INCH-POUND

MIL-STD-333B
1 May 1989
SUPERSEDING
MIL-STD-333A
11 MAY 1979

MILITARY STANDARD

FUZE, PROJECTILE AND ACCESSORY CONTOURS FOR LARGE CALIBER ARMAMENTS

AMSC N/A

FSC 1390

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FOREWORD

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research, Development and Engineering Center, ATTN: SMCAR-AEF-C, Picatinny Arsenal, NJ 07806-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

3. The purpose of this Standard is to establish minimum requirements for nose fuze contours and other physical parameters in order that physical interchangeability within a family of fuzes can be achieved with no special aiming corrections required. Interfacing relationships with associated projectiles are also specified. The information is provided primarily for the designer of future fuzes and projectiles and will promote greater uniformity of munitions. Design flexibility is allowed to the extent that the use of standard tools/setters and packaging are not adversely affected and special aiming corrections are avoided.

4. METRIC PRACTICE, Standard for, ASTM E380-85 approved 14 November 1985 was used in the conversion to the International System of Units (SI).

CONTENTS

CONTENTS (Cont)

CONTENTS (Cont)

1. SCOPE

1.1 Scope. This standard establishes standard designs for projectile nose fuze threads, fuze contours, and projectile cavities for gun projectiles, 75mm and larger in caliber and mortar projectiles 60mm and larger, to insure physical interchangeability, and that for a given projectile family (artillery bursting oriented, artillery cargo oriented, etc.) no special aiming corrections are required when firing any fuze type (PD, MT, PROX, etc.) for which the projectile is intended.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, hand books. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issue of these document are those listed in the issue of the Department of Defense Index of Specification and Standard (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

MIL-A-2250	-	Ammunition, General Specification for

STANDARDS

MILITARY

MIL-STD-444	-	Nomenclature and Definitions in the Ammunition Area

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the

solicitation. Unless otherwise specified, the issues of the documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Y14.5M-82 - Dimensioning and Tolerancing

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018-3308.)

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

2.3 Order of Precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Definitions. The definitions of the various types and components of ammunition shall be those established by MIL-STD-444.

3.2 Abbreviations. The following abbreviations apply:

a.	APERS	-	Anti-Personnel
b.	CS	-	Chemical Filler (Tear Gas)
c.	CP	-	Concrete Piercing
d.	DPICM	-	Dual Purpose Improved Conventional Munition
e.	ET	-	Electronic Time
f.	HE	-	High Explosive
g.	ICM	-	Improved Conventional Munition
h.	ILLUM	-	Illuminating
i.	MT	-	Mechanical Time
j.	MTSQ	-	Mechanical Time Superquick
k.	NSB	-	Near Surface Burst
l.	PD	-	Point Detonating
m.	PD/DLY	-	Point Detonating/Delay
n.	PROX	-	Proximity
o.	WP	-	White Phosphorus (Smoke)

4. GENERAL REQUIREMENTS

This section is not applicable to this standard.

5. DETAILED REQUIREMENTS

5.1 Design. Fuzes shall be designed to insure physical interchangeability and that for a given projectile family (artillery bursting oriented, artillery cargo oriented, etc.) no special aiming corrections are required when firing any fuze type (PD, MT, PROX, etc.) intended for use on the projectile.

5.2 Dimensions. Dimensions of contact surfaces, intrusion, projectile cavity, maximum length, thread size and wrench and setting slots (if required) of all projectile fuzes and accessory contours shall be in accordance with those in the figures contained herein. All other dimensions on the figures are for information only. Dimensions are in millimeters with the exception of thread designations which are in English units.

5.3 Figures and tables. ANSI Y14.5M and MIL-A-2550 shall apply to figures and tables herein Figures shall not be scaled.

5.4 Fuze selection guide. Table I offers guidance in the selection of fuze types for the various projectile configurations:

TABLE I. Fuze Selection Guide

FUZE	SHELL	STANDARD CONTOUR FIGURE		
		ARTILLERY (NOTE 1, 3)	81MM MORTAR	60MM MORTAR
PD or PD/DLY	HE	1,9	5	5
	WP(NOTE 2)	1,2	5	5
TIME	ILLUM, CS	2	8	6,7
	APERS	4	-	-
	HE	1,9	5	5
	WP(NOTE 2)	1,2	5,6	-
	ICM/DPICM	3	-	-
PROX	HE	1,9	5	5
MO	HE	1,9	5	5

NOTES:
1. Contour figures are those designs required for all new developments of nose fuzes for mortar and artillery ammunition.
2. The need for a booster depends on the caliber of the WP projectile.
3. 4.2-inch mortar ammunition currently uses artillery fuzes.

