

Indian Head Division
Naval Surface Warfare Center
Indian Head, MD 20640-5035

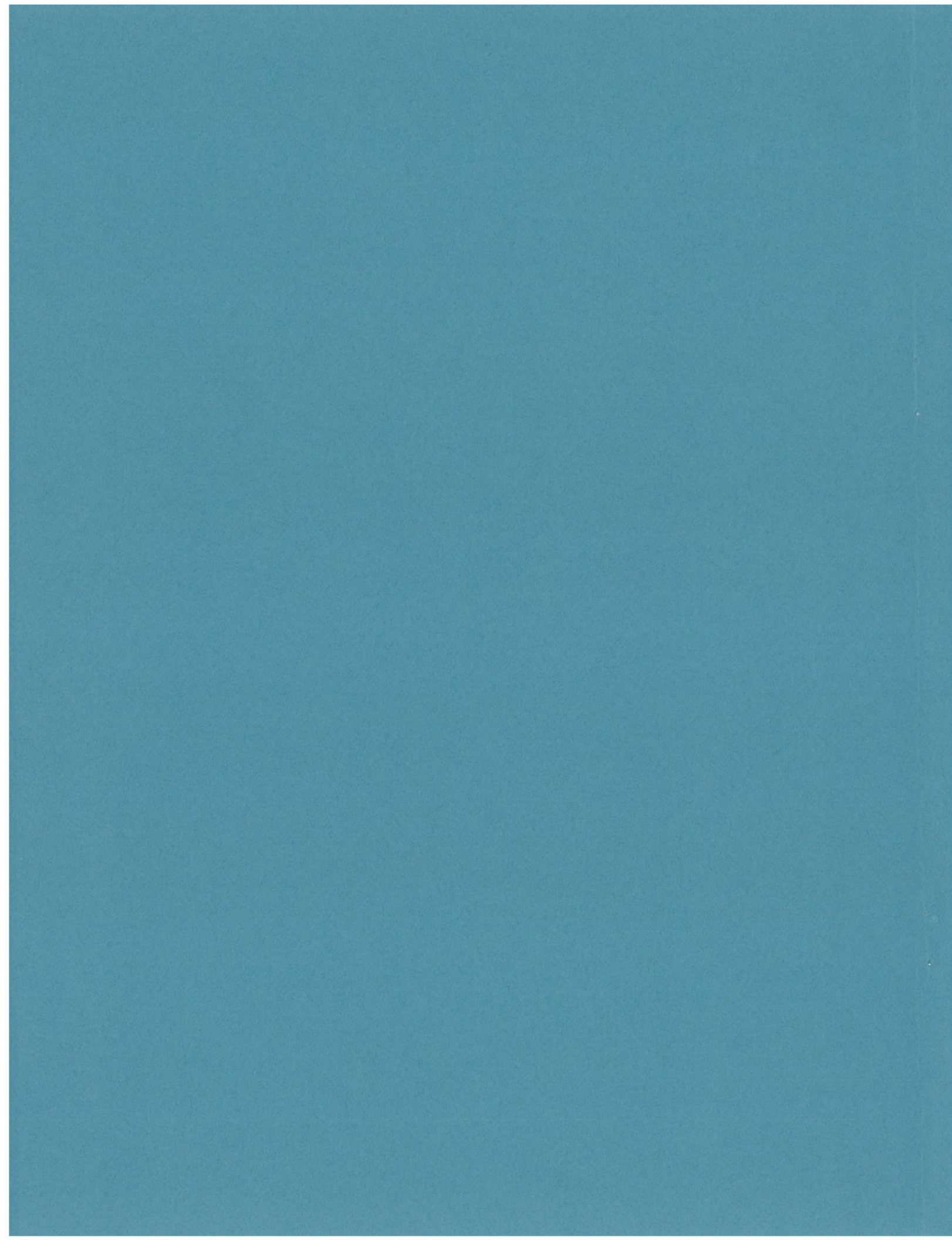
IHSP 02-485
4 December 2002



GUIDE FOR ANTI-SUBMARINE ROCKET (ASROC) MISSILE GAUGE AND HANDLING EQUIPMENT CERTIFICATION PROCEDURE

Approved for public release; distribution is unlimited.





WEAPONS DEPARTMENT

Indian Head Special Publication 02-485

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INDIAN HEAD DIVISION
NAVAL SURFACE WARFARE CENTER
Indian Head, Maryland, 20640-5035

MARC A. SIEBAND
Captain, US Navy
Commander

STEPHEN E. MITCHELL
Director

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CONTENTS

<i>Heading</i>	<i>Page</i>
Foreword	iii
1.0 Introduction	1
2.0 Applicable Documents	1
3.0 Definitions and Acronyms.....	2
4.0 Requirements.....	2
5.0 Supplemental Information.....	22

Figure

1 Inspection Sheet	3
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1.0 INTRODUCTION

This guide provides the requirements for inspection and certification of Anti-Submarine Rocket (Asroc) gauge and handling equipment.

All comments concerning this guide should be directed to the Indian Head Division, Naval Surface Warfare Center (IHDIV, NSWC), Attn: Code 4320, 101 Strauss Ave., Indian Head, MD 20640.

The inspection instruments utilized in this procedure were selected from those known to be available at IHDIV, NSWC, and the listing by make or model number carries no implication of preference, recommendation, or approval for use by other activities. It is recognized that equivalent equipment produced by other manufacturers may be capable of equally satisfactory performance in this procedure. All applicable measuring equipment must bear evidence of current calibration.

All Asroc gauges included in this procedure do not pose a health hazard. Due to the construction and weight of the gauges, handle carefully to avoid any injuries or equipment damage.

2.0 APPLICABLE DOCUMENTS

Technical Manuals

SW180-AA-MMI-010/2923 Revision 1 01 February 1996	Maintenance Manual for Anti-Submarine Rocket (Asroc) Missile Description and Instructions for Assembly, Inspection, and Storage (Intermediate Maintenance Activity)
SG420-AP-MMA-010 Third Revision 01 April 2000	Periodic Testing Arrangement for (Ordnance Handling Equipment)

Drawings

Dwg. 1659987	Mounting Base
Dwg. 1660365	Scale
Dwg. 1806042	Beam, Indicator Deflection Assembly
Dwg. 3018165	Gage Alignment Launching Lug
Dwg. 3236987	Gage, Lug Ear

Standards

ASME Y.14, 1994	Dimensioning and Tolerancing
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Other

ISO 10012-1:1992(E)	Quality Assurance Requirements for Measuring Equipment
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(Application for copies of the above documents should be addressed to: Commander, Naval Sea Systems Command, PMS-380, 1333 Isaac Hull Ave SE Stop (3301) Washington Navy Yard, DC 20376-3301.)

3.0 DEFINITIONS AND ACRONYMS

Definitions

Classification of Characteristic (CC)—The process of assigning classification codes (Critical, Major, or Minor) to design characteristics of an item.

Classification, Critical—A critical characteristic is one that analysis indicates is likely, if defective, to create or increase a hazard to human safety, or to result in failure of a weapon system or major system to perform a required mission.

Classification, Major—A major characteristic is one that analysis indicates is significant to product quality but is not likely, if defective, to impair the mission performance of the item.

Acronyms

Asroc—Anti-Submarine Rocket

CC—Classification of Characteristic

CMM—Coordinate Measuring Machine

EHG—Electronic Height Gage

IHDIV, NSWC—Indian Head Division, Naval Surface Warfare Center

4.0 REQUIREMENTS

4.1 Procedure requirements. Procedures for using and testing the gauge and handling equipment are defined in SW180-AA-MMI-010/2963 and SG420-AP-MMA-010. Please refer to these documents for operational instructions.

4.2 Inspection requirements. The gauge and handling equipment shall meet the inspection requirements identified on the individual inspection procedure (G1 through G7 and H1 through H3). Inspection data shall be recorded on an inspection sheet (see Figure 1). If a piece of equipment does not meet the acceptable dimensions, the equipment shall be rejected. Rejected equipment cannot be used to assemble Asroc missiles. Return inspection records to Commanding Officer, Indian Head Division, NSWC, Code 4320, 101 Strauss Avenue, Indian Head, MD 20640 for technical evaluation and advice.

