

§852.211-70 Requirements for operating and maintenance manuals.

1. Solicitations and requests for proposals for technical medical and other technical equipment and devices issued by a field facility will normally require the contractor to provide operating and maintenance manuals.
2. The purpose of the requirement is for the manufacturer to provide VA a manual or groups of manuals that will allow the in-house repair of the equipment purchased. Unless the facility Chief, Engineering Service, indicates that such service manuals are not needed, each invitation for bid or request for proposal for technical medical or other technical equipment and devices will include the following clauses for operating and maintenance manuals:

SERVICE DATA MANUAL (NOV 1984)

1. The successful bidder will supply operation/service (maintenance) manuals with each piece of equipment in the quantity specified in the solicitation and resulting purchase order. As a minimum, the manual(s) shall be bound and equivalent to the manual(s) provided the manufacturer's designated field service representative as well as comply with all the requirements in paragraphs (b) through (i) of this clause. Sections, headings and section sequence identified in (b) through (i) of this clause are typical and may vary between manufacturers. Variances in the sections, headings and section sequence, however, do not relieve the manufacturer of his/her responsibility in supplying the technical data called for therein.
2. *Title Page and Front Matter.* The title page shall include the equipment nomenclature, model number, effective date of the manual and the manufacturer's name and address. If the manual applies to a particular version of the equipment only, the title page shall also list that equipment's serial number. Front matter shall consist of the Table of Contents, List of Tables, List of Illustrations and a frontispiece (photograph or line drawing) depicting the equipment.
3. *Section I, General Description.* This section shall provide a generalized description of the equipment or devices and shall describe its purpose or intended use. Included in this section will be a table listing all pertinent equipment specifications, power requirements, environmental limitations and physical dimensions.
4. *Section II, Installation.* Section II shall provide pertinent installation information. It shall list all input and output connectors using applicable reference designators and functional names as they appear on the equipment. Included in this listing will be a brief description of the function of each connector along with the connector type. Instructions shall be provided as to the recommended method of repacking the equipment for shipment (packing material, labeling, etc.)
5. *Section III, Operation.* Section III will fully describe the operation of the equipment and shall include a listing of each control with a brief description of its function and step-by-step procedures for each operating mode. Procedures will use the control(s) nomenclature as it appears on the equipment and will be keyed to one or more illustrations of the equipment. Operating procedures will include any preoperational checks, calibration adjustments and operation tests. Notes, cautions and warnings

shall be set off from the text body so they may easily be recognizable and will draw the attention of the reader. Illustrations should be used wherever possible depicting equipment connections for test, calibration, patient monitoring and measurements. For large, complex and/or highly versatile equipment capable of many operating modes and in other instances where the Operation Section is quite large, operational information may be bound separately in the form of an Operators Manual. The providing of a separate Operators manual does not relieve the supplier of his responsibility for providing the minimum acceptable maintenance data specified herein.

Where applicable, flow charts and narrative descriptions of software shall be provided. If programming is either built-in and/or user modifiable, a complete software listing shall be supplied. Equipment items with software packages shall also include diagnostic routines and sample outputs. Submission information shall be given in the Maintenance Section to identify equipment malfunctions which are software related.

6. *Section IV, Principles of Operation.* This section shall describe in narrative form the principles of operation of the equipment. Circuitry shall be discussed in sufficient detail to be understood by technicians and engineers who possess a working knowledge of electronics and a general familiarity with the overall application of the devices. The circuit descriptions should start at the overall equipment level and proceed to more detailed circuit descriptions. The overall description shall be keyed to a functional block diagram of the equipment. Circuit descriptions shall be keyed to schematic diagrams discussed in paragraph (i) below. It is recommended that for complex or special circuits, simplified schematics should be included in this section.
7. *Section V, Maintenance.* The maintenance section shall contain a list of recommended test equipment, special tools, preventive maintenance instructions and corrective information. The list of test equipment shall be that recommended by the manufacturer and shall be designated by manufacturer and model number. Special tools are those items not commercially available or those that are designed specifically for the equipment being supplied. Sufficient data will be provided to enable their purchase by VA. Preventive maintenance instructions shall consist of those recommended by the manufacturer to preclude unnecessary failures. Procedures and the recommended frequency of performance shall be included for visual inspection, cleaning, lubricating, mechanical adjustments and circuit calibration. Corrective maintenance shall consist of the data necessary to troubleshoot and rectify a problem and shall include procedures for realigning and testing the equipment. Troubleshooting shall include either a list of test points with the applicable voltage levels or waveforms that would be present under a certain prescribed set of conditions, a troubleshooting chart listing the symptom, probable cause and remedy, or a narrative containing sufficient data to enable a test technician or electronics engineer to determine and locate the probable cause of malfunction. Data shall also be provided describing the preferred method of repairing or replacing discrete components mounted on printed circuit boards or located in areas where special steps must be followed to disassemble the equipment. Procedures shall be included to realign and test the equipment at the

completion of repairs and to restore it to its original operating condition. These procedures shall be supported by the necessary waveforms and voltage levels, and data for selecting matched components. Diagrams, either photographic or line, shall show the location of printed circuit board mounted components.

8. *Section VI, Replacement Parts List.* The replacement parts list shall list, in alphanumeric order, all electrical/electronic, mechanical and pneumatic components, their description, value and tolerance, true manufacturer and manufacturers' part number.
9. *Section VII, Drawings.* Wiring and schematic diagrams shall be included. The drawings will depict the circuitry using standard symbols and shall include the reference designations and component values or type designators. Drawings shall be clear and legible and shall not be engineering or productions sketches.

(End of Clause)

3. Solicitations and requests for proposals for mechanical equipment (other than technical medical equipment and devices) issued by a field station will include the following clause:

SERVICE DATA MANUAL (NOV 1984)

The contractor agrees to furnish two copies of a manual, handbook or brochure containing operating, installation, and maintenance instructions (including pictures or illustrations, schematics, and complete repair/test guides as necessary). Where applicable, it will include electrical data and connection diagrams for all utilities. The instructions shall also contain a complete list of all replaceable parts showing part number, name, and quantity required.

(End of Clause)

4. When the bid or proposal will result in the initial purchase (including each make and model) of a centrally procured item, the following clause will be used:

SERVICE DATA MANUAL (NOV 1984)

The contractor agrees, when requested by the contracting officer, to furnish not more than three copies of the technical documentation required by paragraph [§852.211-70\(a\)](#) to the Service and Reclamation Division, Hines, IL. In addition, the contractor agrees to furnish two additional copies of the technical documentation required by [§852.211-70\(a\)](#) with each piece of equipment sold as a result of the invitation for bid or request for proposal.

(End of Clause)

