

MIL-I-6856C  
 29 SEPTEMBER 1987  
 SUPERSEDING  
 MIL-I-6856B  
 3 January 1961

## MILITARY SPECIFICATION

### INDICATOR, PRESSURE, SYNCHRO, 1-1/2 INCH

This specification is approved for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. The specification covers three hermetically sealed clamp-mounted 1-1/2 inch single synchro pressure indicators.

1.2 Classification. The indicators shall be furnished in the following types, as specified (see 6.2):

<u>Type No.</u>	<u>Dial scale</u>
I	0 to 5
II	0 to 10
III	0 to 25

#### 2. APPLICABLE DOCUMENTS

##### \*2.1 Government documents.

2.1.1 Specification and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

#### SPECIFICATIONS

##### FEDERAL

QQ-S-781	Strapping, Steel, and Seals
PPP-B-566	Box, Folding, Paperboard
PPP-B-585	Box, Wood, Wirebound
PPP-B-601	Boxes, Wood, Cleated Plywood
PPP-B-621	Box, Wood, Nailed and Lock-corner

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: the Engineering Division, San Antonio ALC/MMEDO, Kelly AFB, Texas 78241 by using the self addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 6685

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PPP-B-636	Box, Shipping Fiberboard
PPP-B-665	Boxes, Paperboard, Metal Edged and Components
PPP-B-676	Boxes, Setup

## MILITARY

MIL-P-116	Preservation, Methods of
MIL-I-7057	Indicator, Synchro, Aircraft, General Specification for
MIL-T-7748	Transmitter, Pressure, Synchro, Aircraft, 320-Degree Movement, High Temperature, General Purpose

## STANDARDS

## FEDERAL

FED-STD-595	Color
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(Requirements for individual color chips, 3 x 5 supplements should be submitted to the Naval Publications and Forms Center 5801 Tabor Avenue, Philadelphia, PA 19120 citing FED-STD-595 together with appropriate chip number as shown therein.)

## MILITARY

MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-147	Palletized Unit Loads
MIL-STD-2073-1	DOD Material Procedures for Development and Application of Packaging Requirements
MIL-STD-2073-2	Packaging Requirements Codes
MS33639	Case, Instrument, Clamp-Mounted, Aircraft

(Copies of specifications and standards, required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

## AMERICAN SOCIETY FOR TESTING AND MATERIAL (ASTM)

ASTM D-3951	Packaging, Commercial
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(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

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2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Qualification. The indicators furnished under this specification shall be a product which has been tested, and has passed the qualification tests specified herein, and has been listed on or approved for listing on the applicable Qualified Products List.

3.2 General specification. Each indicator shall conform to the requirements of MIL-I-7057, however, the requirements specified herein, shall take precedence over any other requirements.

3.3 Presentation. Each indicator shall be a single indicator.

3.4 Design. Each indicator shall be so designed that either 1 or 2 indicators can be operated by 1 pressure transmitter conforming to MIL-T-7748.

3.5 Case. The case of each indicator shall conform to MS33639 for 1-1/2 inch size. The dimensions indicated as "L" on MS33639 shall not exceed 3 inches. The case of each indicator shall be hermetically sealed.

3.6 Electrical receptacle. The electrical receptacle of each indicator shall be mounted on the rear surface of the case of the indicator with the axis of the receptacle within 1/8 inch of the axis of the case.

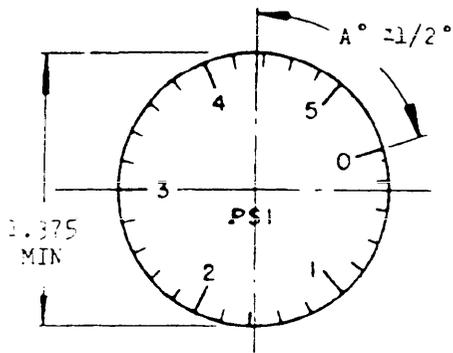
3.7 Dial. The dial of each indicator shall conform to figure 1. The background of the dial shall be finished with lusterless black paint. All marking on the dial shall be applied with lusterless white paint. The dimensions of the marking on the dial of each indicator shall be as listed in table I. Marking the scale arc on the dial is optional.