4.3 Drawing requirements. The minimum requirement for drawing interpretation is a basic understanding of geometric dimensioning and tolerancing. Reference ASME Y.14, 1994, "Dimensioning and Tolerancing." International Standard ISO 10012-1:1992 contains quality assurance requirements for a supplier to ensure that measurements are made with the intended accuracy.

4.4 Temperature requirements. Room temperature requirement for inspection = 68 ± 5 °F.

4.5 Instrument requirements. The inspection instruments utilized in this procedure were selected from those known to be available at IHDIV, NSWC, and the listing by make or model number carries no implication of preference, recommendation, or approval for use by other activities. It is recognized that equivalent equipment produced by other manufactures may be capable of equally satisfactory performance in this procedure. All applicable measuring equipment must bear evidence of current calibration.

4.6 Safety requirements. All Asroc gauges included in this procedure do not pose a health hazard. Due to the construction and weight of the gauges, handle carefully to avoid any injuries or equipment damage.

Inspection Sheet

DRAWING NUMBER		NOMENCLATURE		REVISION	SERIAL NUMBER(S)
QUANTITY RECEIVED	QUANTITY INSPECTED	DATE RECEIVED	DATE INSPECTED		
DISPOSITION					
REQUIREMENT			INSPECTION		
DIMENSIONS AND NOTES	EQUIPMENT USED	OK/REJECT	INSPECTOR'S NOTES	INSTRUCTIONS	
INSPECTED BY					DATE

Figure 1. Inspection Sheet

Special Asroc Gauge Inspection Requirements G-1

Nomenclature: Beam, Indicator Deflection Assembly
Drawing No.: 1806042 **Sheet No.:** 1 of 4
Inspection Frequency: Yearly

General:

1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record Deflection Beam Indicator serial number on inspection sheet. The serial number for this item is located on the nameplate. Refer to sheet 2, zone B-7 of the drawing.

Weight Test Inspection:

Note 5, Classification of Characteristic – CRITICAL (C1)

5. Assembly shall withstand a 2,000-lb minimum static load without permanent deformation when suspended on lock pin, prior to release for use. Load shall be applied equally at each end.

Dwg. 1806042 Sheet 1 (Spline indicates Note to be inspected.)

NOTES:

1. PAINT ALL SURFACES EXCEPT THE FOLLOWING USING PRIMER AND FINISH COAT IN ACCORDANCE WITH MIL-STD-1303, SYSTEM 37. PROCEDURE IN ACCORDANCE WITH MIL-STD-1303, SYSTEM 37.
 - (A) ALL WORKING SURFACES MARKED Δ
 - (B) THREADED AREAS
 - (C) HEIGHT GAGE SCOPE
 - (D) PINS AND CHAINS
 - (E) THUMB SCREWS
2. THE NAMEPLATE, PWD NO. 10, SHALL BE ETCHED OR ENGRAVED WITH THE FOLLOWING INFORMATION: DEFLECTION, DWG. 1806042. THE CONTRACT NUMBER AND THE MANUFACTURER'S IDENTIFICATION. THE NAMEPLATE SHALL BE STAMPED WITH ASSIGNED SERIAL NUMBER. CHARACTERS SHALL BE 1/4", 3/32" AND 1/8" AS APPLICABLE PER EXAMPLE, SEE VIEW B, SHEET 2.
3. STEEL STAMP ETCH, OR ENGRAVE " - PWD " IN 1/4" MINIMUM HEIGHT CHARACTERS IN POSITION SHOWN.
4. COMPONENTS TO BE LUBRICATED DA WITH LUBRICATING OIL - PWD NO. 31.
 - (C1) ASSEMBLY SHALL WITHSTAND A 2000 LB STATIC LOAD WITHOUT PERMANENT DEFORMATION WHEN SUSPENDED ON PIN LOCK PWD NO. 30. PRIOR TO RELEASE FOR USE, LOAD SHALL BE APPLIED EQUALLY AT EACH END.
5. NAVORD SYSTEM SERIAL NOS. TO RUN CONSECUTIVELY. ACTUAL NOS. TO BE FURNISHED BY NAVAL UNDERWATER WEAPONS RESEARCH AND ENGINEERING STATION, NEWPORT, RI 02840

FOR LIST OF DIMENSIONS SEE: LD 487795

BEAM, INDICATOR, DEFLECTION ASSEMBLY: SEE SHEET 2
 BEAM, INDICATOR DEFLECTION-SCOPE CHECK GAGE: SEE SHEET 3
 BEAM INDICATOR DEFLECTION-V BLOCK AND SCALE GAGE: SEE SHEET 4

33	AR	MIL-E-15090	ENAMEL	LI	CRIT
32	AR	MIL-P-8508	PRIMER		
31	AR	MIL-L-17827	OIL LUBRICATING		
30	1	53711	PHL LOCK		
29	2	M633275-3	SCREW, PHM HD, SLOTTED		
28	2	17-5-40442-801			
27	2	MS18997-45	CAP SCREW, SOCKET HEAD HEX		
26	2	MS18997-145	CAP SCREW, SOCKET HEAD HEX		
25	2	AMS65442845	SET SCREW		
24	2	AMS6544102944	SET SCREW		
23	2	RR-C-271	CHAIN, SAFETY, TYPE R, CLASS 6 (BRASS) SEE. 035, 18.00 LG		
22	2	AMS15-10-5			
21	8	AM122743	PHL. DOWEL		
20	2	AM122774	PHL. DOWEL		
19	8	AM122721	PHL. DOWEL		
18	1	100011808271	NUT		
17	2	100011808070	SCREW, THUMB		
16	2	100011808017	SCREW, THUMB		
15	2	537111807885	HEIGHT POST		
14	2	537111807745	SCREW, THUMB		
13	3	100011807740	FLANGE BEARING		
12	1	100011808044	CHANNEL		
11	1	100011808043	CHANNEL		
10	1	537111787480	PLATE, NAME		
9	1	537111860385	SCALE		
8	1	537111860117	BRACKET ASSEMBLY, APT		
7	1	537111860116	BRACKET ASSEMBLY, PWD		
6	1	537111859988	V BLOCK		
5	1	537111859987	MOUNTING BASE		
4	2	100011859985	PHL. LOCK		
3	1	537111859753	TELESCOPE, HEIGHT GAGE		
2	1	537111859752	MOUNT, TELESCOPE		
1	1	100011859892	BRACKET		

PART LIST
 NAME, SERIAL NUMBER
 QUANTITY
 UNIT OF MEASURE
 MATERIAL SPECIFICATION
 DRAWING NO. 1806042-1
 SHEET NO. 1 OF 4
 DATE 1/27/53
 DRAWN BY
 CHECKED BY
 APPROVED BY
 CLASSIFICATION OF DRAWING: UNCLASSIFIED

