

DESCRIPTION OF MANUFACTURE SHELL, H.E. 105MM, M1 FROM FORGINGS



OFFICE OF
THE CHIEF OF ORDNANCE
U.S. ARMY
AUG. 30, 1940

The information contained herein has been prepared at Frankford Arsenal and is based upon the latest practice used by that arsenal in the manufacture of 105 MM., H.E. Shell, M1 from Forgings.

The information has been compiled for use as a guide in connection with the preparation of plans for the war-time production of this item, and as an aid to manufacturers showing a possible method of procedure in the event of actual production in an emergency.

The Ordnance Department, in furnishing the information contained herein, accepts no responsibility either in connection with the use of recommended features and processes, or such operations as may be covered by live patents.

SUBMITTED BY:

APPROVED:

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PRELIMINARY SURVEY

COVER SHEET

DATE 8-30-40

Revision

Sheet 1 of 1 sheets

PLANT

ADDRESS

Plant Hours per Month

Gage Design Hours Available

Tool Design Hours Available

Toolmaker Hours Available

Gagemaker Hours Available

Present Capacity per Month

Production Assigned per Month

Deliveries start in

ITEM, SUB ASSEMBLY or COMPONENT Shell, H.E.,

105 MM., M1

Drawing 75-4-75

Based on Production of per Month

Tool Design Hours Required

Gage Design Hours Required

Toolmaker Hours Required (1 set) 1450 hrs.

Toolmaker Hours Req'd. (Prod. per month)

Gagemaker Hours Required (1 set) 900 hrs.

Gagemaker Hours Req'd (Prod. per month)

Basis - 10 hrs. per day - 25 Days

EQUIPMENT SHORTAGES

ARSENAL REMARKS

Toolmaker Hours listed above do not include the time required in the manufacture of raw or semi-finished materials such as bar stock, forgings and castings.

Gages mentioned herein are working gages only.

Toolmaker and gagemaker hours include only special tools and gages. Standard tools and gages which may be procured from firms specializing in certain types are not included, such as drills, taps, dies, thread gages, snap gages, plug gages, etc.

Estimated number of government inspectors required for production of 50,000 shell per month 2-10 hour shifts.-12

GENERAL INFORMATION

In addition to this Description of Manufacture, a contractor should be provided with a set of specifications for this shell, and a set of regular drawings. Drawings of the finished shell and forging are included in this description but should be checked carefully to see that they are the latest revised copies. If the revision dates check, these drawings should enable a manufacturer to proceed satisfactorily in default of the regular set. If the revision dates do not check, all tools and gages contained herein pertaining to the revised dimensions should be changed to suit.

In the manufacture of this shell there are certain considerations which are particularly important for personnel to bear in mind:

In the first place, it is essential that the forgings which are furnished be free from porosity particularly in the base; that they be concentric within limits and that they have been properly cooled or normalized in order not to present hard spots when they come to be machined. It is important also to note that in the turning of all shell, such turning is done with reference to the inside rather than the outside. This improves the concentricity which is highly important. Very good results have been obtained by the use of sintered or cemented carbide tools of the proper grade, and their use for turning operations is recommended in machines that are capable of the necessary speed. In general, the ruggedness of the machines to insure accuracy is most essential, and it is highly recommended that the weights of the machine tools for the various operations listed be ample.

The rotating band should be pressed into its groove under sufficient pressure to insure tight seating but not great enough to overwork the metal of the band and thus cause low ductility with consequent likelihood of rupturing the band in firing.

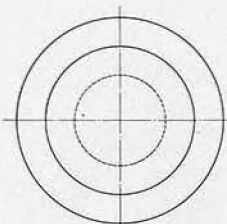
Dimensional tolerances on the finished shell, if taken advantage of to the full extent, may produce shell which do not come within the weight tolerances. These large tolerances are made for the convenience of the manufacturer, and he can decide which ones he wishes to decrease and the ones he wishes to take full advantage of so as to produce a shell that will come within the weight tolerances. The working gages, as shown

