MIL-M-18012B
20 JULY 1964

SUPERSEDING
MIL-C-18012A(ASG)
29 MARCH 1957

MILITARY SPECIFICATION

MARKINGS FOR AIRCREW STATION DISPLAYS

DESIGN AND CONFIGURATION OF

This specification has been approved by the Department of Defense and is mandatory for use by the Department of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 Scope. ThiS specification Covers the design requirements and configuration of letters, numerals, and identification for aircrew station displays and control panels.

1.2 Classification. The control panels shall be classified as follows.

1.2.1 Classes.

Class A—Transilluminated panels conforming to MIL-P-7788.
Class B-Non-Transilluminated panels Conforming to MIL-C-6781.

1.2.2 Types.

Type I —White markings on black background.
Type II-White markings on gray

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS

MILITARY

MIL-C-6781-Control Panel: Aircraft Equipment, Rack or Console Mounted
MIL-P-7788–Plate, Plastic, Lighting

STANDARDS

FEDERAL

STANDARD No. W-Colors

MILITARY

MIL-STD-203-Cockpit Controls, Location and Actuation of, for Fixed wing Aircraft
MIL-STD-250-Cockpit Controlls, Location and Actuation of, for Helicopters
MIL-STD-411-Aircrew Station Signals
MS33558 —Numerals and Letters, Aircraft Instrument Dial, Standard Form of
MS33585 —Pointers, Dial, Standard Design of Aircraft

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with Specifiec procurement functions should be obtained from the procuring activity or as directed by the contracting Officer.)

3. REQUIREMENTS

3.1 General Markings shall be uniform and without distortion. All letters and numerals shall be vertically oriented and shall

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

distinctly indicate the graduation to which each applies.

3.1.1 Instruments and indicators.

(a) Numerals on dish of instruments whose graduations are on the perimeter of the dial shall be within the inner perimeter of the graduations. Numerals on sub-dials and dials having arc-type scales with graduations not on the perimeter of the dial may be on the outer perimeter of the graduations, unless otherwise specified by the procuring activity.

(b) Numeral values on fixed circular scales shall increase in a clockwise direction. On a linear scale display, numeral values shall increase from left to right on horizontal scales, and from bottom to top on vertical scales.

(c) On those displays which require positive and negative indications about a zero point, positive values shall increase in a clockwise or upward direction and negative values shall increase in a counter-clockwise or downward direction, unless otherwise approved by the procuring activity.

(d) Instruments and indicators presenting information to the viewer as to the current status of an important control or equipment shall be clearly identified by bearing the nomenclature which indicates the function being measured rather than a specific instrument title. For example, the altimeter should be labeled “ALTITUDE” and the tachometer should be labeled “RPM”. All identification markings placed on instruments and indicators shall be subject to the approval of the procuring activity.

3.1.1.1 Letter and numeral design. Letters and numerals on instruments and indicators shall conform to MS33558.

3.1.2 Control panels.

3.1.2.1 Letter design. The recommended letter form is shown on figure 1. This font is available for paste-up layout work, in double the specified sizes, as Artype S-274. The letter designs shows in MS33558 are acceptable for parts covered by this specification. The following commercial fonts having the size ratios specified herein for the classes and types of control panels coverered by this specification may be used. Stroke width of engraved letters shall be the same as that of the acceptable type fonts of the same letter heights.

(a) Fonts for engraving:
  (1) Gorton extended
  (2) Groton normal
  (3) Gorton condensed

(b) Fonts for printing and other reproduction methods:
  (1) Airport semibold
  (2) Futura demibold
  (3) Vogue medium
  (4) Lining Gothic No. 66
  (5) Alternate Gothic No. 3

3.1.2.1.1 Letter spacing. There shall be approximately one stroke width space between letters within words, and one standard letter width (see 3.2.2) between words in groups. Because letters vary in the amount of stroke occupying the left and right edge of the letter-block space, spacing that is actually unequal between the letter blocks can appear more uniform than equal spacing. The lettering within words, except for overall panel identification, shall be arranged to read horizontally from the viewer’s left to right. Legend or contraction shall normally be arranged to read horizontally, unless for clarity of indication or for reasons of space limitation, a vertical arrangement is necessary. Vertically arranged letters shall be of equal width to provide a pleasing effect.