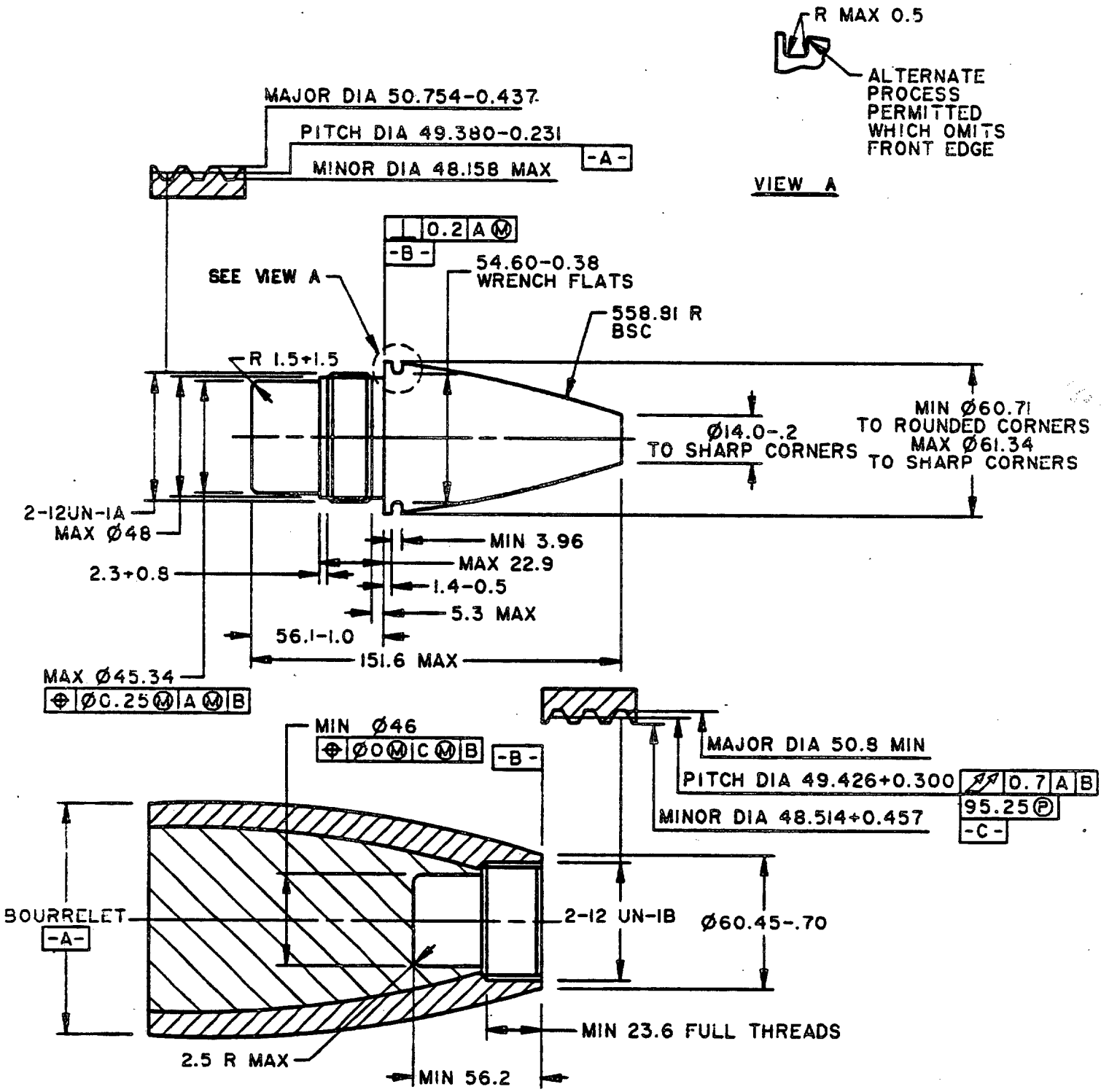
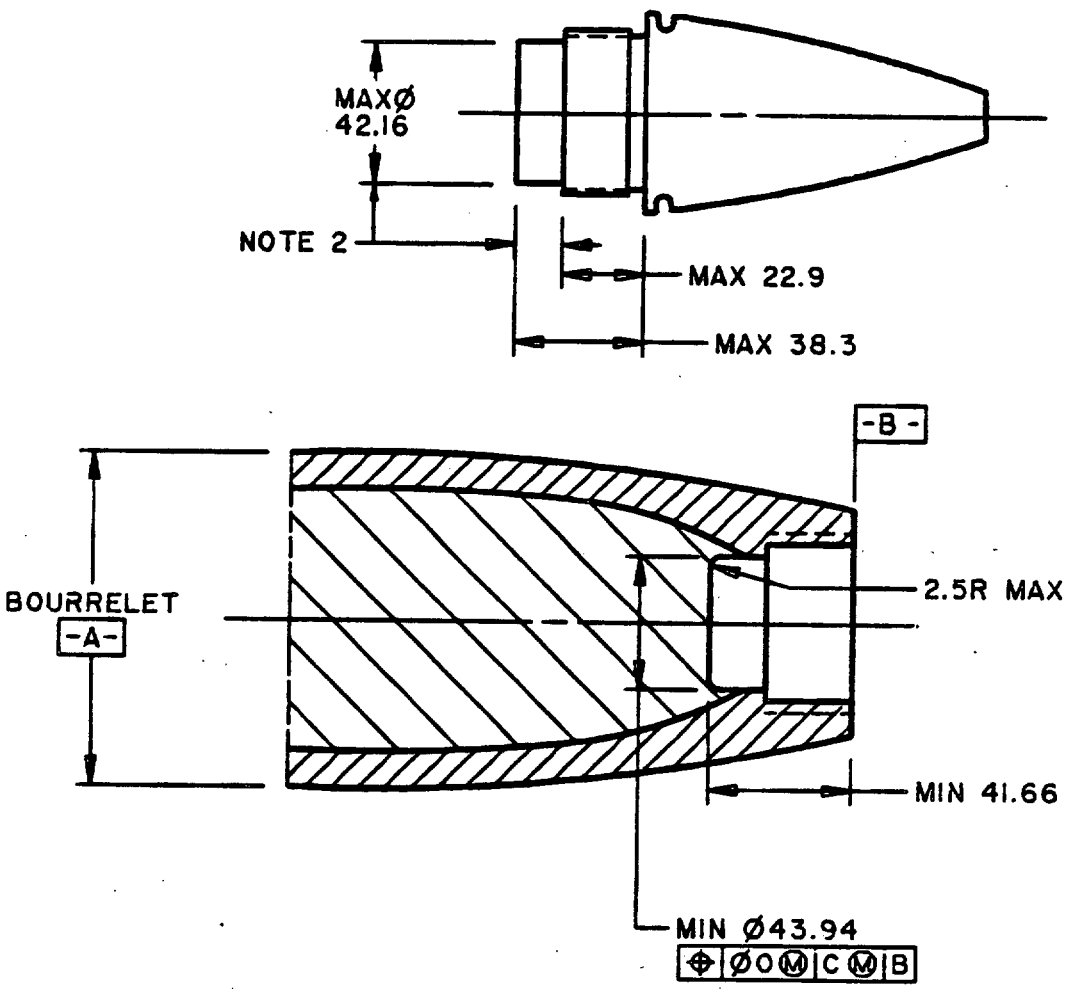


FIGURE 1

STANDARD CONTOUR FOR 2-INCH NOSE FUZES WITH BOOSTER AND MATCHING CAVITY FOR ARTILLERY AND MORTAR HE/WP PROJECTILES (SPIN AND FIN STABILIZED).

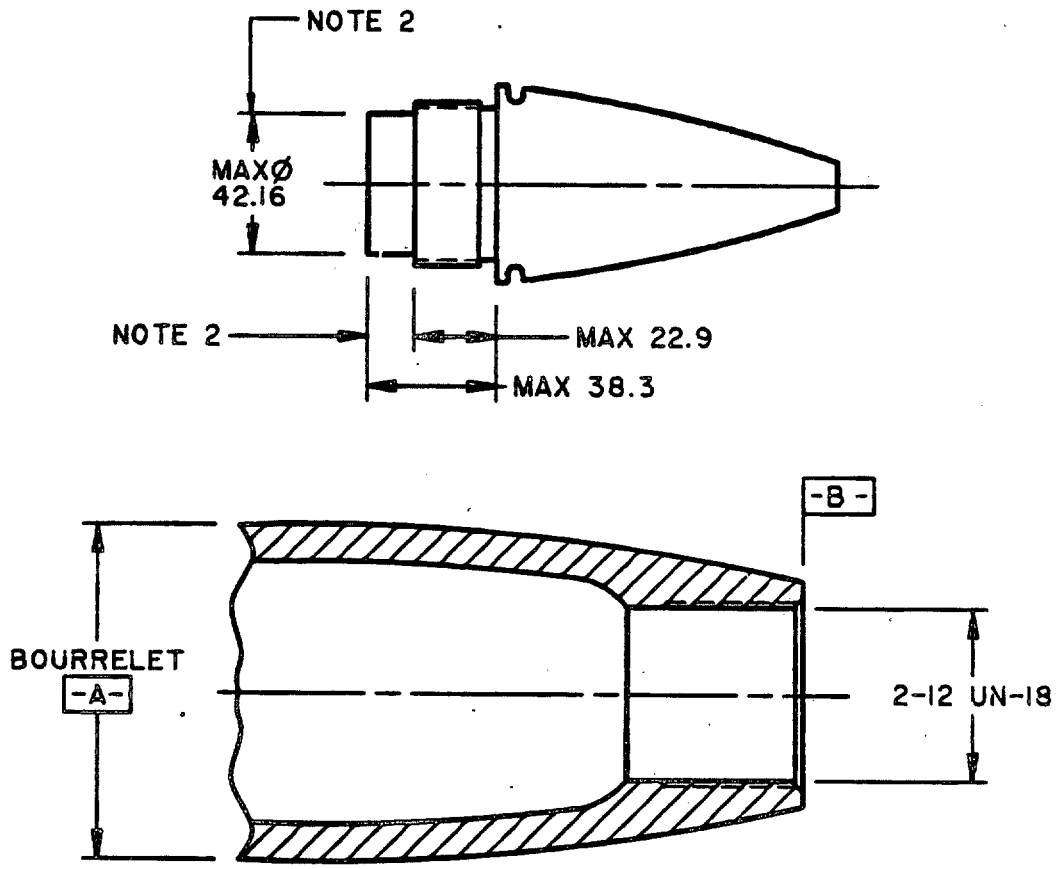


NOTES:

1- FOR OTHER DIMENSIONS SEE FIGURE 1.
2- THREADS ARE OPTIONAL WITHIN NOTED CONTOUR.