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DRAWINGS OF FIXTURES, TOOLS, GAGES, ETC.	FB 11175 FB 17861 to FB 17989 incl.
ORDNANCE DEPARTMENT INSPECTION GAGES	A 52575 to A 52588 incl. A 52590 & A 52592 A 165752 B 21850 B 21851 B 111886 B 111887 B 149862 B 149863 C 10634 C 10635 D 10141-1 D 10141-2 D 10142 D 10146

HEAT TREATMENT & FINAL FINISH



NOTES: UNDERLINED DIMENSIONS ARE FINISHED SIZES AND WILL NOT BE SUBSEQUENTLY MACHINED. DOT AND DASH LINES REPRESENT FINISHED PROJECTILE. MAXIMUM PERMITTED ECCENTRICITY BETWEEN CAVITY AND THE EXTERIOR CYLINDRICAL SURFACE, .0625 INCH. (WHEN MEASURING ECCENTRICITY BY MEANS OF A DIAL INDICATOR THE TOTAL READING OF THE DIAL IS TWICE THE ECCENTRICITY.)

FOR SHELL DRG SEE 75-4-75

A horizontal ruler with markings from 0 to 11 inches. The markings are labeled with integers from 0 to 11, and the word "INCHES" is at the far right. The ruler is positioned above the text "The length of the pencil is _____ inches."

* THE SPECIFICATION NUMBERS SHOWN ARE BASIC NUMBERS ONLY. WHEN A SPECIFICATION IS REVISED A LETTER IS AFFIXED TO ITS BASIC NUMBER. SPECIFICATIONS REFERRED TO IN THESE SPECIFICATIONS AND NOT LISTED HEREON, SHALL NOT APPLY.

SUPERSEDES OLD TRACING 75-20-76
UNDER REVISION DATE OF MAY 25, 1939

AUG 18 1966	CLASS	DIVISION	DRAWING	FILE
REVISONS	75	20	76	
1 3-25-66 2 4-10-66				
ORG. PERTAINS TO				
OFFICE	ENGINE		COUN. STATION	
DESIGNER	<i>[Signature]</i>		CHECK OFFICER	
SUBMITTED:				
<i>Melvin Winge</i>				
EXAMINED: MAY 1966 DEPT. U.S.A.				
<i>SFA</i>				
DES. DATE				
APPROVED BY ORDER OF THE CHIEF OF ORGANIZATION				
<i>R. A. Williams</i>				
MAY 1966 DEPT. U.S.A.				
D	ORDNANCE DEPT. U.S.A.			

[illegible]

LIN#	QTY	DESCRIPTION	SPECIFICATION NUMBER	REQUIRED BY
1		AMMUNITION, EXCEPT SMALL ARMS AMM, GENERAL SPEC FOR	50-0-1	DWG 75-4-75
2		BLANKS, ROTATING BAND, FOR PROJECTILES	50-17-1	DWG 75-6-75
3		BOXES, FIBER, SOLID	LLB-B-636	50-30-1
4				
5				
6				
7				
8				
9				
10		GREASE, SHELL	50-11-37	DWG 75-4-75
11				
12				
13		INK, MARKING, BLACK AND WHITE	36-2	DWG 75-6-75
14				
15		METALS; GENERAL SPECIFICATION FOR INSPECTION OF	20-M-181	DWG 75-6-75
16		LACQUER ENAMEL, NITROCELLULOSE, AND THINNER, FOR AMMUNITION	3-162	DWG 75-4-75
17		PAINT, ACID-PROOF BLACK, FOR AMMUNITION	3-106	DWG 75-6-75
18		PAINTS AND RELATED MATERIALS, GENERAL SPECIFICATIONS FOR	3-1	3-162
19				
20				
21				
22				
23				
24		SHELL, STEEL, COMMAL, MANUFACTURED FROM FORGINGS	50-30-1	DWG 75-6-75
25		STEEL SHEETS AND STRIPS, CARBON AND ALLOY	57-136	DWG 75-6-75
26		STEEL, CARBON AND ALLOY BARS	57-107	DWG 75-6-75
27		STANDARD SPECIFICATIONS FOR MARKING SHIPMENTS	160-2	50-30-1
28				
29				
30				

* THE SPECIFICATION NUMBERS SHOWN ARE BASIC NUMBERS ONLY. WHEN A SPECIFICATION IS REVISED A LETTER IS AFFIXED TO ITS BASIC NUMBER. SPECIFICATIONS REFERRED TO IN THESE SPECIFICATIONS AND NOT LISTED HEREON, SHALL NOT APPLY.