BEAM, INDICATOR, DEFLECTION ASSEMBLY
 D53711 1806042
 SHEET 1 OF 4

Special Asroc Gauge Inspection Requirements G-2

Nomenclature: Beam, Indicator Deflection Assembly

Drawing No.: 1806042 **Sheet No.:** 2 of 4

Inspection Frequency: Yearly

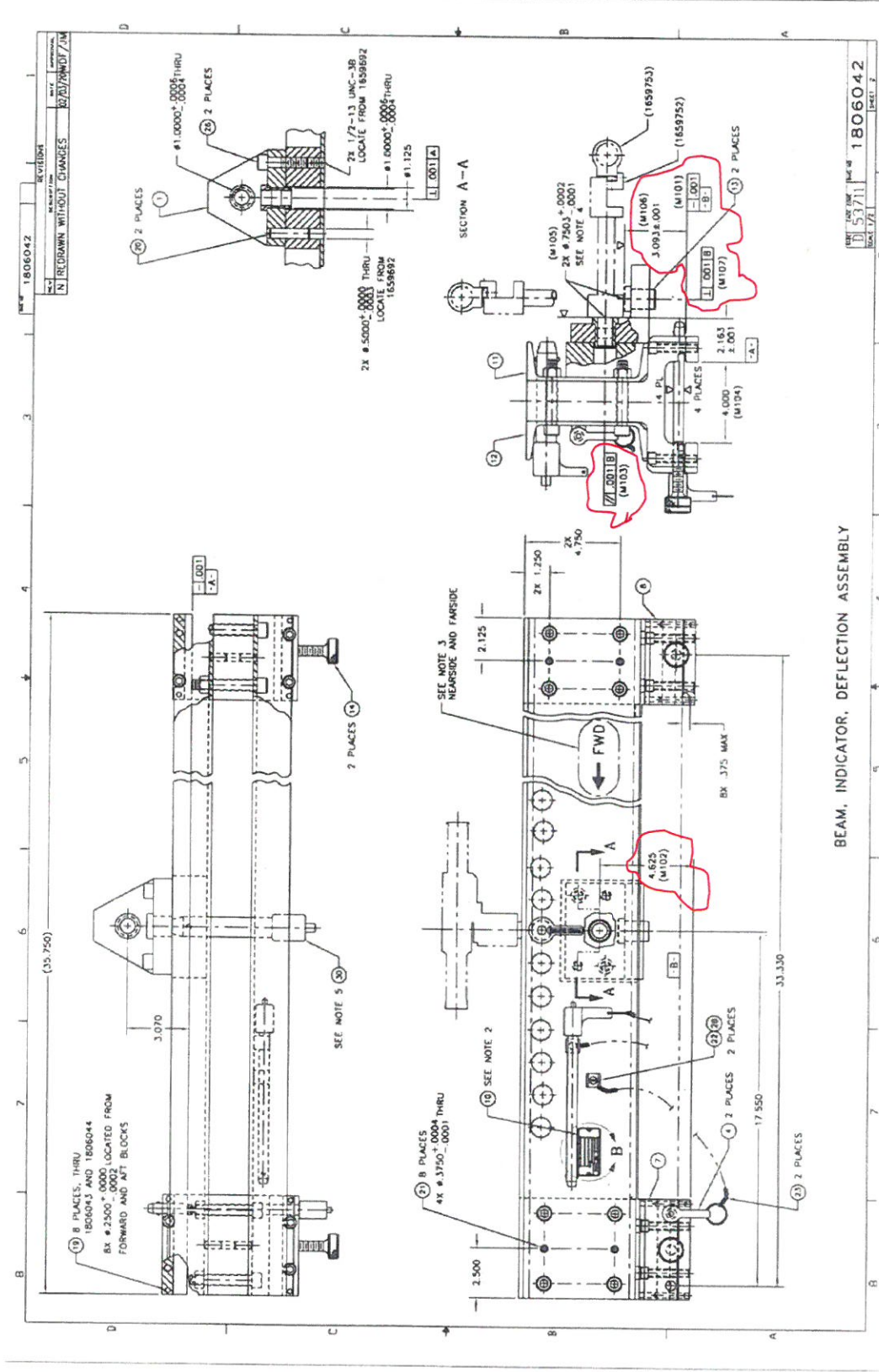
General:

1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record Deflection Beam Indicator serial number on inspection sheet. The serial number for this item is located on the nameplate. Refer to sheet 2; zone B-7 of the drawing nameplate.

Inspections:

Classification of characteristic	Zone	Drawing dimension	Acceptable dimension	Measuring equipment
Major (M101)	A-2	<div style="border: 1px solid black; padding: 2px; display: inline-block;">- .001</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">- B -</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">- .002</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">- B -</div>	CMM
Major (M102)	A-6	4.625 ± .020	4.625 ± .020	CMM
Major (M103)	B-3	<div style="border: 1px solid black; padding: 2px; display: inline-block;">// .001 B</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">// .002 B</div>	CMM
Major (M106)	B-2	3.093 ± .001	3.093 ± .005	CMM
Major (M107)	A-2	<div style="border: 1px solid black; padding: 2px; display: inline-block;">⊥ .001 B</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">⊥ .002 B</div>	CMM

Dwg. 1806042 Sheet 2 - (Splines indicate dimensions to be inspected.)



Special Asroc Gauge Inspection Requirements G-3

Nomenclature: Beam, Indicator Deflection (Scope Check Gauge)
Drawing No.: 1806042 **Sheet No.:** 3 of 4
Inspection Frequency: Yearly

General:

1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record gauge serial number. The serial number for this item is located on the nameplate. Refer to sheet 2, zone B-7 of the drawing.
3. Verify security seals are not broken. If adjustment is performed, replace security seals.

Inspections: Mount telescope on mounting base for inspection.

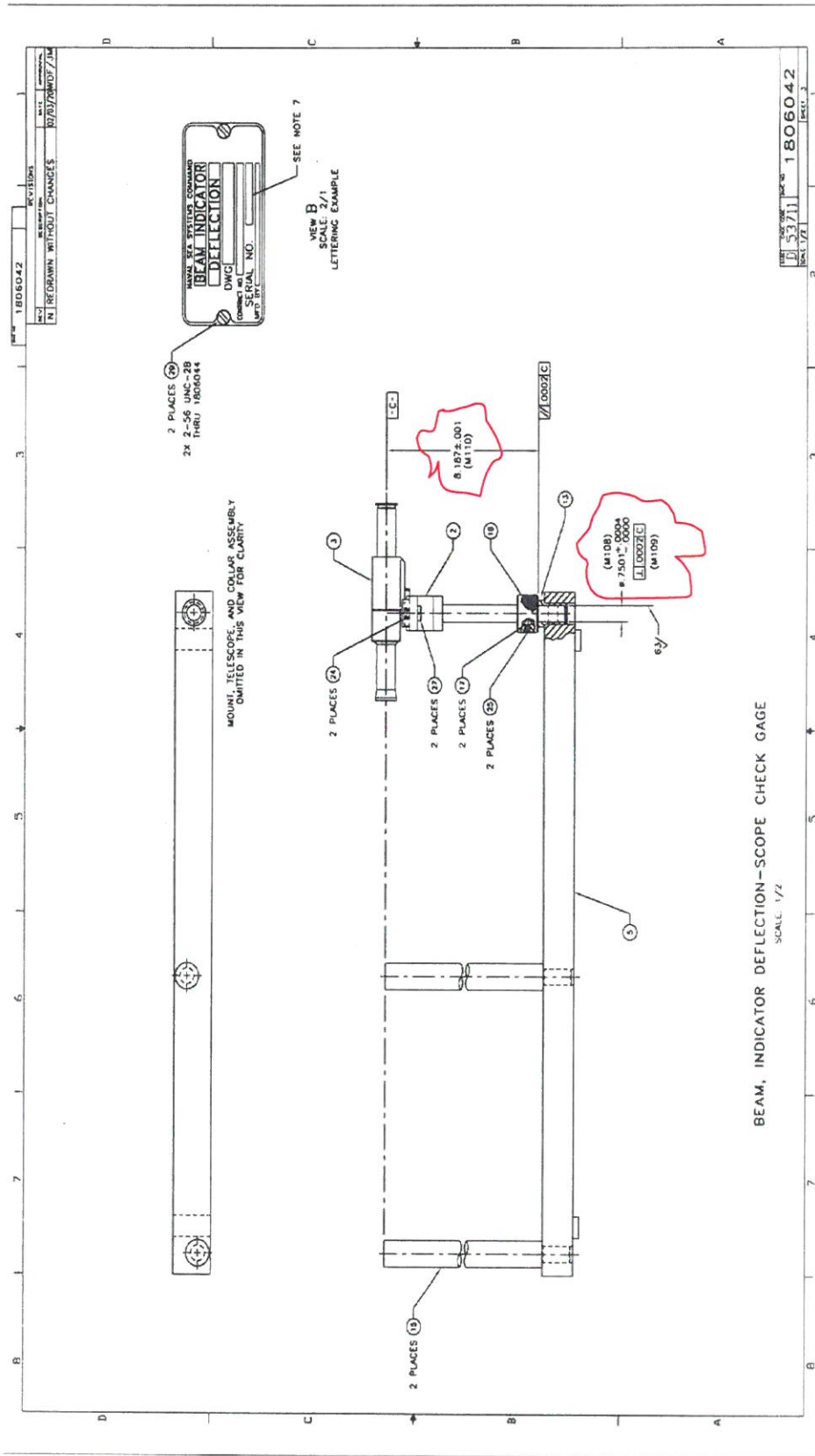
Classification of characteristic	Zone	Drawing dimension	Acceptable dimension	Measuring equipment
Major (M108)	A-3	.7501 + .0004 - .0000	.7501 + .0008 - .0000	CMM
Major (M109)	A-3	⊥ .0002 C	⊥ .0006 C	CMM
Major (M110)	B-2	8.187 ± .001	8.187 ± .005	CMM