3.1.2.2 Numeral design. The recommended number series is shown on figure 2. This font is currently available for paste-up layout

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

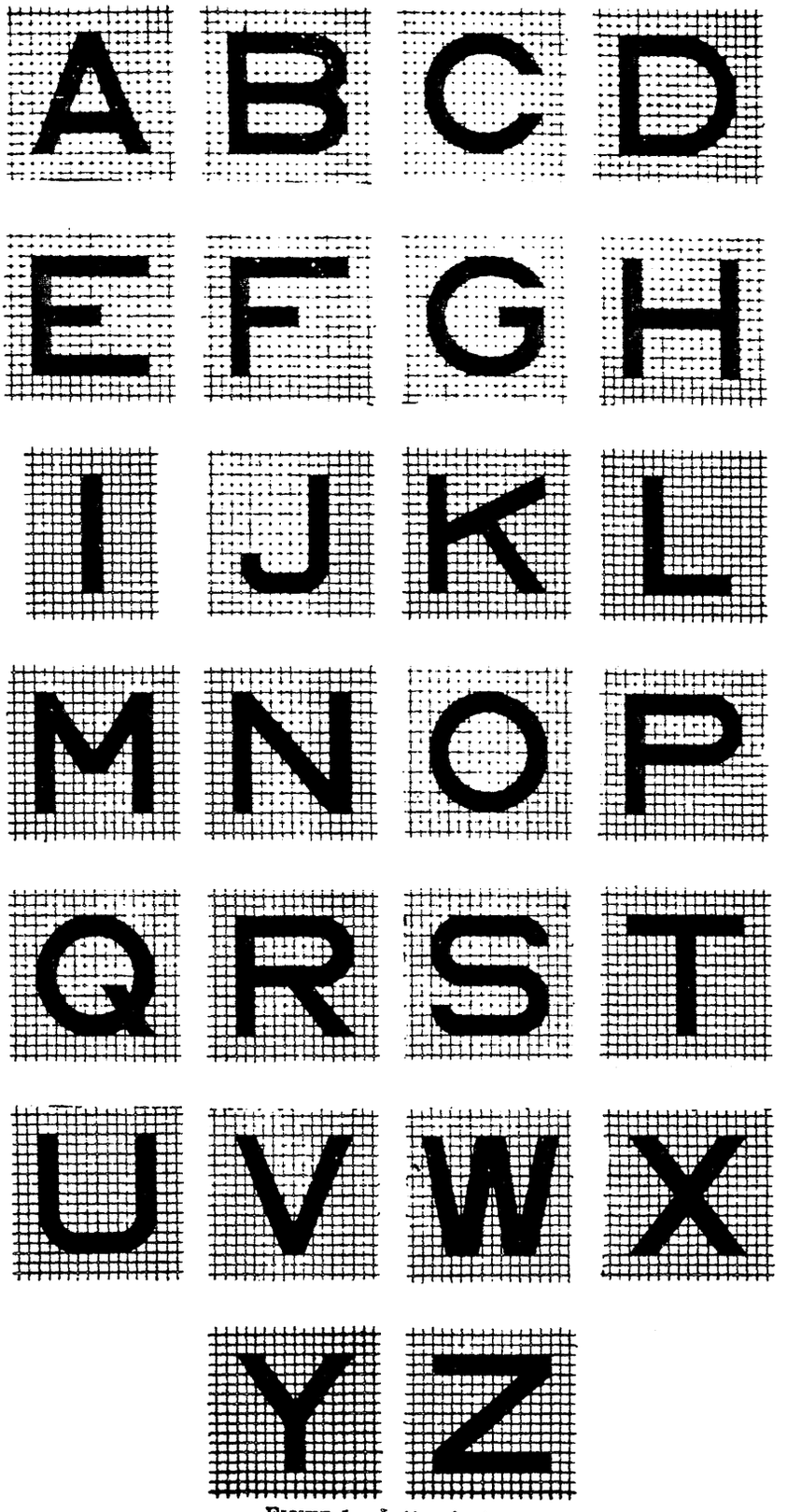


FIGURE 1. *Letter font*

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

work, in double the specified sizes, as Artype S-274. Numeral designs shown in MS33558 are acceptable for parts covered by this specification. The following commercial fonts having the size ratios specified herein for the classes and types of control panels covered by this specification may be used. Stroke width of engraved letters shall be the same as that of the acceptable type fonts of the same letter height.