WITH 75-4-75 SUPERSEDES OLD
TRACING 75-4-75 UNDER DATE
OF JAN. 23, 1935.

SHELL, H.E. 105 MM. M1
OF PARTS AND LIST OF SPECIFICATIONS

[illegible]

NOTICE: THIS DRAWING SHALL NOT BE USED NOR REPRODUCED EITHER WHOLLY OR IN PART (A) WITHOUT AUTHORIZATION IN WRITING FROM THE DIRECTOR, ARMY CONSTRUCTION CENTER, OR (B) IN CONNECTION WITH UNITED STATES GOVERNMENT PROCUREMENT.

LIST OF OPERATIONS

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

1 F.A. 8-30-40
Drg. No. 75-4-75

OPER. NO.	OPERATION	MACHINE	APPROX. H. P.	NUMBER OF OPERATORS PER MACH.	ESTIMATED PROD. PER MACHINE PER 10 HRS.	FIXTURES, JIGS, TOOLS & GAGES	
						NAME	F. A. DRG. NO.
1	Center Closed End	Lathe, Metal, (Special) Single Purpose, Shell Centering, Revolving Drill & Arbor, Capacity 105 MM. Shell. (Foster or Equal)	5	1	1000	Operation Sketch Setup Sketch Centering Arbor Assembly Centering Arbor Details Grinding Fixture Assembly Grinding Fixture Details	FB 17861 FB 17862 FB 17863 FB 17864 to FB 17867 incl FB 17868 FB 17869
2	Cut Off, Turn for Concentricity, Rough Boattail, Rough Face Base & Taper for Nosing	Lathe, Single Spindle, Centers Type, Horizontal, Capacity 105 MM. Shell (Fay or Equal)	75	1	300	Operation Sketch Setup Sketch Expanding Driver Assembly Expanding Driver Details Turning Tool Cut Off Tool Base Facing Tool Chamfering Tool (Open End) Chamfering Tool (Base End) <u>GAGES</u> Dia. Body Depth Cavity Rough Thickness Base Length to End Boattail	FB 17870 FB 17871 FB 17872 FB 17873 to FB 17875 incl FB 17876 FB 17877 FB 17878 FB 17879 FB 17880 FB 17881 FB 17882 FB 17883 FB 17884
3	Nose	Press, Power, Straight Sided, Single Action, Single Crank, 225 Ton Capacity. 17" Min. Stroke (Bliss or Equal) Heating Furnace; oil, gas or electric	20	3	1000	Operation Sketch Setup Sketch Punch & Die Details Inside Dia. Nose-Gage	FB 17885 & FB 17885A FB 17886 FB 17887 to FB 17890 incl FB 17891

LIST OF OPERATIONS

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

2 F.A. 8-30-40
Drg. No. 75-4-75

OPER. NO.	OPERATION	MACHINE	APPROX. H. P.	NUMBER OF OPERATORS PER MACH.	ESTIMATED PROD. PER MACHINE PER 10 HRS.	FIXTURES, JIGS, TOOLS & GAGES	
						NAME	F. A. DRG. NO.
4	Rough Bore & Rough Face, Open End	Lathe, Turret, Hex. Horizontal, Ram Type, Universal, Fixed Head, Fixed Turret. (W & S #4 or Equal)	2	1	200	Operation Sketch Setup Sketch Depth Cavity Gage	FB 17892 FB 17893 FB 17894
5	Shot Blast Interior	Special Shot Blasting Machine, Capacity 105 MM. Shell, (Pangborn or Equal)	5	1	1000		
6	Finish Turn	Lathe, Metal, Turning, Profile (Ogive, Boattail or Straight) Double Tool Carriages. Capacity 105 MM. Shell. (Excello or Equal)	22 1/4	1	400	Operation Sketch Setup Sketch Expanding Driver Assembly Expanding Driver Details Insert Grinding Fixture Assembly Insert Grinding Fixture Details Turning Tool R.H. Slide Turning Tool L.H. Slide Forming Cam R. H. Forming Cam L. H. <u>GAGES</u> Dia. Rough Bourrelet Dia. Body Rough Dia. Nose Profile Ogive Position Boattail	FB 17895 FB 17896 FB 17897 FB 17898 to FB 17901 incl. FB 17902 FB 17903 FB 17904 FB 17905 FB 17906 FB 17907 FB 17908 FB 17909 FB 17910 FB 17911 FB 17912