Note:

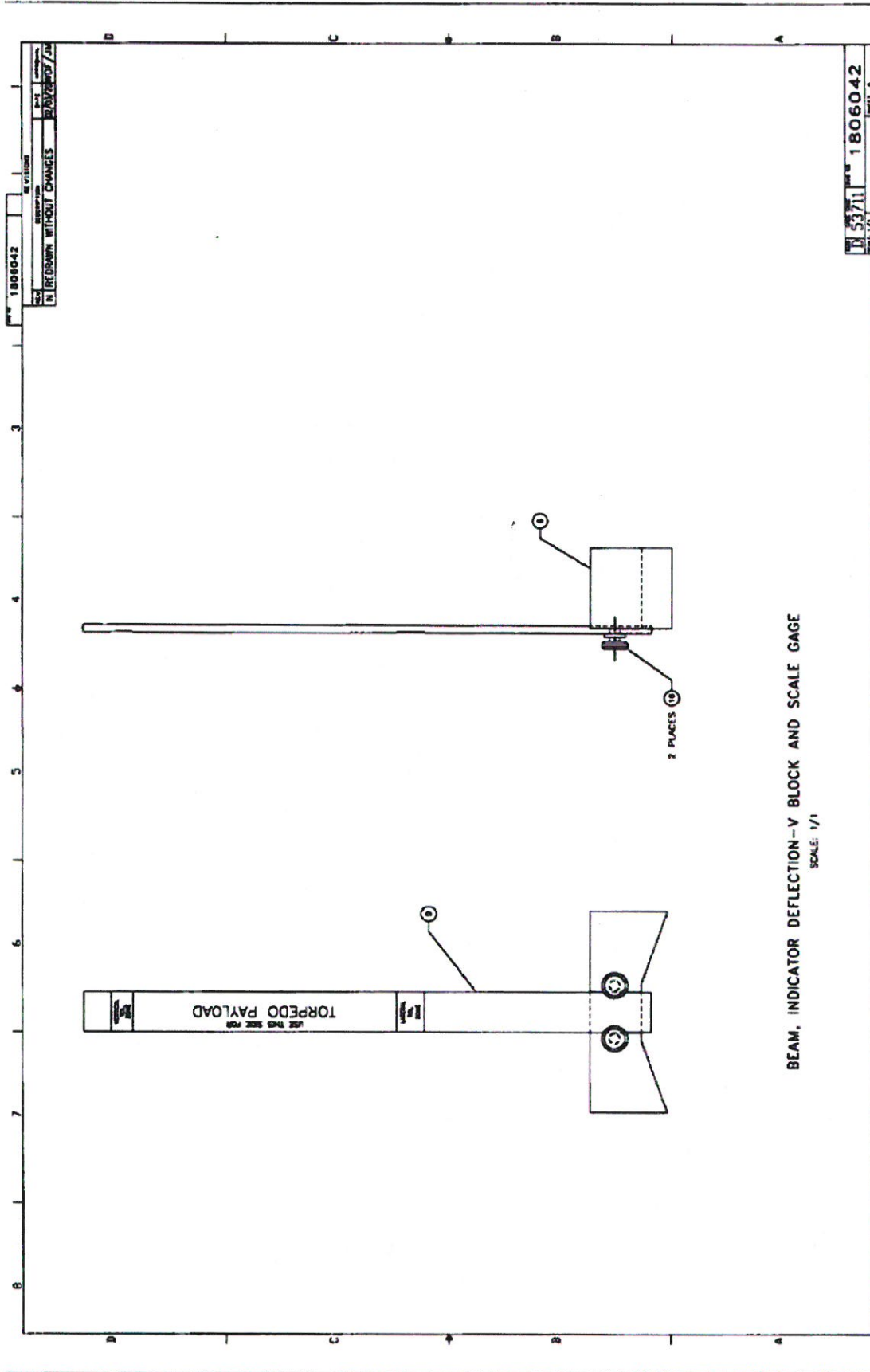
Telescope Alignment.

The telescope used with the deflection indicator beam in checking vertical and horizontal deflections of the missile must be aligned daily before deflection checks can be made on the all-up-round missile. Refer to SW180-AA-MMI-010/2963.

Dwg. 1806042 Sheet 3 - (Splines indicate dimensions to be inspected.)



1806042 Sheet 4 - Information Only



BEAM, INDICATOR DEFLECTION-V BLOCK AND SCALE GAGE
SCALE: 1/1

Special Asroc Gauge Inspection Requirements G-4

Nomenclature: Lug Ear Gauge
Drawing No.: 3236987 **Sheet No.:** 1 of 1
Inspection Frequency: Yearly

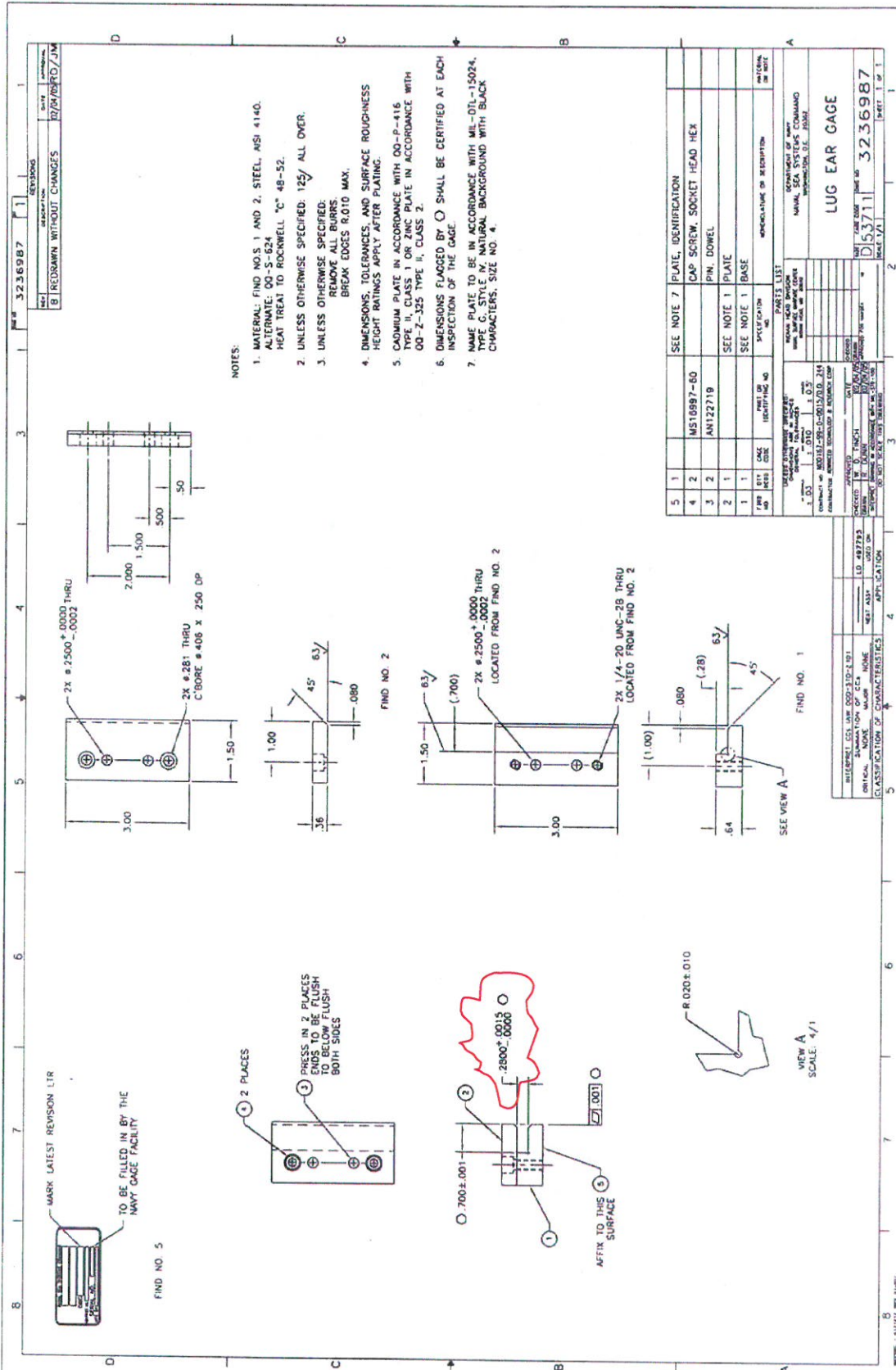
General:

1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record Lug Ear Gage serial number on inspection sheet. The serial number for this item is located on the nameplate. Refer to zone D-8 of the drawing.