(a) For-its for engraving:
  (1) Gorton extended
  (2) Gorten moderne

(b) Fonts for printing and other repro - duction methods:
  (1) Futura medium
  (2) Futura tempo bold

3.1.2.2.1 Numeral spacing. There shall be approximately one stroke width space between digits forming a single numerical indication.

3.1.2.3 Punctuation and symbols. Punctuation marks shall not be used. Specialized symbols, such as arrows, plus or minus signs. and degree markings, shall be used only when essential to the meaning of the legend. When used, symbols shall not exceed the adjacent lettering in stroke width.

3.1.2.1 Legends and contractions. Gencrally, ease of interpretation must be provided without an excessive number of control panel markings. Contractions shall be substituted for complete words when space limitations prohibit the use of the entire word. No fixed maximum can be placed on the number of letters in a legend for it to be spelled out. Contractions shall be subject to the approval of the procuring activity.

3.1.2.5 Lines. Marginal lines around grouped control markings and underlinings shall not be used.

3.1.2.6 Marking sizes. All letter and numeral measurements shall be made from the outside edges of the stroke lines for other than machine engraving on opaque surfaces. For all mechanical engraving on opaque surfaces, the dimension controlling the size of letters and numerals will be measured from centerline to centerline of the stroke. All letters and numerals shall be proportioned to provide a pleasing visual effect. When one letter or numeral is selected at the lower tolerances, the remaining letters or numerals of the control panel shall also be selected at the lower tolerance.

3.1.2.7 Display-control relationship. Controls associated with a display should be proximal to the display in an arrangement whereby the display unit will be visible during operation of the control. The control and display shall be linked in a manner specified in MIL-STD-203 and MIL-STD-250.

3.1.2.7.3 Control knob identification. Identification markings of control knobs shall be placed on the adjacent panel area, not on the knob itself, except as otherwise specified herein and in MIL-STD-411.

3.1.2.8 Control panel identification. Words and letters used for identification of an entire panel or the portion of the panel including several controls making up a functional group shall be larger than the other letter heights used. The panel-identifying legend shall be located at the top of the panel and shall be standard horizontal lettering. Markings irrelevant to the operator, such as stock numbers and aeronautical type designations, shall be avoided.

3.1.3 Counter displays. The number of digits that can be displayed on the counter shall be obvious to the operator at all times. regardless of the momentary reading on the display.

3.1.4 Toggle switches. Except where readability is compromised, the identification of the switch shall be placed above the switch. Where readability is compromised, the identifcation shall be placed adjacent to arid easily identifiable with the switch. Switch positions shall be marked in the direction of travel. For center positions, the markings shall be placed on the right of the switch for left-hand operation and on the left of the switch for right-hand operation. When the location of the equipment is indefinite, the