LIST OF OPERATIONS
MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

3 F.A. 8-30-40
Drg. No. 75-4-75

OPER. NO.	OPERATION	MACHINE	APPROX. H. P.	NUMBER OF OPERATORS PER MACH.	ESTIMATED PROD. PER MACHINE PER 10 HRS.	FIXTURES, JIGS, TOOLS & GAGES	
						NAME	F. A. DRG. NO.
7	Drill & Tap Set Screw Hole	Drilling Machine, Sensitive Bench or Box Column Type, Two Spindle, (Capacity Steel) 1/4" x 12" Swing.	2	1	750	Operation Sketch Setup Sketch Drill Jig Details	FB 17913 FB 17914 to FB 17916 incl. FB 17917 to FB 17924 incl.
8	Finish Rear End & Form Band Seat	Lathe, Metal, Automatic Chucking, Multiple Spindle, Horizontal, (Work Rotating) Capacity 105 MM. Shell 4 Spindle. (New Britain Gridley or Equal)	20	1	500	Operation Sketch Setup Sketch End Mill Facing Tool (Rough) Form Tool Facing Tool (Finish) <u>GAGES</u> Thickness Base Assembly Thickness Base Details Width Band Seat Position Band Seat Profile & Position Boattail Dia. Band Seat Dia. Over Ribs Dia. Recess Profile Rear of Band	FB 17925 FB 17926 FB 17927 FB 17928 FB 17929 FB 17930 FB 17931 FB 17932 to FB 17935 incl. FB 17936 FB 17937 FB 17938 FB 17939 FB 17940 FB 17941 FB 17942
9	Finish Nose End	Lathe, Metal, Automatic Chucking, Multiple Spindle, Horizontal, (Work Rotating) Capacity 105 MM. Shell. 4 Spindle (New Britain Gridley or Equal)	20	1	500	Operation Sketch Setup Sketch Rough Boring Tool & Holder Reamer Holder Facing Tool (Rough) Chamfering Tool & Collar	FB 17943 FB 17944 FB 17945 FB 17946 FB 17947 FB 17948 FB 17949

LIST OF OPERATIONS

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

4 F.A. 8-30-40
Drg. No. 75-4-75

OPER. NO.	OPERATION	MACHINE	APPROX. H. P.	NUMBER OF OPERATORS PER MACH.	ESTIMATED PROD. PER MACHINE PER 10 HRS.	FIXTURES, JIGS, TOOLS & GAGES	
						NAME	F. A. DRG. NO.
9	Finish Nose End (Continued)					Facing Tool (Finish) Chasers For Tap Thread Gages Depth Cavity Gage Dia. Nose Gage Total Length Gage	FB 17950 FB 17951 FB 17952 FB 17953 FB 17954 FB 17955
10	Grind Bourrelet	Grinding Machine, Cylindrical, Centerless, (External) (Cincinnati #2 or Equal)	10	1	750	Operation Sketch Dia. Bourrelet Gage	FB 17956 FB 17957
11	Score	Special Shell Scoring Machine, Capacity 105 MM. Shell. (Morley or Equal)	5	1	2000	Operation Sketch Setup Sketch Score Roller Assembly Roller Details	FB 17958 FB 17959 FB 17960 FB 17961 FB 17962
12	Notch	Milling Machine (Producto-matic #2 or Equal)	2	1	1000	Operation Sketch Setup Sketch Notching Fixture Assembly	FB 17963 FB 17964 FB 17965
13	Apply Band	Special Hydraulic Banding Press, Capacity 105 MM. Shell. (West Tire Setter or Equal)	5	1	750	Operation Sketch Setup Sketch & Banding Dies	FB 17966 FB 17967