Inspections:

CC	Zone	Drawing dimension	Acceptable dimension	Measuring equipment
	B-7	.2800 + .0015 - .0000	.2800 + .0015 - .0000	EHG

Dwg. 3236987 - (Spline indicates dimension to be inspected.)



Special Asroc Gauge Inspection Requirements G-5

Nomenclature: Gage Alignment Launching Lug
Drawing No.: 3018165 **Sheet No.:** 1 of 1
Inspection Frequency: Two years

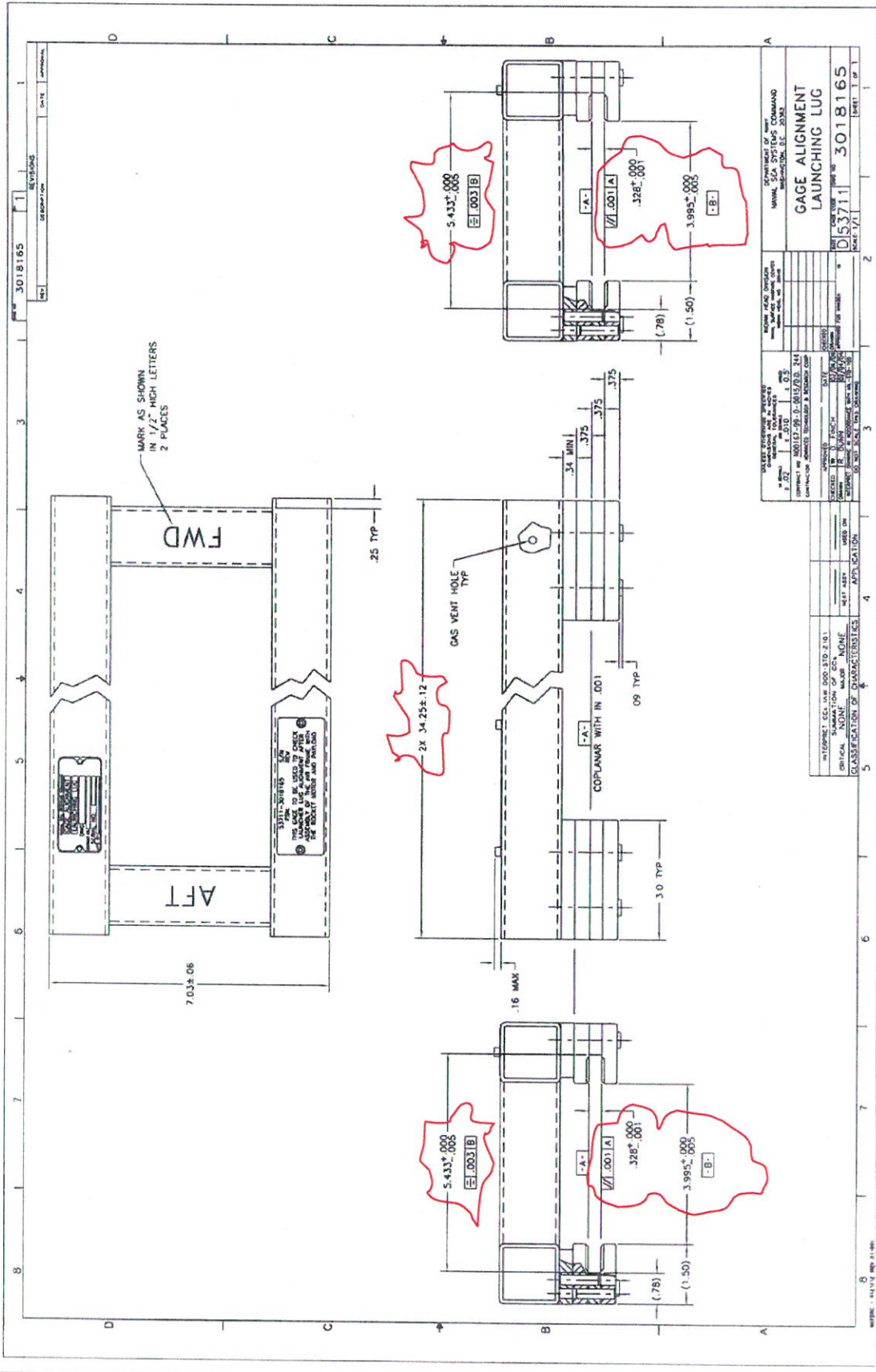
General:

1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record gauge serial number on inspection sheet. The serial number for this item is located on the nameplate. Refer to zone D-5 of the drawing.

Inspections:

CC	Zone	Drawing dimension	Acceptable dimension	Measuring equipment
	B-2, B-7			CMM
	B-2, B-7	0.328 + .000 - .001	0.328 ± .001	CMM
	B-2, B-7			EHG
	B-2, B-7	3.995 + .000 - .005	3.995 + .002 - .005	EHG
	B-2, B-7	5.433 + .000 - .005	5.433 + .001 - .005	EHG
	C-5	34.25 ± .12	34.25 ± .12	CMM

Dwg. 3018165 - (Splines indicate dimensions to be inspected.)



Special Asroc Gauge Inspection Requirements G-6

Nomenclature: **Scale**
Drawing No.: 1660365 **Sheet No. :** 1 of 1
Inspection Frequency: Yearly

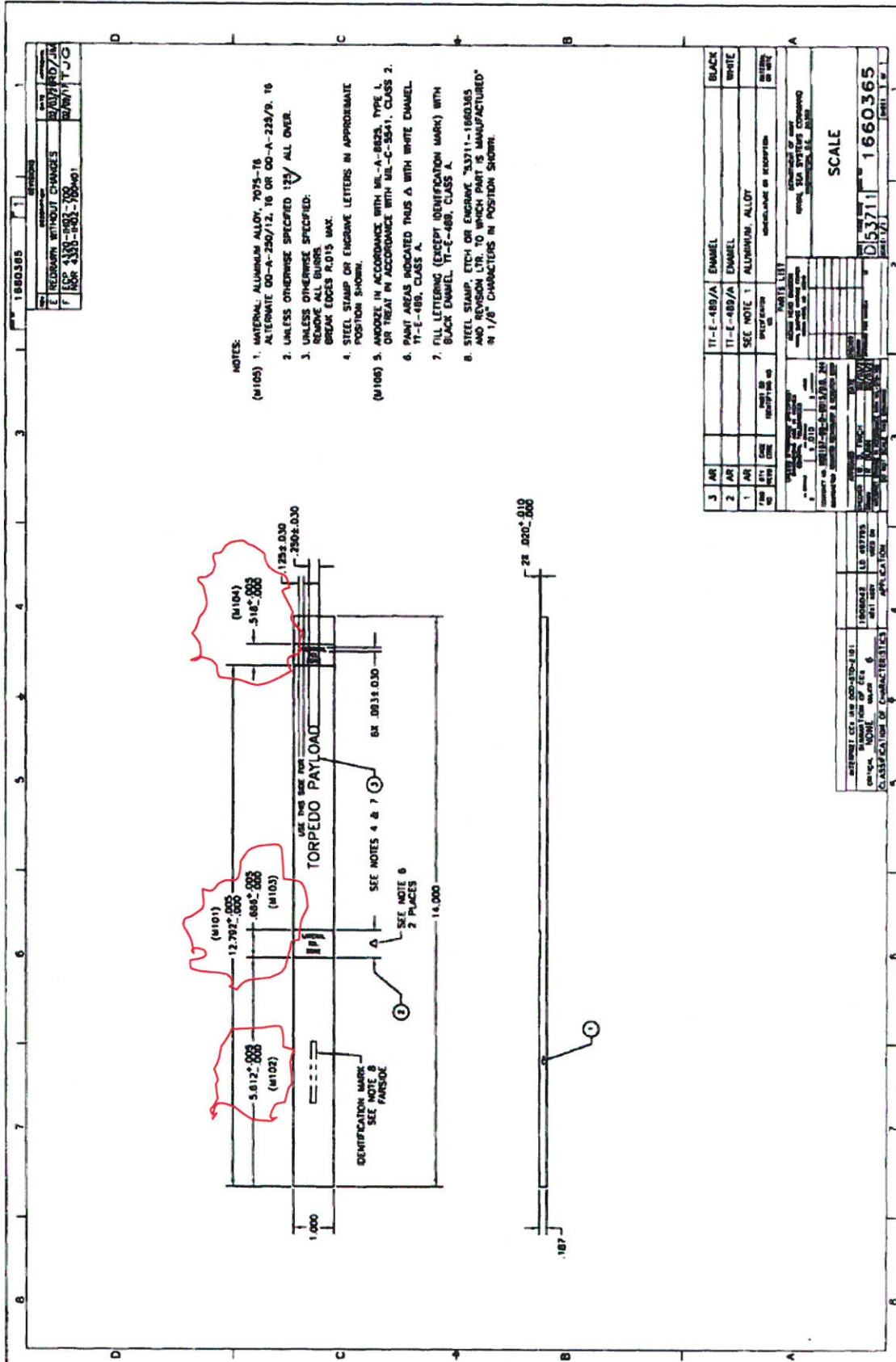
General:

1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record scale serial number on inspection sheet. The serial number for this item is etched or engraved on the item. Refer to zone C-7 of the drawing.

Inspections:

CC	Zone	Drawing dimension	Acceptable dimension	Measuring equipment
M101	C-6	12.792 + .005 - .000	12.792 + .005 - .000	EHG
M102	C-6/7	5.612 + .005 - .000	5.612 + .005 - .000	EHG
M103	C-6	.686 + .005 - .000	.686 + .005 - .000	EHG
M104	C-4	.518 + .005 - .000	.518 + .005 - .000	EHG

Dwg. 1660635 - (Splines indicate dimensions to be inspected.)



- NOTES:
- (M105) 1. MATERIAL: ALUMINUM ALLOY, 7075-T6 ALTERNATE GR-A-250/12, 16 OR GR-A-225/9, 16
 2. UNLESS OTHERWISE SPECIFIED $\frac{1}{32}$ ALL OVER.
 3. UNLESS OTHERWISE SPECIFIED: ROUND ALL EDGES. BREAK EDGES R.015 MAX.
 4. STEEL STAMP OR ENGRAVE LETTERS IN APPROPRIATE POSITION SHOWN.
 - (M106) 5. ANODIZE IN ACCORDANCE WITH MIL-A-8823, TYPE 1, OR TREAT IN ACCORDANCE WITH MIL-C-5541, CLASS 2.
 6. PAINT AREAS INDICATED THUS Δ WITH WHITE ENAMEL. TT-E-489, CLASS A.
 7. ALL LETTERING (EXCEPT IDENTIFICATION MARK) WITH BACK ENAMEL TT-E-489, CLASS A.
 8. STEEL STAMP, ETCH OR ENGRAVE "53711-1660365 AND REVISION LTR. TO WHICH PART IS MANUFACTURED" IN $\frac{1}{8}$ " CHARACTERS IN POSITION SHOWN.

3	AR	TT-E-489/A	ENAMEL	BLACK
2	AR	TT-E-489/A	ENAMEL	WHITE
1	AR	SEE NOTE 1	ALUMINUM ALLOY	
10	ONE	INSPECTION	MANUFACTURE OR REVISION	

IDENTIFICATION OF PART: 53711-1660365

SCALE: 1:1

1	APPROVAL	DATE
2	DESIGN	DATE
3	ENGINEERING	DATE
4	MANUFACTURING	DATE
5	INSPECTION	DATE

CLASSIFICATION OF CHARACTERISTICS: 1660365

Special Asroc Gauge Inspection Requirements G-7

Nomenclature: **Mounting Base**
Drawing No.: 1659987 **Sheet No.:** 1 of 1
Inspection Frequency: Yearly

General:

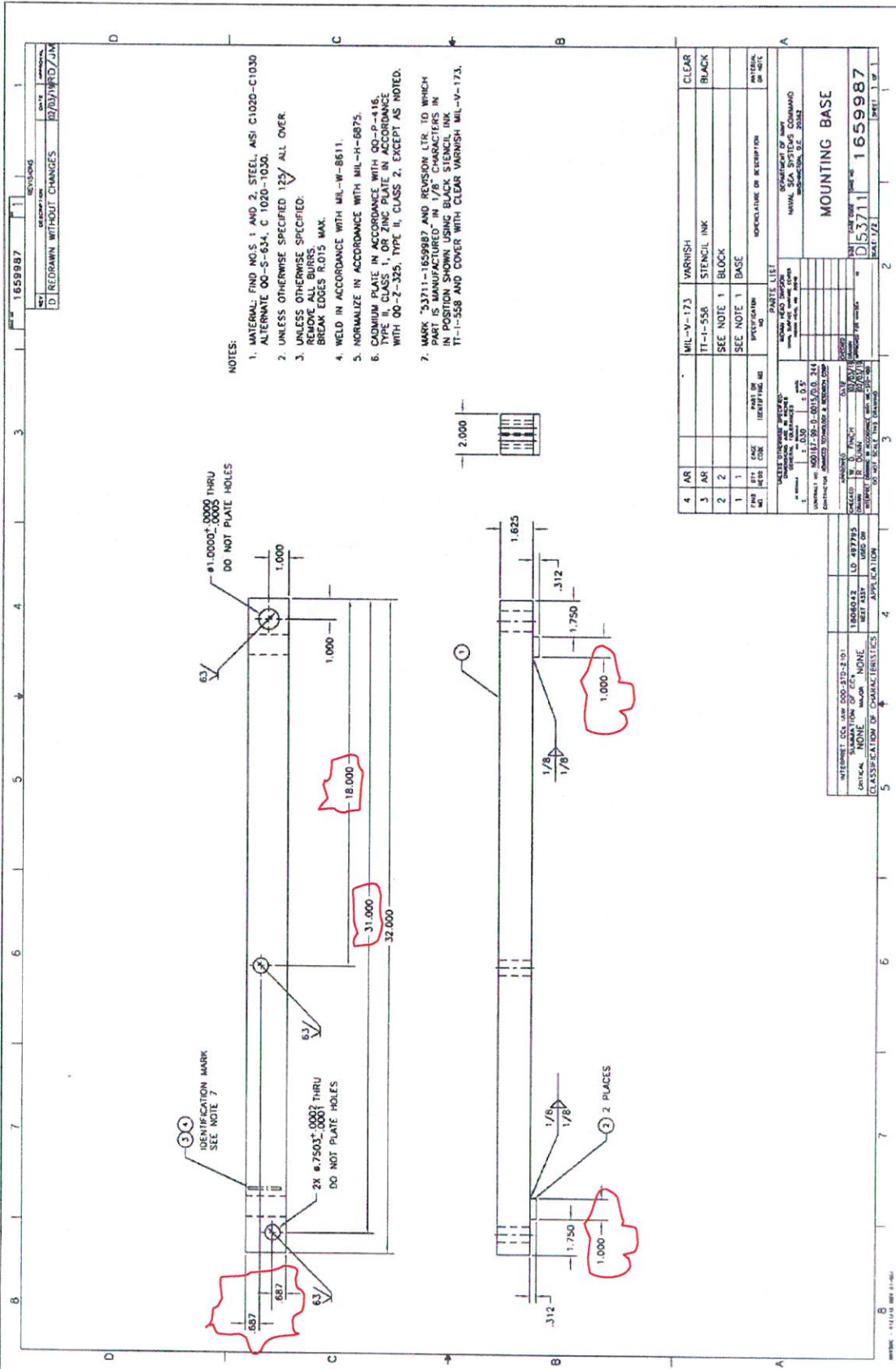
1. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the gauge.
2. Record mounting base serial number on inspection sheet. The serial number for this item is etched or engraved on the item. Refer to zone C-7 of the drawing.