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

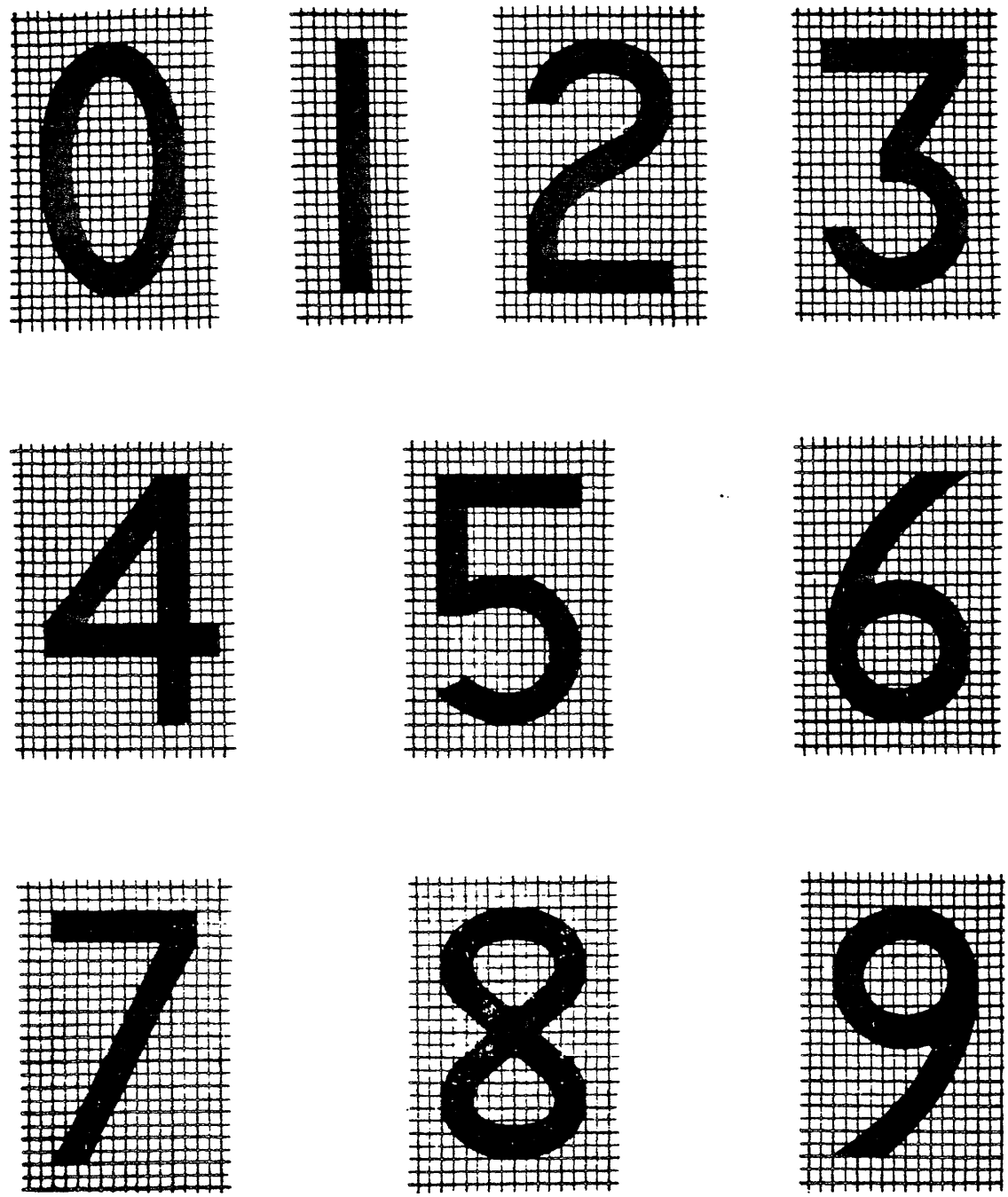


FIGURE 2. *Numeral font*

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

marking of center positions shall be on the left of the switch.

3.1.5 Linear switches. The markings associated with a linear switch shall be placed to remain visible during hand operation of the switch.

3.1.6 Thumb wheels. The identification of thumb wheel-type controls that are perpendicular to the control panel and have a part of the wheel extending above the panel shall be visible while the control is being operated.

3.1.7 Pushbuttons (non-transilluminated). The pushbutton shall be illuminated by means of a chamfer on the rear of the panel mounting hole through which the pushbutton protrudes.

3.1.7.1 Pushbuttons (transilluminated). The top surface of transilluminated pushbuttons shall be marked with appropriate legends.

3.1.8 Switch guards. Switch guards in general do not require special markings because of their installation. Markings for the switch shall be outside the area covered by the switch guard.

3.1.9 Immediate action controls. All switches, buttons, and small bandies or levers shall have a striped panel background, whereas large handles or levers shall be striped on the handle or lever. The striped colors shall be alternate orange-yellow and black. The black stripes shall have a width between 1/16 and 1/4 inch and the orange-yellow stripes shall be three times the width of the black stripe. The stripes shall be applied at a 45 degree angle from the vertical, rotated clockwise. The striping shall begin and end with an orange-yellow stripe. Background striping around a switch or button shall be not wider than 3/4 inch nor less than 1/8 inch. If one side of a switch or button haS less than 1/8 inch space, no striping shall be applied to that side. Background striping around a small handle or lever shall be no wider than 1 1/2 inches nor less than 1/4 inch. Lighted pushbuttons require a lighted background with opaque nomenclature. The brightness of the illuminated pushbutton area shall be less than the brightness of the nomenclature on the panel.