LIST OF OPERATIONS

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

5 F. A. 8-30-40
Drg. No. 75-4-75

OPER. NO.	OPERATION	MACHINE	APPROX. H. P.	NUMBER OF OPERATORS PER MACH.	ESTIMATED PROD. PER MACHINE PER 10 HRS.	FIXTURES, JIGS, TOOLS & GAGES	
						NAME	F. A. DRG. NO.
14	Turn Band	Lathe, Automatic, Single Spindle, Chuck Work Capacity 105 MM. Shell (#10 Sundstrand Stub Lathe or Equal)	10	1	750	Operation Sketch Setup Sketch Turning Tool Form Tool Burring Tool <u>GAGES</u> Dia. Band Profile Band Position Band	FB 17968 FB 17969 FB 17970 FB 17971 FB 17972 FB 17973 FB 17974 FB 17975
15	Stamp	Special Shell Stamping Machine, Capacity 105 MM. Shell. (Noble & Westbrook or Equal)	1/2	1	2000	Operation Sketch Setup Sketch Stamp Assembly Stamp Details	FB 17976 FB 17977 FB 17978 FB 17979 to FB 17981 incl.
16	Wash	Washing Tanks			To Suit Production		
17	Inspect	Bench			To Suit Production		
18	Weld Base Cover	Seam Welding, Machine with Automatic Indexing Fixture. Capacity 105 MM. Shell. (Type 176 Thomson-Gibb or Equal)	40 KVA	1	750	Operation Sketch Setup Sketch Welding Wheel	FB 17982 FB 17983 FB 17984

LIST OF OPERATIONS

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

6 F.A. 8-30-40
Drg. No. 75-4-75

OPER. NO.	OPERATION	MACHINE	APPROX. H. P.	NUMBER OF OPERATORS PER MACH.	ESTIMATED PROD. PER MACHINE PER 10 HRS.	FIXTURES, JIGS, TOOLS & GAGES	
						NAME	F. A. DRG. NO.
19	Paint Interior & Assemble Set Screw	Spray Booth & Revolving Fixture		2	1000		
20	Paint Exterior & Pack	Spray Booth with Revolving Fixture & Paint Shield		2	1000		
<u>ROTATING BAND, PC. MK. 75-4-75-B</u>							
1	Cut to Length	Cutting off Machine, Rotary Cutter Head, Capacity 4.56 Tubing (Taylor or Equal)	4 1/2	1	2000	Setup Sketch Cut Off Blade Width of Band Gage	FB 17985 FB 17986 FB 17987
2	Anneal, Pickle & Wash	Annealing Furnace, Batch Type, Gas Fired. (Lindburg or Equal) Washing & Pickling Tanks		2	To Suit Production		
<u>COVER, BASE, PC. MK. 75-4-75-E</u>							
1	Blank	Press, Power, Inclinable Open Back, Single Action, Plain, Flywheel, 5 Ton Capacity, 4" Throat	3	1	10,000	Punch & Die Assembly Punch & Die Details	FB 17988 FB 17989
2	Wash	Washing Tanks			To Suit Production		

BILL OF MATERIAL

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

7 F.A. 8-30-40

1	2	3	4	5	6	7	8	9
NAME OF PART	DRAWING NUMBER	PIECE MARK NUMBER	NO. PER	MATERIAL	SPEC.	COMMERCIAL FORM OF MATERIAL AND APPROX- IMATE SIZE IN THE ROUGH	AVERAGE AMOUNT OF MATERIAL PER SHELL	AMOUNT OF MATERIAL PER 100,000 SHELL
Body, Shell	75-4-75	75-4-75A	1	Steel WD-X1335	57-107	Forging	53.9 Lbs.	5,390,000 Lbs.
Band, Rotating	75-4-75	75-4-75B	1	Gilding Metal	50-27-1	Seamless Tubing O.D. 4.56" I.D. 4.15"	0.653 Lbs.	65,300 Lbs.
Cover, Base	75-4-75	75-4-75E	1	Steel WD 1010	57-136	Strips #22 U.S. Gage 3.125" Wide	.0852 Lbs.	8,520 Lbs.
Screw, Set	75-4-75	75-4-75F	1	Steel	Commercial			
Coating, Exterior				Yellow Lacquer Enamel	3-67			500 Gal.
Coating, Interior				Acid Proof Black Paint	3-106			250 Gal.
Stenciling				Black Marking Ink	36-2			2 Gal.
Packing				Shell Grease	50-11-37			20 Gal.