Inspections:

CC	Zone	Drawing dimension	Acceptable dimension	Measuring equipment
	B-7 & B-4	1.000 ± .030	1.000 ± .030	CMM
	C-5	18.000 ± .030	18.000 ± .030	CMM
	C-6	31.000 ± .030	31.000 ± .030	CMM
	C-8 (2 places)	.687 ± .030	.687 ± .030	CMM

Note: Piece must be leveled (flat) on the surface. Recommend using a graphite table.

Dwg. 1659987



Special Asroc Handling Equipment Inspection Requirements H-1

Nomenclature: Adapter, Missile Hoisting Mk 151 Mod 0 (LD 4979908)

National Stock Number (NSN): 9C 4921-00-777-5604

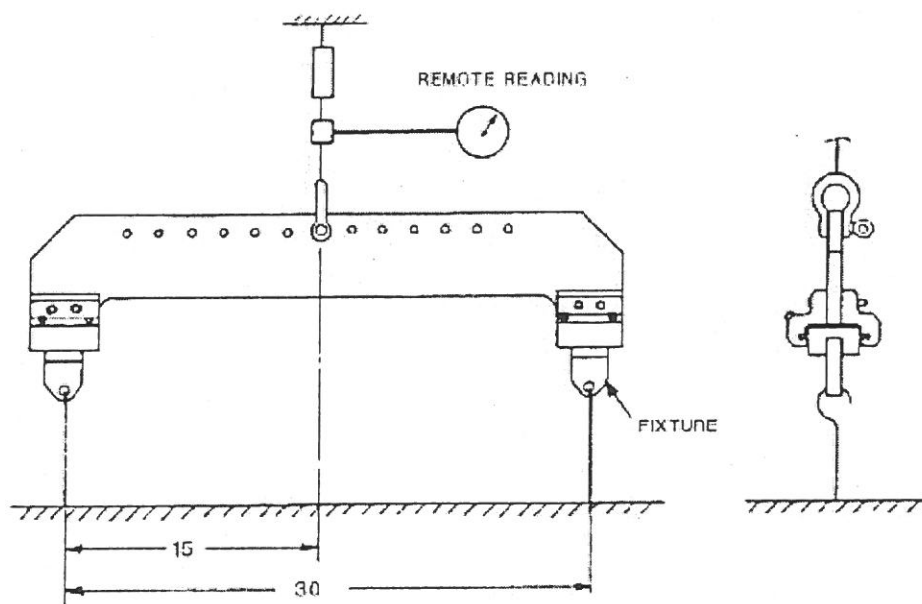
Inspection Frequency: Every 2 years

General:

1. Reference NAVSEA SG420-AP-MMA-010
2. Visually inspect for dents, bends, cracks, or missing components that may preclude the correct use of the hoisting adapter.

Test load	Test duration
2,400 pounds	2 minutes

Test configuration:



Special Asroc Handling Equipment Inspection Requirements H-2

Nomenclature: Sling, Torpedo, Mk 102 Mod 0

National Stock Number (NSN): 4921001185846

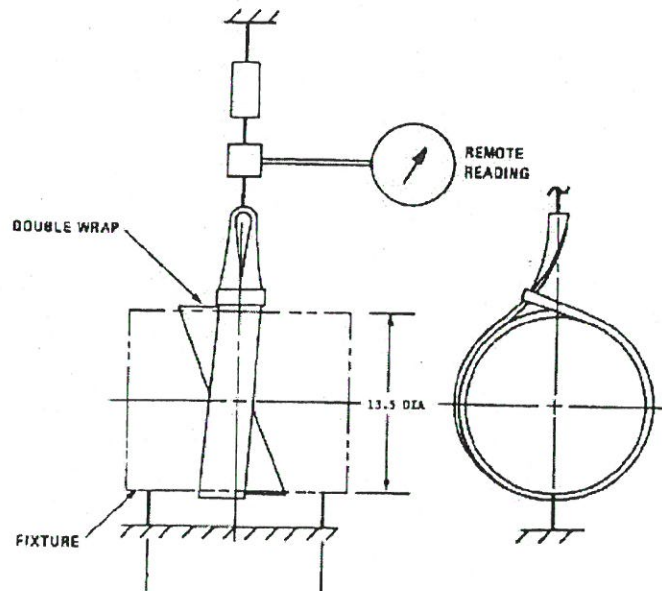
Inspection Frequency: Yearly or if integrity of sling is suspect, whichever occurs first

General:

1. Reference NAVSEA SG420-AP-MMA-010
2. Visually inspect for splicing damages or signs of deterioration that may preclude the correct use of the sling.

Test load	Test duration
2,400 pounds	2 minutes

Test configuration:



Special Asroc Handling Equipment Inspection Requirements H-3

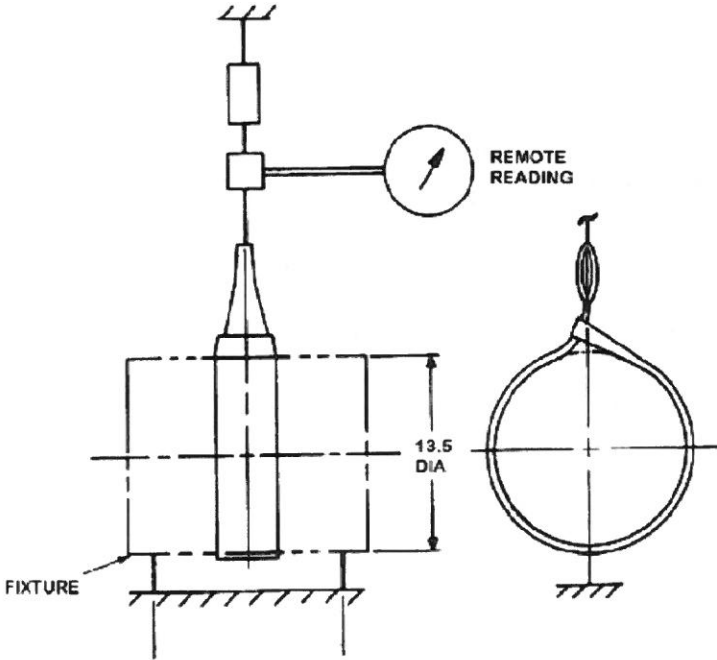
Nomenclature: Sling, Torpedo, Mk 106 Mod 0
National Stock Number (NSN): 4921009239089
Inspection Frequency: Yearly or if integrity of sling is suspect, whichever occurs first

General:

- 1. Reference NAVSEA SG420-AP-MMA-010
- 2. Visually inspect for splicing damages or signs of deterioration that may preclude the correct use of the sling.

Test load	Test duration
2,000 pounds	2 minutes

Test configuration:



5.0 SUPPLEMENTAL INFORMATION

The following pictures are provided to assist in the understanding of the gauge and handling certification requirements.

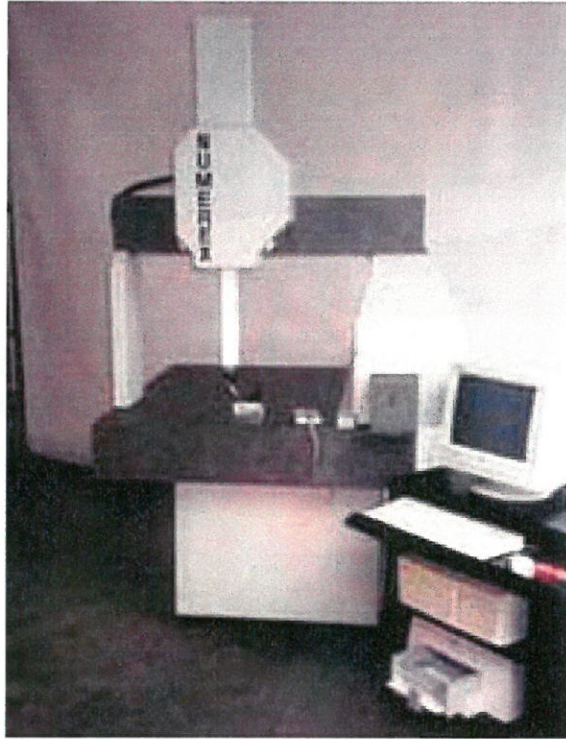
Picture No.	Description
1	Electronic Height Gauge
2	Coordinate Measuring Machine
3	Beam, Indicator Deflection Assembly
4	Scope Alignment Mounting Base
5	Lug, Ear Gauge
6	Gage Alignment Launching Lug
7	Adapter, Missile Hoisting Mk 151 Mod 0