3.1.9.1 Nomenclature. Where nomenclature is included on the control handle or lever or as a part of the background, the nomenclature shall be insignia white cm a black background. The background shall extend beyond the nomenclature at least one stroke width of the nomenclature markings and be in the form of a rectangle. Where the background is a part of a plastic lighting plate conforming to MIL-P-7788, the black and white requirements shall be those of 311 MIL-P-7788.

3.2 Detail.

3.2.1 Instrumental indicators.

(a) Numerals and letters: Numeral and letter size specified herein are given for a 28-inch viewing distance. For other viewing distances (x), the given value should be multiplied by x/28. Generally all numerals and letters shall be within the range specified and shall present a visually pleasing and uncluttered instrument (display to the operator,

(1) Height: The height of critical letters and numerals shall be between 0.15 and 0.30 inch, except those critical markings whose position is variable shall be no less than 0.20 inch.

(2) Width: The width of the letters and numerals shall be 3/5 of the height, except the numeral “4” which shall be one stroke width wider; the numeral “1” and the letter “I” which shall be one stroke width, and the letters “M” and “W” which shall be 20 percent wider than the other letters.

(3) Stroke width: The stroke width shall be from 1/8 to 1/6 of the letter or numeral height. However, the width shall be the same for all letters and numerals of equal height.

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

(b) Pointer design: Pointer design and dimensions shall conform to MS33585 Unless otherwise specified for a particular display by the procuring activity.

(c) Graduation marks:

(1) Overall length should be determined by the number of types needed on an instrument, i.e., major, minor, and intermediate.

(2) The absolute distance between midpoints of adjacent graduation marks should be not less than 0.07 inch for those instruments to be used under low brightness conditions where dark adaptation is required. Under these conditions, the smallest graduation mark which is recommended should be 0.10 inch long and 0.025 inch wide. Where low brightness legibility is not required, the distance may be reduced to as little as 0.035 inch if the graduation mark is a maximum of 25 percent of the separation distance.

(3) Scales to be read quantitatively shall be designed so that interpolated reading between graduation marks shall be minimal and shall not exceed the accuracy of the signal input. Interpolation requirements should be kept as simple as possible, e.g., interpolation of one unit between graduation marks rather than interpolation in fifths or tenths. Interpolation in tenths can be used only if errors as large as 10 percent of the interval can be tolerated in 50 percent of the readings.

3.2.2 Control panels.

3.2.2.1 Class A—type I, and class B—type I.

(a) Height: The height of all numerals and letters, except those specified hereafter, shall be a minimum of 0.125 Inch and shall not exceed j0.141 inch. Where special emphasisis is required for increased readability. the letters and numerals shall be at least 0.156 inch and shall not exceed 0.172 inch.

(b) Width: The width of the numerals shall be between 0.4 and 0.7 of the height, except the numeral “4” which shall be between 0.5 and 0.8 of the height, and the numeral “1” which shall be one stroke width. The width of ‘the letters shall be between 0.6 and 1.0 of the height, except the letter “X” which shall be one stroke width, the letters “J” and “L" which shall be between 0.5 and 0.75 of the height, respectively. The letter “W” shall be between 0.7 and 1.1 of the height.

(c) Stroke width: The stroke width of the numerals shall be between 0.013 and 0.020 inch. The stroke width of the letters shall be between 0.018 and 0.025 inch.

3.2.2.2 Class A - type II, and class B-type II.

(a) Height: The height of the numerals and letters shall be at least 0.156 inch and shall not exceed 0.172 inch. Where emphasis is required for increased readability, the letters and numerals shall beat least 0.188 inch and no greater than 0.204 inch.