FIGURE 2

STANDARD CONTOUR FOR 2-INCH NOSE TIME FUZES AND MATCHING CAVITY FOR ARTILLERY AND MORTAR CARGO PROJECTILES (SPIN STABILIZED).

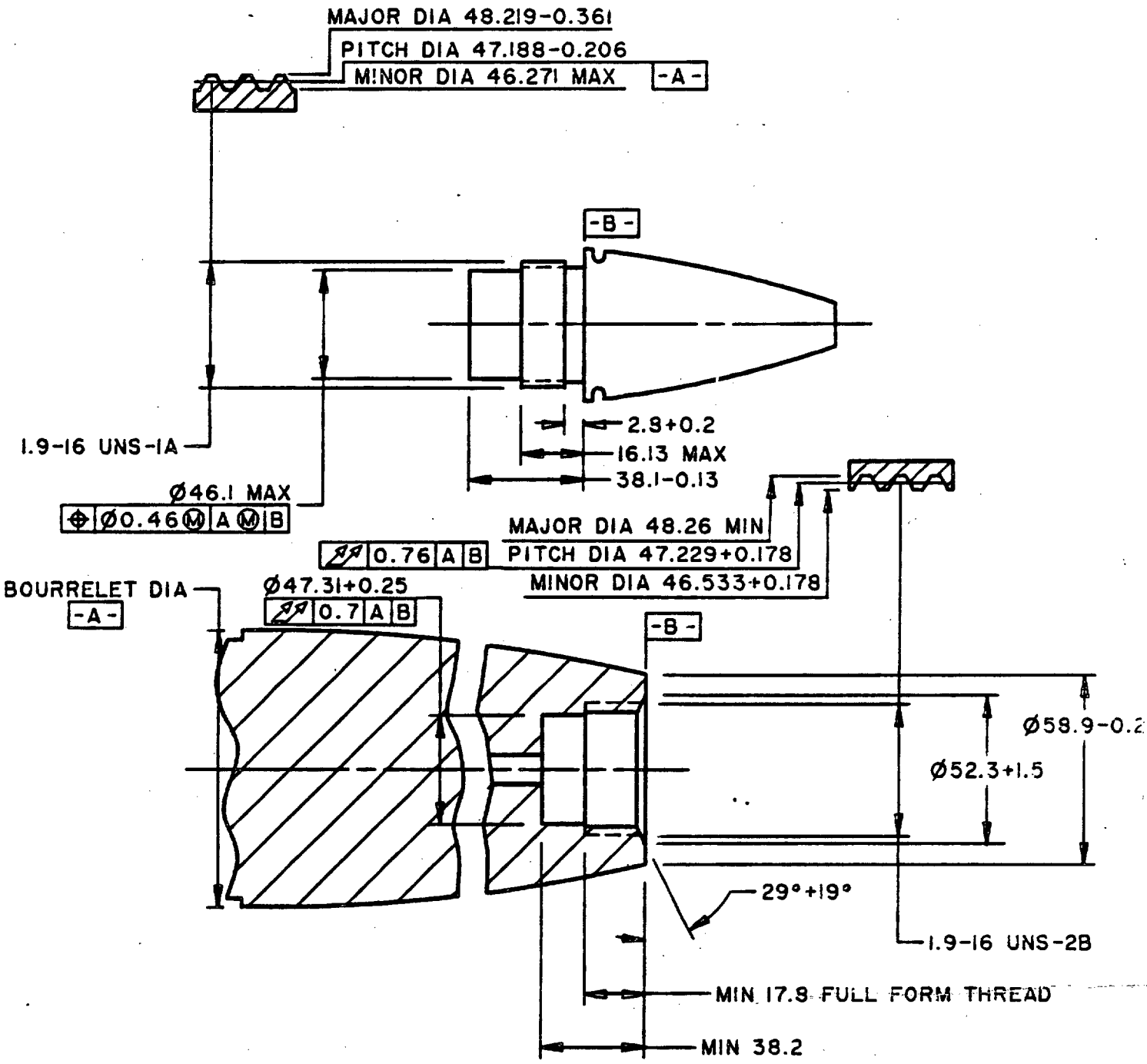


NOTES:

1- FOR OTHER DIMENSIONS SEE FIGURE 1.
2- THREADS ARE OPTIONAL WITHIN NOTED CONTOUR.

FIGURE 3

STANDARD CONTOUR FOR 2-INCH NOSE TIME FUZES AND MATCHING CAVITY FOR ARTILLERY AND MORTAR CARGO PROJECTILES (ICM/DPICM) (SPIN AND FIN STABILIZED)



NOTES:

1- FOR OTHER DIMENSIONS SEE FIGURE 1.
2- FUZE IS USED WITH MUZZLE ACTION FUZE SETTING ON ARTILLERY, TANK, AND RECOILESS RIFLE PROJECTILES.

FIGURE 4

STANDARD CONTOUR FOR 1.9-INCH APERS NOSE FUZES AND MATCHING CAVITY FOR ARTILLERY, TANK, AND RECOILESS RIFLE PROJECTILES. (SPIN STABILIZED)