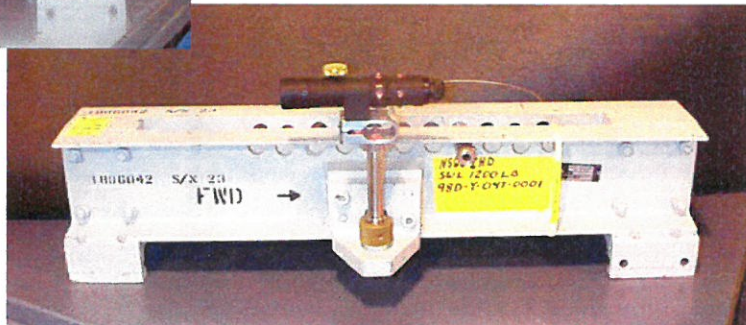
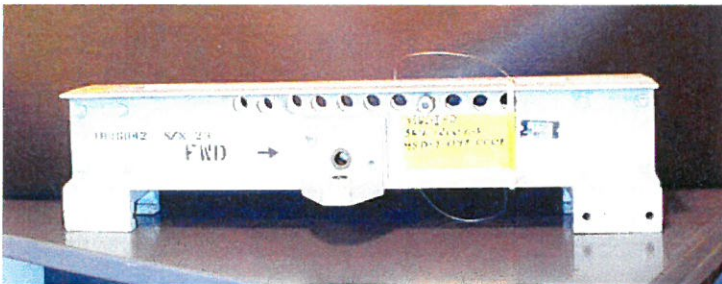
Accuracy requirement = 0.0005 inch
 Model – Micro-Hite
 Manufacturer – Brown & Sharp

Picture 1 – Electronic Height Gauge (EHG)

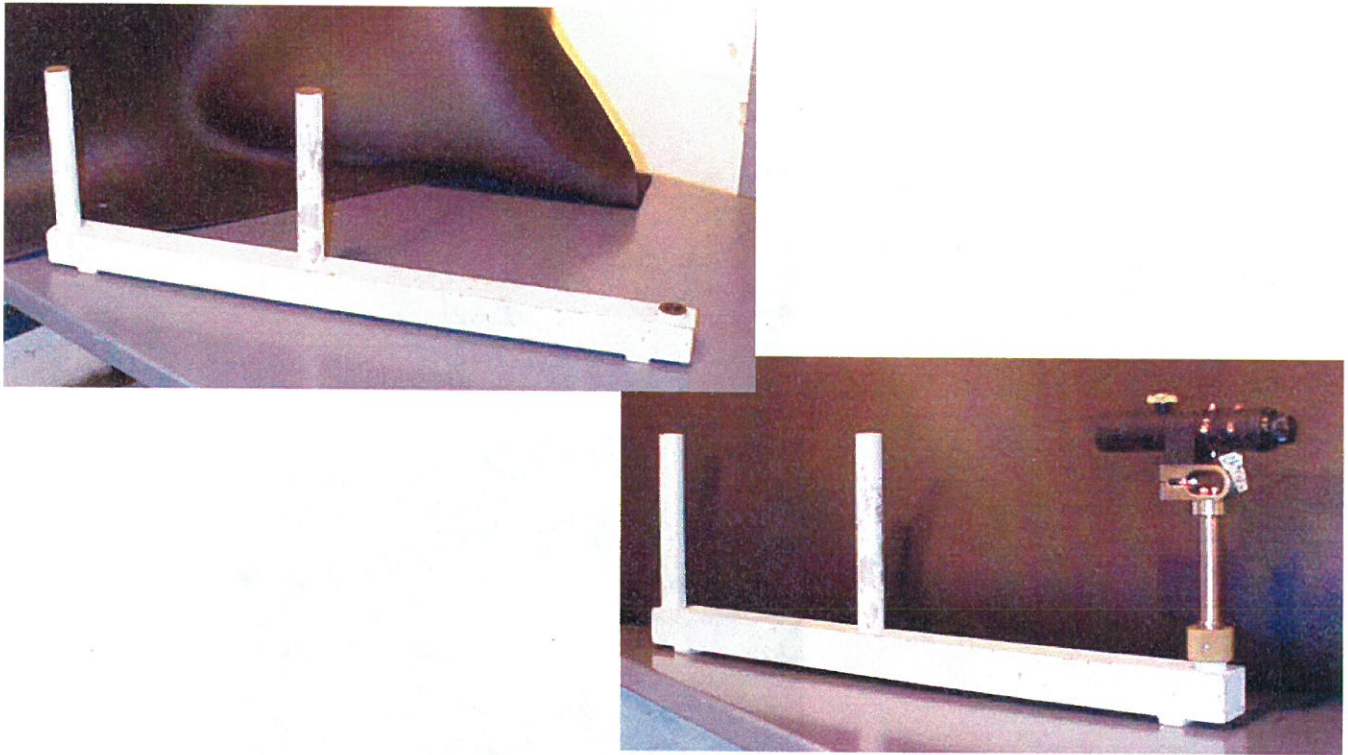
Accuracy requirement = 0.0005 inch
Model 2428-24
Manufacturer – Numerex Corp.



Picture 2 – Coordinate Measuring Machine (CMM)



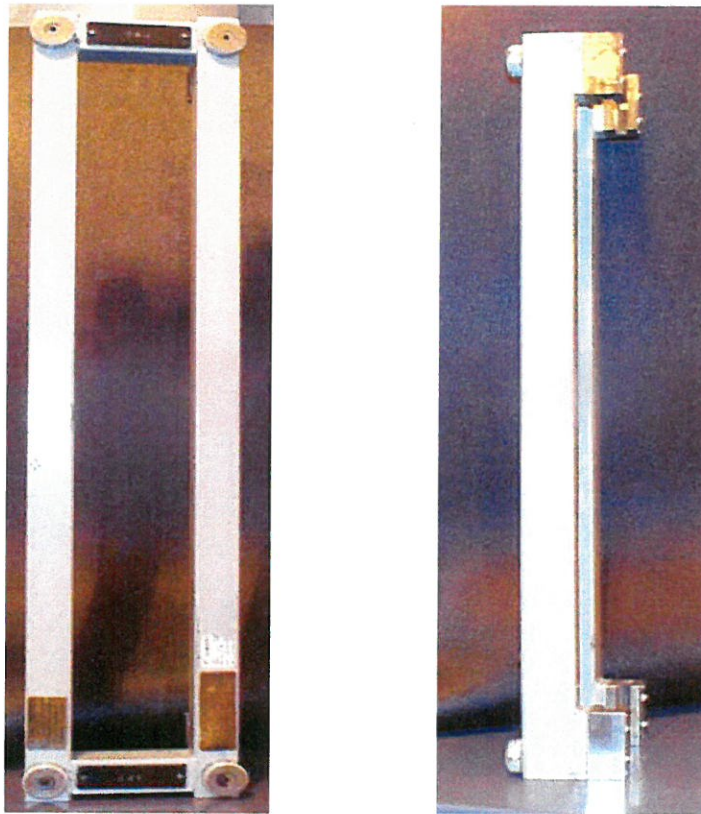
Picture 3 – Beam, Indicator Deflection Assembly (Dwg. 1806042)



Picture 4 – Scope Alignment Mounting Base (Dwg. 1806042, sheet 3)



Picture 5 – Lug Ear Gauge (Dwg. 3236987)



Picture 6 – Gage Alignment Launching Lug (Dwg. 3018165)



Picture 7 – Adapter, Missile Hoisting Mk 151 Mod 0

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DISTRIBUTION

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NAVAL SEA SYSTEMS COMMAND		
SECURITY ASSISTANCE PRGM MGR		
ATTN PMS3804X1	2210L	1
1333 ISAAC HULL AVE SE STOP (3301)	4230	3
WASHINGTON NAVY YARD DC 20376-3301	430	1
	4320	1
	071	3
NORTHROP GRUMMAN		
ATTN JOHN CUMMINGS		
300 M STREET SE SUITE 100		
WASHINGTON DC 20003		3
BOOZ-ALLEN-VSE		
ATTN DONALD MCKINNEY		
60 HIGHLAND DRIVE		
HOWARD CO 81233		1

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