(b) Width: The width of the numerals shall be between 0.6 and 0.7 of the height, except the numeral “4" which shall be between 0.6 and 0.8 of the height, and the numeral “1" which shall be one stroke width. The width of the letters shall be between 0.8 and 1.0 of the height, except the letter “I” which shall be one stroke width, the letters “J" and "L”

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

which shall be between 0.8 and 1.1 of the height.

(c) Stroke width: The stroke width of numerals shall be between 0.020 and 0.025 inch. The stroke width of the letters shall be between 0.025 and 0.030 inch.

3.2.2.3 Radio call numbers. Transilluminated radio call numbers shall conform to the size requirements specified in 3.2.2.1.

3.2.2.3.1 Non-transilluminated radio call numbers and other similar markings shall be between 0.188 and 0.375 inch high, having a width of between 0.9 to 1.1 of the height and a stroke width between 0.030 and 0.040 inch.

3.2.2.4 Controls. The letters and numerals for transilluminated and non-transilluminated aircrew station controls shall conform to the size requirements specified in 3.2.2.2.

3.2.2.5 Marking arrangements. In those places where a plastic lighting plate larger than 100 square inches is required. two or more plastic lighting plates shall be used. The arrangement of markings on any of the control panels shall be such that errors of association of one marking or set of markings with adjacent ones shall not be possible. Markings shall be spaced to avoid a cluttered appearance. The space between the bottom of a row of letters or numbers and the top of the next row of letters or numbers shall be at least 1/8 inch. A 1/16 inch border area on any control panel shall be free of markings.

3.2.2.6 Miscellaneous markings. For all classes and type of control panels. instruments, and irdicators, special markings, such as those used for a fuel-flow diagram (figure 3), shall be Subject to the approval of the procuring activity.

3.2.3 Counter displays.

(a) Numerals:

(1) Height: The height of numerals on counters shall be between 0.20 and 0.30 inch, except as otherwise specified by the procuring activity.

(2) Width: The width of the numerals shall be the same as the height, except that the “1” shall be one stroke in width and the “1” shall be one stroke width wider.

(3) Stroke width: The stroke width shall be from 1/8 to 1/16 of the numeral height.

(4) Numeral spacing: The spacing between numerals shall be one-half the width of the numerals, except for the “1” and “4” which shall be decreased and increased to conform with the height and width requirements specified above.

(5) Color: Numerals on counters shall be white on a black background.

3.3 Miscellaneous.

3.3.1 Checkoff lists. The lettering of permanently mounted checkoff lists shall conform to the requirements specified herein. The items shall be restricted as specified in MIL-STD-203 and shall be listed vertically.

3.3.2 Visual warning flags. Warning flag lettering shall be at least as large as the smallest letters on the display and the edge of the flag shall be at least 0.06 inch from the letters. Flags shall be located on the display in such a position that. when presented, they will obscure the function to which they apply without affecting the readability of the remainder of the display. Nomenclature and color on the flag shall besubject to the approval of the procuring activity.

3.3.3 Colors. All colors specified in this specification shall be in accordance with the color numbers of Federal Standard No. 595. Unless otherwise specified, the color numbers for the colors shall be as follows:

Color	Number
Gray	36231
Black	37038
Insignia white	37875
Orange-yellow	33538

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

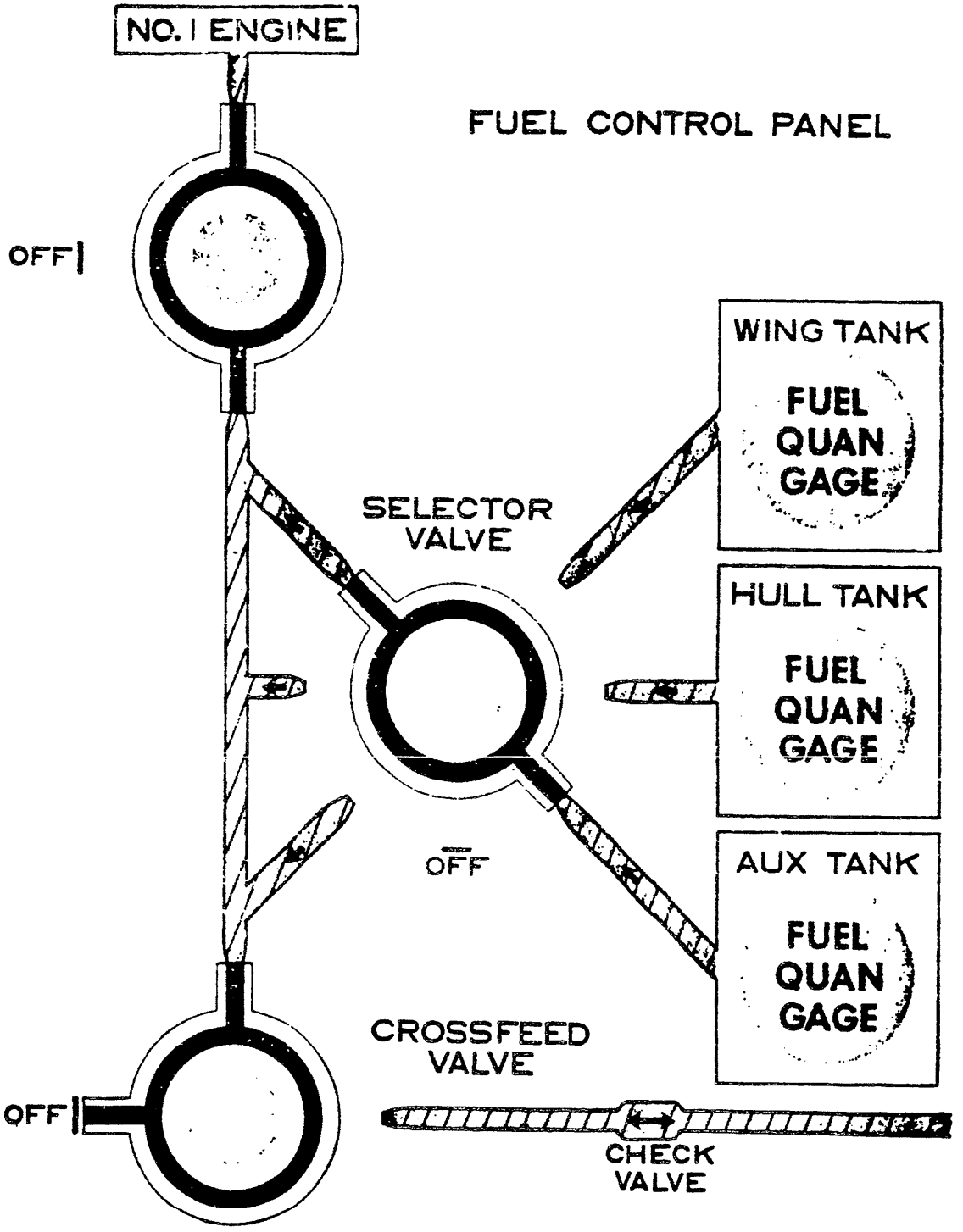


FIGURE 3. *Fuel control panel*

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

4. QUALITY ASSURANCE PROVISIONS

There are no applicable requirements.

5. PREPARATION FOR DELIVERY

There are no applicable requirements.

6. NOTES

6.1 International standardization. Certain provisions of this specification (3.1.9) are the subject of international standardization agreement (ABC Air Standard 10/23A, STANDAG 3341) When amendment, revision. or cancelation of this specification is proposed, the departmental custodians will inform their respective Departmental Standardization Offices so that appropriate action may be taken respecting the international agreement concerned.

Custodians:
Army—MO
Navy—Weps
Air Force-11
International interest (see 6.1)
Reviewer activity:
Army—
Navy-Weps
Air Force - 11
User activity:

Preparing activity:
Navy—Weps
Project No. 1500-0008

Review/user information is current as of the date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current Federal Supply Classification Listing of DoD Standardization Documents.

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge *(DO NOT STAPLE)*, and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 12503 WASHINGTON D. C.
POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

Commander
Naval Air Systems Command (AIR 51122)
Washington, DC 20361

Source: https://assist.dla.mil -- Downloaded: 2026-11-20T22:00Z
Check the source to verify that this is the current version before use.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE

Source: https://assist.dla.mil – Downloaded: 2025-11-20T22:00Z
Check the source to verify that this is the current version before use.