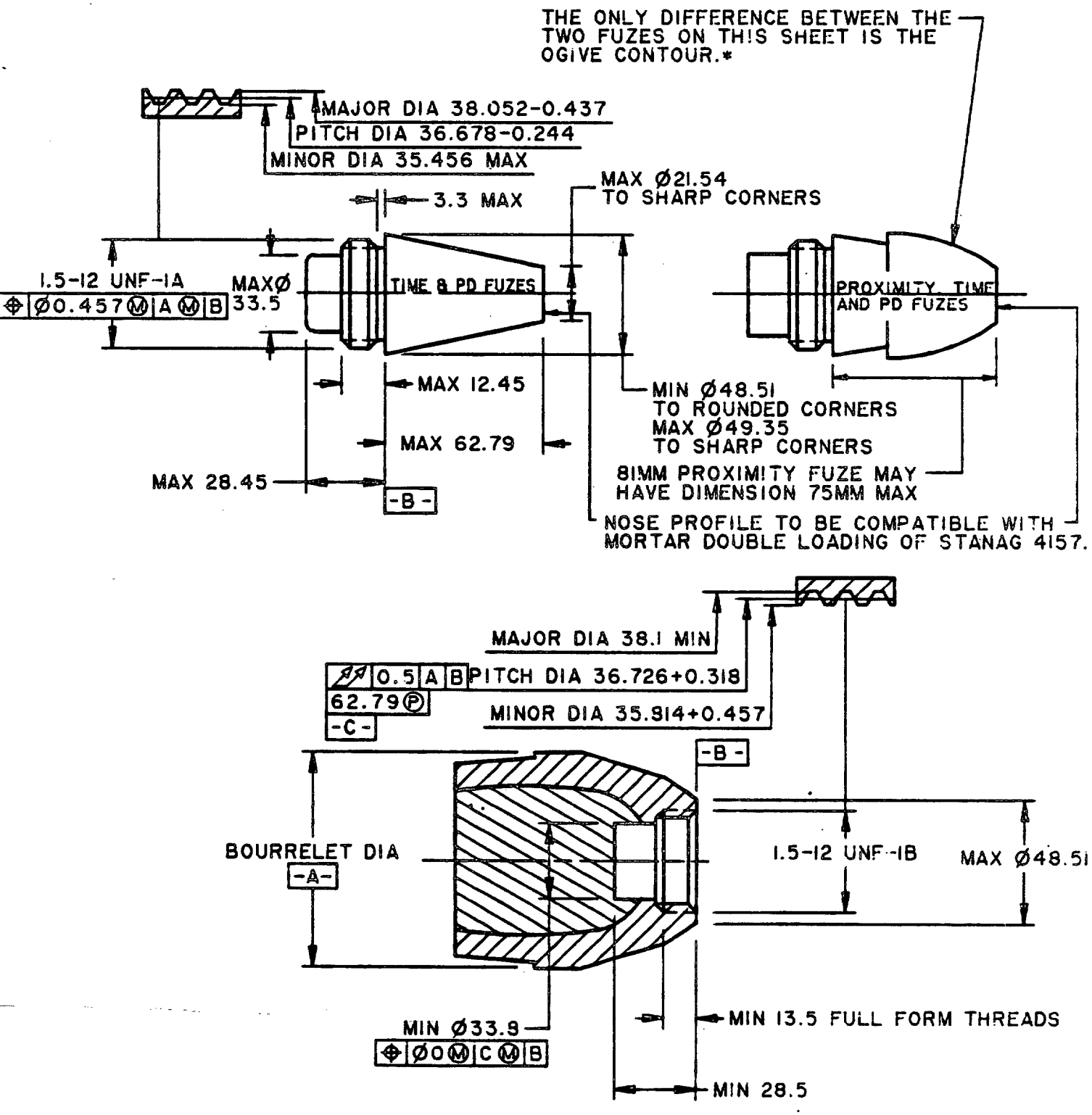
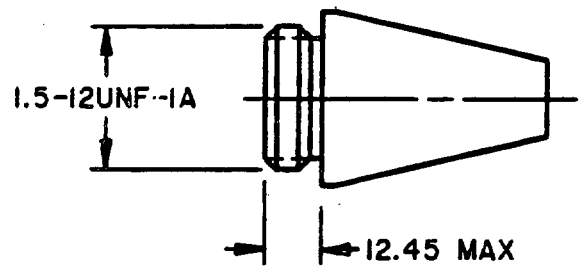
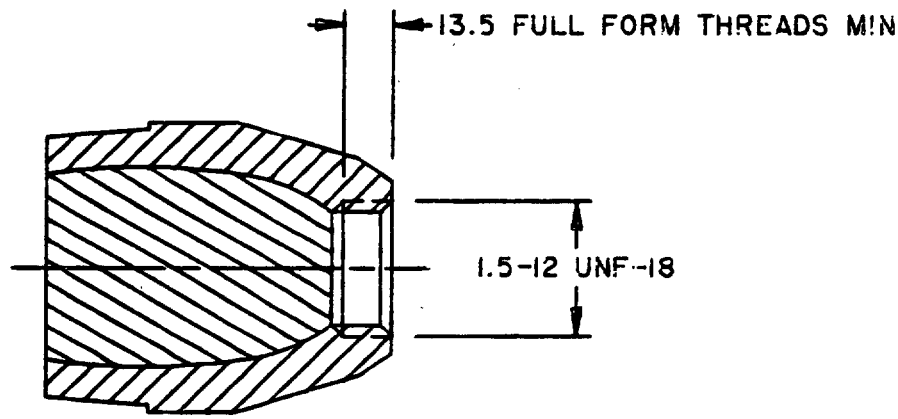


FIGURE 5

STANDARD CONTOUR FOR 1.5-INCH PROXIMITY, TIME, AND POINT DETONATING FUZES WITH BOOSTER AND MATCHING CAVITY FOR 60MM AND 81MM MORTAR HE, WP AND ILLUMINATING PROJECTILES (FIN STABILIZED).

* THIS CONTOUR MUST BE USED IF THE FUZE IS A MEMBER OF A PROXIMITY FUZE FAMILY.



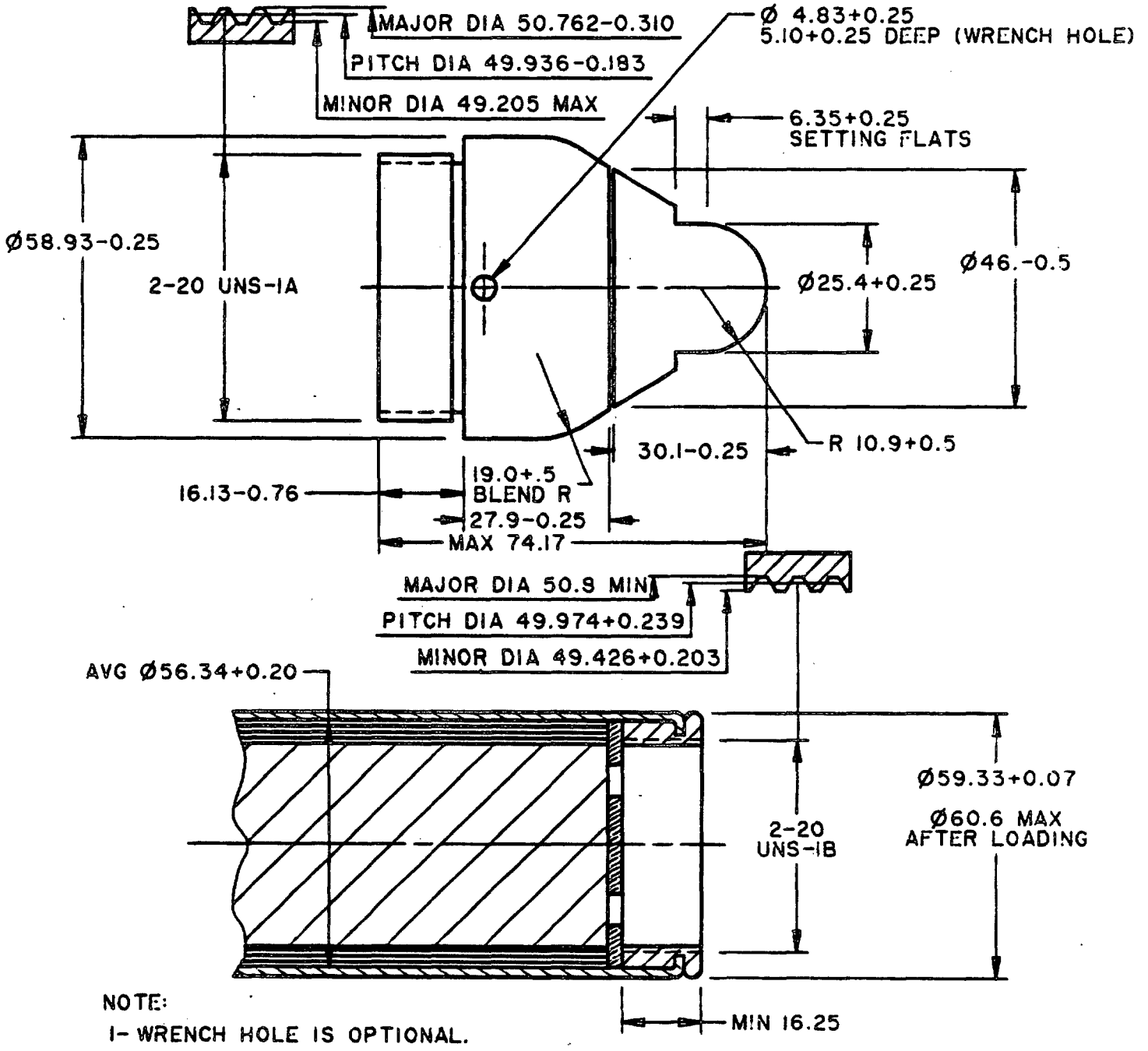


NOTE:

1- FOR OTHER DIMENSIONS SEE FIGURE 5.