CONTRACTOR'S INSPECTION

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

8 F.A. 8-30-40

Operations:
(General)

Inspection is conducted at every operation. In the case of machining, cleaning, marking and painting operations, each shell is inspected for the operation performed before being permitted to pass to the next operation. Working gages used by the contractor's inspector are listed in the "List of Operations" opposite each operation. The contractor's inspector verifies working gages by comparison with limit check gages (See Drawing FB11175). Dimensions applying to limit check gages for any particular gage, appear on the drawing of the gage. Visual inspections are continually being made for defects in the metal. Working gages shown with each operation described in this description are for use only in the event the method of manufacture herein is used. In the event that the contractor should decide to use any other method it will be necessary that he check very closely these gages in order to decide which can be used.

With all form cutting tools where the dimensions of the finished surface which has been cut depends upon the dimensions of these tools, the contractor's inspector, in the case of a new tool or tool which has been ground, verifies by measurement the accuracy of the tool before it is used by the machine operator.

Operations:
(Classified)

Operation No. 1 Centering - The centering arbor should be checked at frequent intervals to verify its trueness, and thus eliminate as far as possible rejects due to eccentricity on subsequent machine operations.

Operation No. 10 Stamp - At this operation the shell are stamped with a lot number. This number depends primarily upon the heat of steel from which the forgings were made. All

CONTRACTOR'S INSPECTION
(Continued)

9 F.A. 8-30-40

MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

shell from one heat of steel are given the same lot number. When a decided change in the method of manufacture is made a new lot number may be assigned which is continued for the balance of shell made from that particular heat of steel.

Final General
Inspection:

After Operation No. 15, Wash, every shell is inspected prior to submission to the government inspector.

GOVERNMENT INSPECTION
MACHINING SHELL, H.E., 105 MM., M1
FROM FORGINGS

10 F.A. 8-30-40

Operation No. 10 Stamp - At this operation the government inspector verifies the correctness of the lot number which is being stamped upon the shell.

After the contractor's inspector has made his inspection following Operation No. 11, every shell is submitted to the government inspector. The shell are carefully examined visually inside and out, and all dimensions, which may be rendered inaccessible due to pressing on the band, are gaged.

After the contractor's final general inspection, all shell pass before the government inspector. Once a day, or more often if found necessary, several bands are removed and subjected to the bending test specified in Specification 50-30-1. At this inspection the shell are gaged using the gages listed under "Shell Body" on Drawing No. B 112066.