3.8 Pointer. The pointer of each indicator shall conform to figure 1. Portions of the pointer which are shown as white on figure 1 shall be finished with lusterless black paint. Portions of the pointer which are shown as black on figure 1 shall be finished with lusterless white paint.

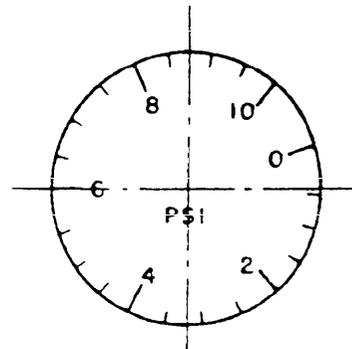
TABLE I. Dial marking.

Marking	Length or height (inch) +0.010	Width of graduation or line (inch) +0.005
Scale arc	----	0.010
Major graduations	0.125	0.020
Intermediate graduations, if any	0.090	0.015
Minor graduations	0.060	0.010
Numerals	0.100	0.020
"PSI"	0.040	0.010

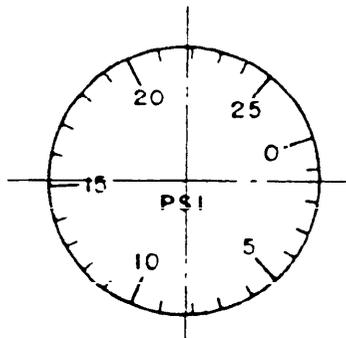
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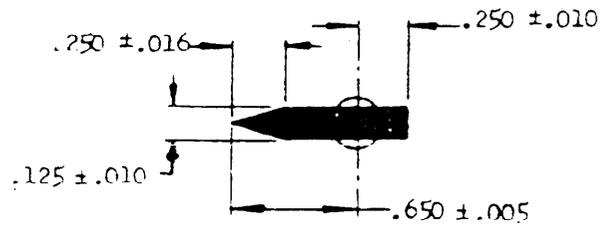
DIAL - TYPE I



DIAL - TYPE II



DIAL - TYPE III



POINTER

GRADUATION			ANGLE A FROM VERTICAL CENTERLINE (DEGREES)
TYPE I	TYPE II	TYPE III	
0	0	0	78
1	2	5	112
2	4	10	206
3	6	15	270
4	8	20	334
5	10	25	38

DIMENSIONS IN INCHES.

FIGURE 1. Dial details

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3.9 Paint. Lusterless black paint shall conform to FED-STD-595 for color number 37038. Lusterless white paint shall conform to FED-STD-595 for color number 37875.

3.10 Weight. The weight of each indicator shall not exceed 0.6 pound.

3.11 Identification marking. Each indicator shall be marked for identification in accordance with MIL-STD-130.

3.12 Reclaimed materials. The use of reclaimed materials shall be encouraged to the maximum extent possible.

## 4. QUALITY ASSURANCE PROVISIONS

\*4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 General specification. The inspection and testing of indicators shall be in accordance with MIL-I-7057. The test points and tolerances shall be as shown in tables II and III.

TABLE II. Scale error tolerance  $\pm$ PSI

Test Points (Percent full scale)	Scale error - room temperature	Scale error - low temperature
	High temperature friction Room and high temperature (Percent full scale)	Low temperature friction (percent full scale)
0	0.5	1.0
20	0.5	1.0
40	0.5	1.0
60	0.5	1.0
80	0.5	1.0
100	0.5	1.0

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TABLE III. Positive error and vibration test point tolerances

Tests	Test points (Percent full scale)	Tolerances (± Percent full scale)
Position error	50	0.5
Vibration Pointer oscillation and variation	50	0.5

4.3 Inspection of packaging. The sampling and inspection of the preservation, packing, and container marking shall be in accordance with the requirements of Section 5.

5. PACKAGING.

5.1 Preservation. Preservation shall be level A, C, or Commercial as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. The indicator shall be cleaned in accordance with MIL-P-116, process C-1.

5.1.1.2 Drying. The indicator shall be dried in accordance with MIL-P-116.

5.1.1.3 Preservation applications. Preservatives shall not be used.

5.1.1.4 Unit packs. Unless otherwise specified (see 6.2), each indicator shall be individually unit packed in accordance with method IA of MIL-P-116 designated herein insuring compliance with the applicable requirements of that specification.