FIGURE 6

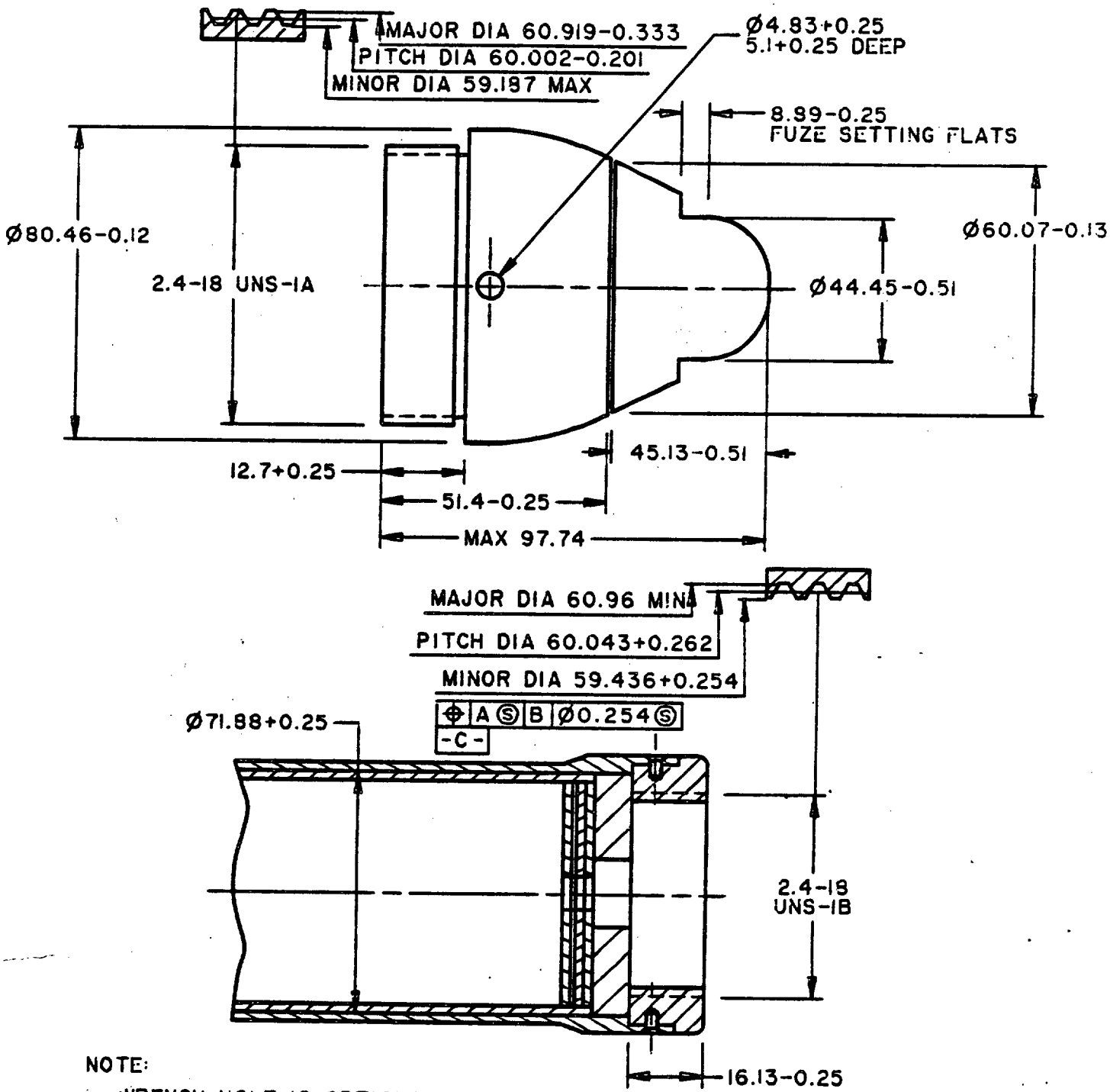
STANDARD CONTOUR FOR 1.5-INCH TIME AND POINT DETONATING FUZES WITHOUT BOOSTER AND MATCHING CAVITY FOR 60MM AND 81MM MORTAR CARGO PROJECTILES (FIN STABILIZED)



NOTE:
1- WRENCH HOLE IS OPTIONAL.

FIGURE 7

STANDARD CONTOUR FOR 60MM MORTAR NOSE FUZES AND MATCHING CAVITY FOR 60MM MORTAR CARGO PROJECTILE. (FIN STABILIZED)

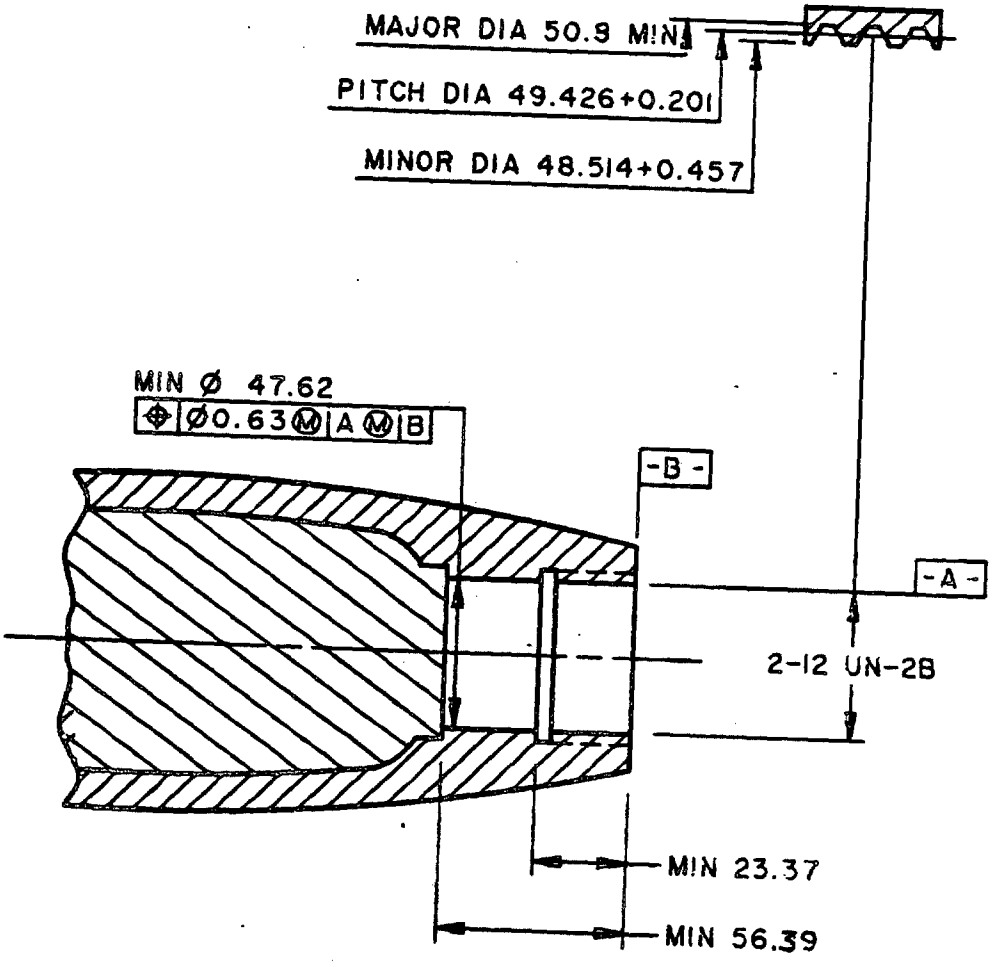


NOTE:

1- WRENCH HOLE IS OPTIONAL.

FIGURE 8

STANDARD CONTOUR FOR 2.4 INCH NOSE FUZES AND MATCHING CAVITY FOR 81MM MORTAR ILLUM/SMOKE PROJECTILES. (FIN STABILIZED)

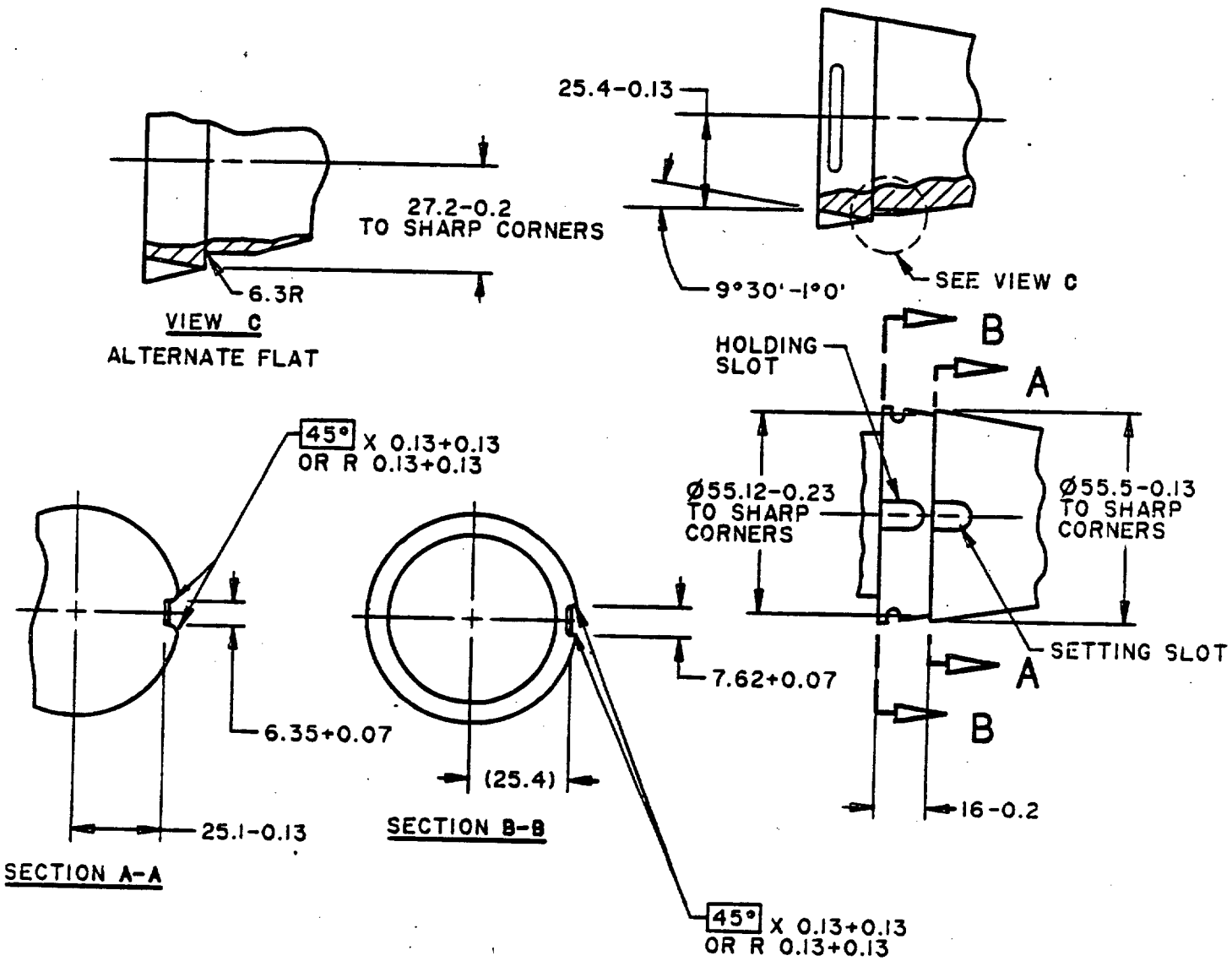


NOTE:

1- FOR FUZE DIMENSIONS SEE FIGURE 1.

FIGURE 9

STANDARD CAVITY CONTOUR FOR NAVY SHORT INTRUSION FUZES FOR HE LOADING 5"/54 CALIBER AND 76MM PROJECTILES (SPIN STABILIZED)



(FOR NOTES, SEE FOLLOWING PAGE)

FIGURE 10

FUZE TIME-SETTING SLOTS TO INTERFACE WITH HAND SETTERS FOR ARTILLERY AND MORTAR TIME FUZES.

NOTES FOR FIGURE 10:

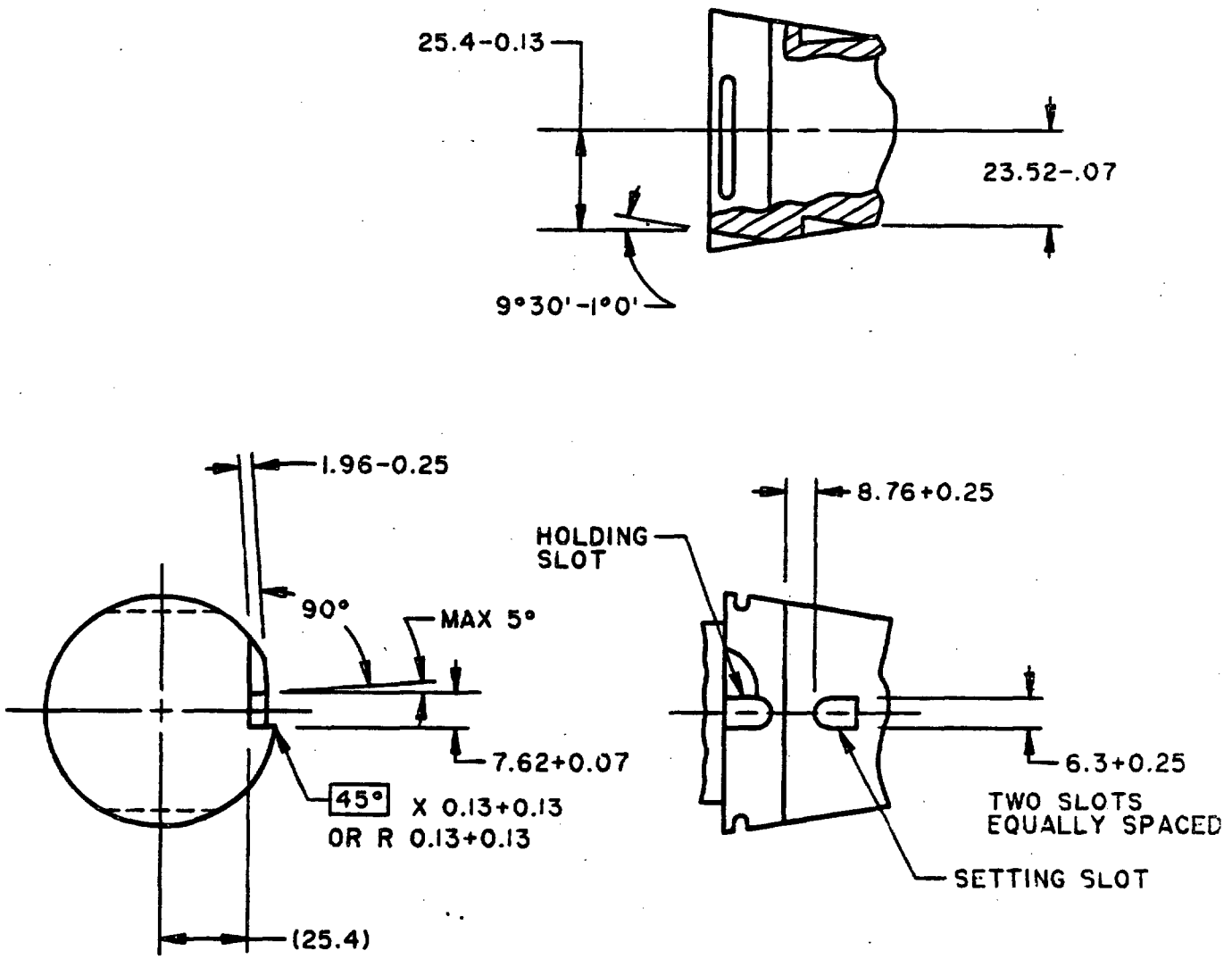
1. DIMENSIONS SHOWN ARE FOR SLOTS FOR A MECHANICAL HAND SETTER FOR ARTILLERY AND MORTAR (81MM AND SPIN STABILIZED) MECHANICAL TIME AND DEEP INTRUSION PROXIMITY FUZES.

2. ORIENTATION OF HOLDING SLOT TO SETTING SLOT IS SHOWN OUT OF POSITION FOR CLARITY.

3. THIS NOTE PERTAINS TO THE FUZE AS VIEWED FROM THE FRONT. WHEN THE FUZE IS SET IN THE SHIPPING POSITION AND THE SETTING SLOT IS POSITIONED COUNTERCLOCKWISE FROM THE HOLDING SLOT, TIME IS SET IN THE CLOCKWISE DIRECTION. WHEN THE FUZE IS SET IN THE SHIPPING POSITION AND THE SETTING SLOT IS POSITIONED CLOCKWISE FROM THE HOLDING SLOT, TIME IS SET IN THE COUNTERCLOCKWISE DIRECTION. THIS MAY TEND TO UNSCREW THE FUZE FROM THE PROJECTILE.

4. VARIOUS DETAILS OF SECTIONS ARE OMITTED FOR CLARITY.

5. FOR OTHER FUZE DIMENSIONS, SEE FIGURE 1.



NOTES:

1- DIMENSIONS SHOWN ABOVE ARE FOR SLOTS FOR A MECHANICAL HAND SETTER FOR ARTILLERY AND MORTAR (81MM AND SPIN STABILIZED) TIME FUZES.

2- ORIENTATION OF HOLDING SLOT TO SETTING SLOT IS SHOWN OUT OF POSITION FOR CLARITY.

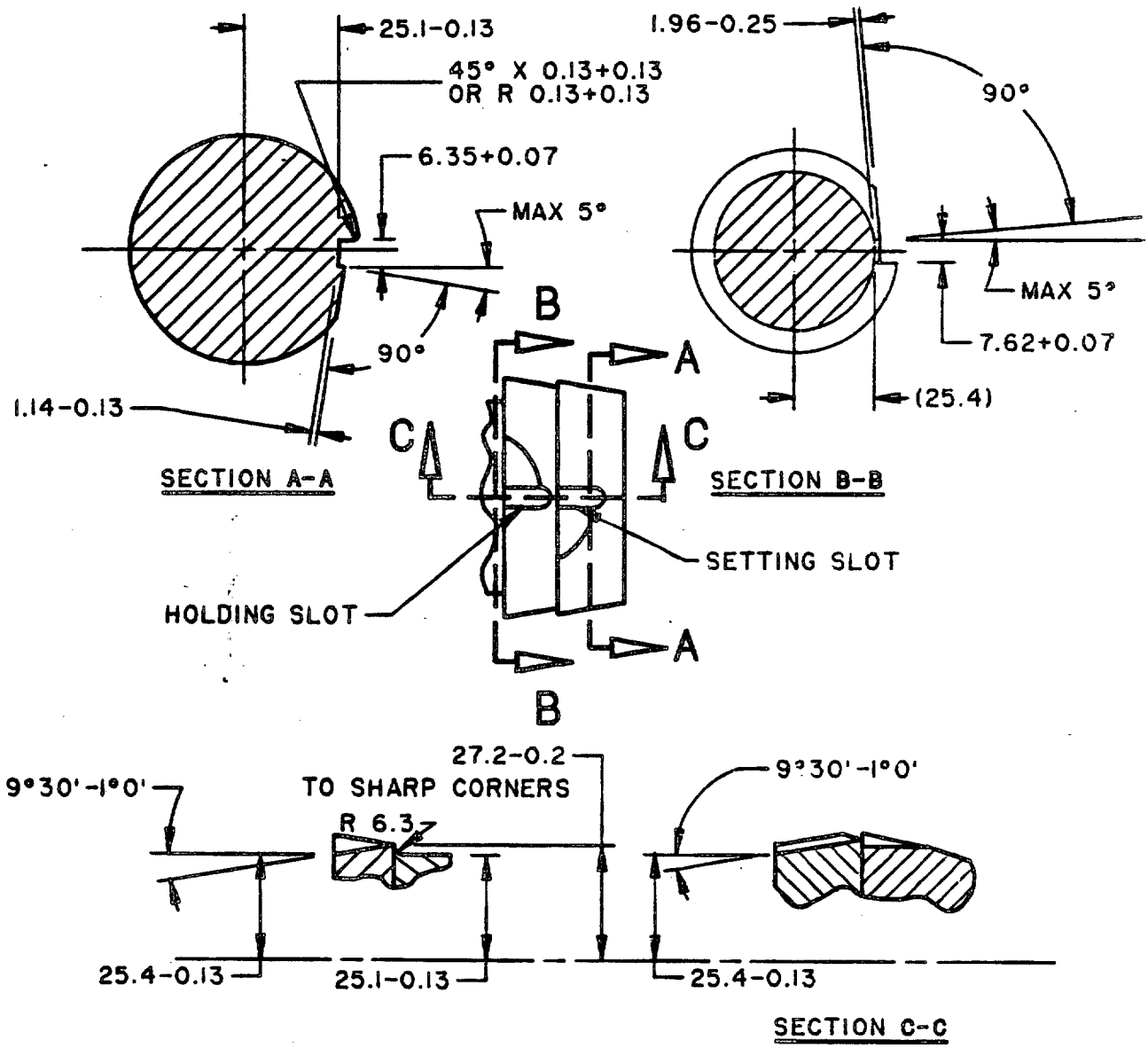
3- THIS NOTE PERTAINS TO THE FUZE WHEN VIEWED FROM THE FRONT. WHEN THE FUZE IS SET IN THE SHIPPING POSITION, THE SETTING SLOT CLOSEST TO THE HOLDING SLOT IS POSITIONED CLOCKWISE TO THE HOLDING SLOT AND TIME IS SET IN THE CLOCKWISE DIRECTION.