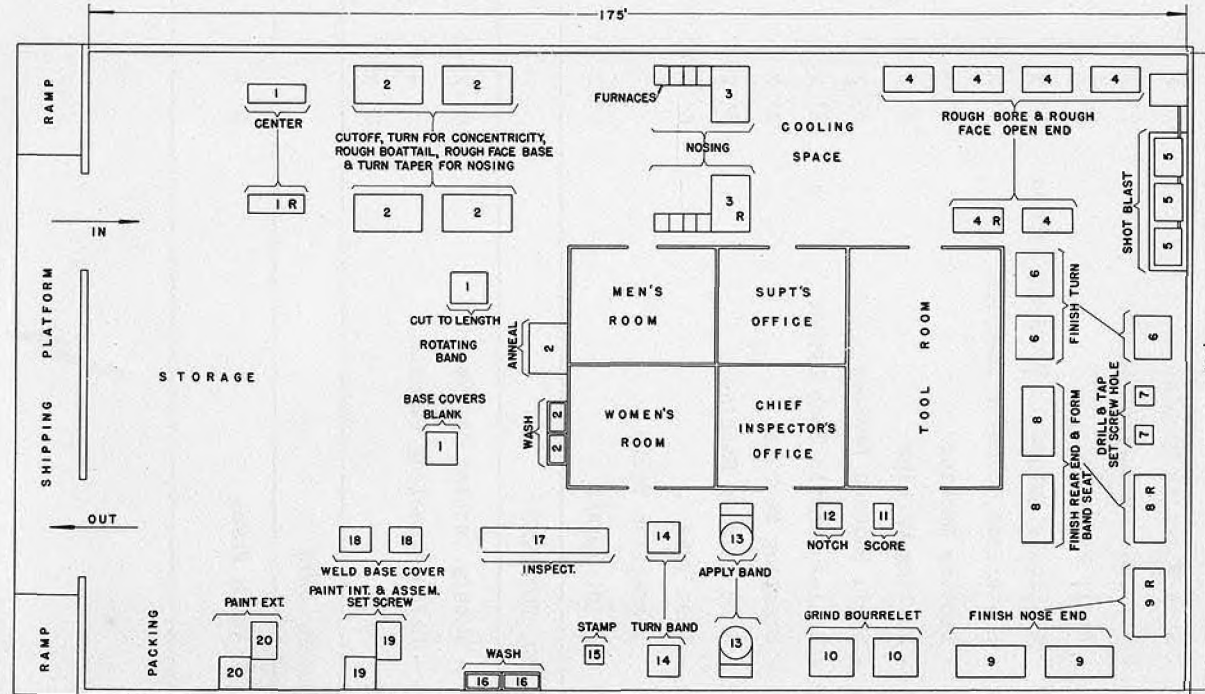
The government inspector tests the seating of the band after it has been finish turned by tapping the band gently with a small hammer. He places his finger so as to touch the shell and the band close to the point where he is tapping. If the band is not properly seated, he will be able to feel a spring in the band while tapping. The tapping must be lightly done so as not to damage the band.

All shell passing this inspection are stamped with the initials of the government inspector, following those of the contractor.

At Operation No. 18, during which the shell are being prepared for shipment, the government inspector examines each shell to verify that it is properly painted, greased, and stenciled.

Test, Hardness - The government inspector selects the shell which are to be subjected to the physical test. After physical test specimens have been cut from the shell, the remaining sections are used to check from time to time the interior profile.

Operation No. 1 Cut Off Rough Band - The government inspector makes a percentage inspection of the rough bands.



SHOP PERSONNEL REQUIRED 20 HOURS	
1-	SHOP SUPERINTENDENT
1-	CHIEF INSPECTOR
2-	SHOP FOREMEN
4-	ASSISTANT FOREMEN
12-	GOVERNMENT INSPECTORS
6-	CONTRACTORS INSPECTORS

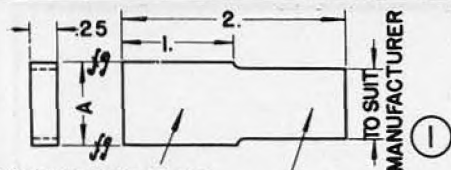
TYPICAL PLANT LAYOUT
 BASED ON PRODUCTION 50,000, 105MM. H.E. SHELL, M.I.
 PER MONTH OF 25 DAYS, 2-10 HOUR SHIFT

NOTE:-
 FLOOR SPACE REQUIRED 17,500 SQ. FT.
 TOTAL MAN HOURS REQUIRED 1060 PER DAY, 26,500 PER MONTH.
 TOTAL MACHINISTS & TOOLMAKERS HOURS, 200 PER DAY, 5000 PER MONTH.
 SHELL MAY BE CONVEYED BY CONVEYOR OR HAND RACK TRUCKS.
 MACHINES MARKED 'R' ARE CONSIDERED AS BEING IN RESERVE.