5.1.1.5 Intermediate packs. The indicator unit packed as specified in 5.1.1.4, shall be placed in intermediate containers conforming to PPP-B-566, PPP-B-665, or PPP-B-676. Intermediate containers shall be uniform in size, shape and quantities, shall be of minimum tare and cube and shall contain multiples of five unit packs not to exceed 100 unit packs. Intermediate containers shall be closed as specified in the appendices or notes of the applicable container specification. No intermediate packs are required when the total quantity shipped to a single destination is less than 100 unit packs. For the Army, containers shall conform to PPP-B-636, class weather resistant or PPP-B-636, class weather resistant or PPP-B-566, variety 2.

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5.1.2 Level C. The level C preservation for the indicators shall conform to the MIL-STD-2073 requirements for this level.

5.1.3 Commercial. The commercial preservation of the indicators shall be in accordance with the requirements of ASTM-D-3951.

5.2 Packing. Packing shall be level A, B, C or commercial, as specified (see 6.2).

5.2.1 Level A. The packaged indicator shall be packed in containers conforming to PPP-B-601, overseas type; PPP-B-621, class 2, style 4 or PPP-B-585, class 3, style 2 or 3. Closure and strapping shall be in accordance with applicable container specifications except the strapping shall conform to QQ-S-781, type I or IV, finish A. When the Gross weight exceeds 200 pounds or the container length and width is 48" x 24" or more and the weight exceeds 100 pounds, 3 x 4 inch skids (laid flat) shall be applied in accordance with the requirements of the container specification.

5.2.2 Level B. The packaged indicator shall be packed in fiberboard containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. In lieu of the closure and waterproofing requirement in the appendix of PPP-B-636, closure waterproofing shall be accomplished by sealing all seams, corners and manufacturer's joints with waterproof packaging tape or box closure and sealing tape, two inches minimum width.

5.2.3 Level C. The Level C packing for the indicator shall conform to the MIL-STD-2073 requirements for this level.

5.2.4 Commercial. The preserved indicator shall be packed in accordance with the requirements of ASTM-D-3951.

5.2.5 Palletized loads. When specified (see 6.2) palletized loads, commensurate with the level of packing specified in the contract or order, shall be palletized in accordance with MIL-STD-147. Palletized loads shall be uniform in size and quantities to the greatest extent possible. If the container is of a size which does not conform to any of the pallet patterns specified in MIL-STD-147, the pallet pattern used shall first be approved by the contracting officer.

5.3 Marking. In addition to any special or other identification marking required by the contract (see 6.2), each unit pack, intermediate and exterior container and unitized load shall be marked in accordance with MIL-STD-129 or ASTM-D-3951 as applicable.

5.4 General.

5.4.1 Exterior containers. Exterior containers (see 5.2.1, 5.2.2, 5.2.3 and 5.2.4) shall be of minimum tare and cube consistent with the protection required and shall contain equal quantities of identical stock numbered items to the greatest extent practicable.

5.4.2 Packaging inspection. The inspection of these packaging requirements shall be in accordance with 4.3

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## 6. NOTES

6.1 Intended use. The indicators covered by this specification are intended for use with pressure transmitters conforming to MIL-T-7748 or other suitable pressure transmitters for indicating aircraft pressures remotely.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) The type of indicator desired.
- (c) Selection of applicable levels of preservation, packaging, packing, marking and commercial/industrial (see 5.1, 5.2 and 5.3).
- (d) When palletized loads are required (see 5.2.5)

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of the contractor is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer the Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the San Antonio Air Logistics Center (SA-ALC/MMEDO) Kelly Air Force Base, Texas 78241, and information pertaining to qualification of products may be obtained from that activity.

6.4 Subject term (key word) listing.

Indicator, Pressure  
 Indicator, Pressure, Synchro  
 Indicator, Synchro  
 Indicator, Synchro, 1-1/2 inch  
 Pressure Indicator  
 Synchro Indicator  
 1-1/2 inch Synchro Indicator

6.5 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:  
 Air Force - 99

Preparing Activity:  
 Air Force - 82

Review Activities:  
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