4- VARIOUS DETAILS OF SECTIONS AND VIEWS OMITTED FOR CLARITY.

5- FOR OTHER FUZE DIMENSIONS, SEE FIGURE 1.

FIGURE 11

FUZE TIME-SETTING SLOTS TO INTERFACE WITH HAND SETTERS FOR ARTILLERY AND MORTAR TIME FUZES.



SECTION C-C

ALTERNATE CONTOUR

(FOR NOTES, SEE FOLLOWING PAGE.)

FIGURE 12

DUAL PURPOSE FUZE TIME-SETTING SLOTS TO INTERFACE WITH ARMY AUTOMATIC AND HAND MECHANICAL SETTERS.

NOTES FOR FIGURE 12:

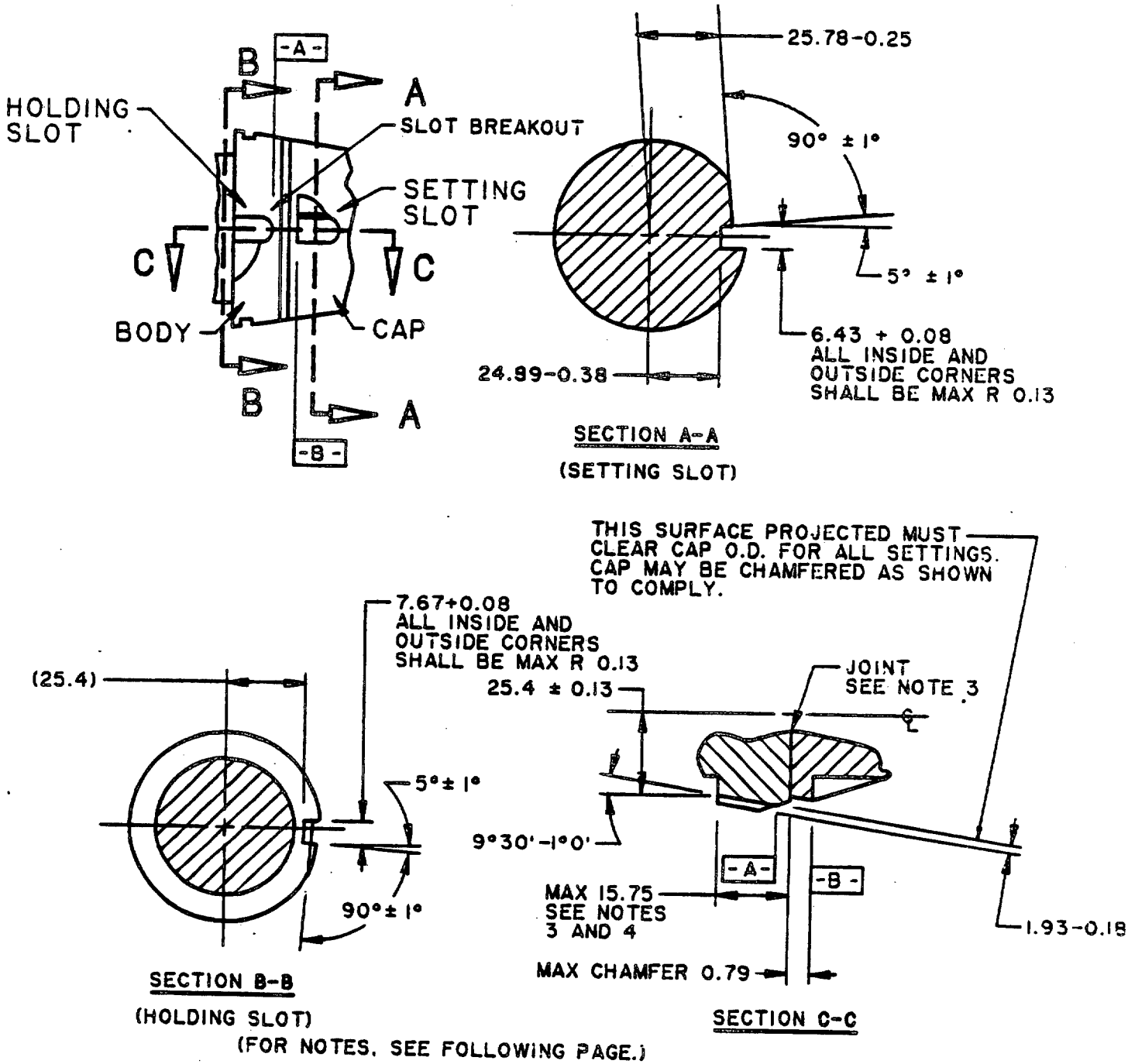
1. DIMENSIONS SHOWN ARE FOR DUAL PURPOSE SLOTS FOR MECHANICAL SETTERS (AUTOMATIC AND HAND) FOR ARTILLERY AND MORTAR (81MM AND SPIN STABILIZED) MECHANICAL TIME AND PROXIMITY FUZES.

2. ORIENTATION OF HOLDING SLOT TO SETTING SLOT IS SHOWN OUT OF POSITION FOR CLARITY.

3. THIS NOTE PERTAINS TO THE FUZE AS VIEWED FROM THE FRONT. WHEN THE FUZE IS SET IN THE SHIPPING POSITION AND THE SETTING SLOT IS POSITIONED COUNTERCLOCKWISE FROM THE HOLDING SLOT, TIME IS SET IN THE CLOCKWISE DIRECTION.

4. VARIOUS DETAILS OF SECTIONS ARE OMITTED FOR CLARITY.

5. FOR OTHER FUZE DIMENSIONS, SEE FIGURE 1.



(FOR NOTES, SEE FOLLOWING PAGE.)

FIGURE 13

DUAL PURPOSE FUZE TIME-SETTING SLOTS TO INTERFACE WITH NAVY AUTOMATIC AND HAND MECHANICAL SETTERS.

6. NOTES

(This section contains information of a general explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard contains requirements for fuze contours for large caliber, non-nuclear projectiles.

6.2 Issue of DODISS. When this standard is used in acquisition, the applicable issue of the DODISS must be cited in the solicitation (see 2.1.1 and 2.2).

6.3 Subject terms (key word) listing.

Artillery
Contours
Fuzes
Large caliber
Mortar
Projectiles
Proximity fuzes
Recoiless rifle projectiles
Setting slots
Tank projectiles
Time fuzes

6.4 International standardization agreements. Provisions of this publication are the subject of international standardization agreements STANAG 2916 and QSTAG-101. When amendment, revision, or cancellation of this publication is proposed which will affect or violate the international agreements concerned, the preparing activity will take appropriate reconciliation action through international standardization channels.

6.5 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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