MACHINES REQUIRED		FLOOR SPACE REQUIRED PER MACHINE
OPER.	SHELL, BODY	
1	2 - CENTERING LATHES	9' x 3'
2	4 - HORIZONTAL PRODUCTION LATHES	11' x 6'
3	2 - 225 TON CRANK PRESSES	9' x 6'
4	6 - TURRET LATHES	8' x 4'
5	1 - SHOT BLASTING MACHINE	31' x 6'
6	3 - VERTICAL PRODUCTION LATHES	7' x 6'
7	2 - DRILL PRESSES	5' x 3'
8,9	6 - 4 SPINDLE AUTOMATIC CHUCKING LATHES	11' x 5'
10	2 - CENTERLESS GRINDING MACHINES	7' x 6'
11	1 - SCORING MACHINE	4' x 3'
12	1 - MILLING MACHINE	4' x 4'
13	2 - SHELL BANDING PRESSES	8' x 5'
14	2 - SEMI-AUTOMATIC STUB LATHES	5' x 5'
15	1 - STAMPING MACHINE	3' x 3'
18	2 - SEAM WELDING MACHINES	5' x 4'
16	2 - WASH TUBS	6' x 3'
17	INSPECTION TABLE	
19,20	2 - PAINT SPRAYS	5' x 5'
BAND, ROTATING		
1	1 - ROTARY CUTTING OFF MACHINE	6' x 5'
2	1 - BATCH ANNEALING FURNACE	8' x 6'
2	2 - TUBS	5' x 3'
COVER, BASE		
1	1 - PUNCH PRESS	5' x 5'

MACHINES REQUIRED		FLOOR SPACE REQUIRED PER MACHINE
OPER.	BODY, SHELL	
1	2 - Centering Lathes	9' x 3'
2	4 - Horizontal Production Lathes	11' x 6'
3	2 - 225 Ton Crank Presses	9' x 6'
4	6 - Turret Lathes	8' x 4'
5	1 - Shot Blasting Machine	31' x 6'
6	3 - Vertical Production Lathes	7' x 6'
7	2 - Drill Presses	3' x 3'
8,9	6 - 4 Spindle Automatic Chucking Lathes	11' x 5'
10	2 - Centerless Grinding Machines	7' x 6'
11	1 - Scoring Machine	4' x 3'
12	1 - Milling Machine	4' x 4'
13	2 - Shell Banding Presses	8' x 5'
14	2 - Semi-Automatic Stub Lathes	5' x 5'
15	1 - Stamping Machine	3' x 3'
18	2 - Seam Welding Machines	5' x 4'
16	2 - Wash Tubs	6' x 3'
17	Inspection Table	
19,20	2 - Paint Sprays	5' x 5'
BAND, ROTATING		
1	1 - Rotary Cutting Off Machine	6' x 5'
2	1 - Batch Annealing Furnace	8' x 6'
2	2 - Tubs	5' x 3'
COVER, BASE		
1	1 - Punch Press	5' x 5'

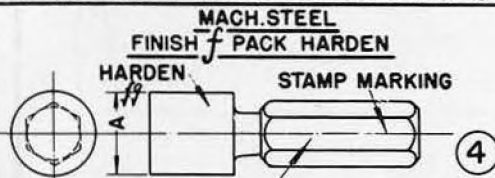
12 F.A. 8-30-40



STAMP:-LIMIT CHECK FOR GO & SIZE

STAMP MARKING

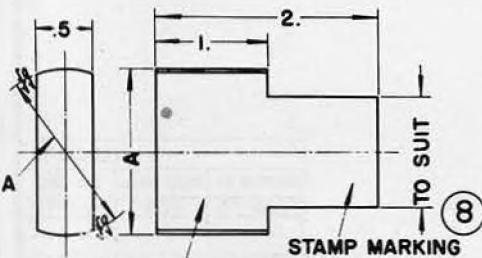
SINGLE END FLAT PLUG CHECK GAGE



STAMP:-LIMIT CHECK FOR GO & SIZE

PLAIN PLUG CHECK GAGE

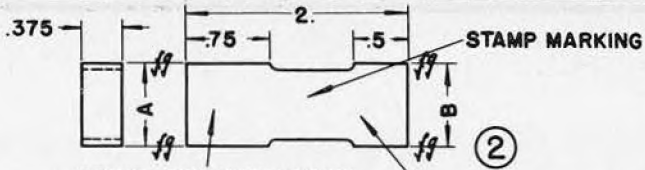
AMERICAN GAGE DESIGN STD.



STAMP:-LIMIT CHECK FOR GO & SIZE

ROUNDED FLAT PLUG CHECK GAGE

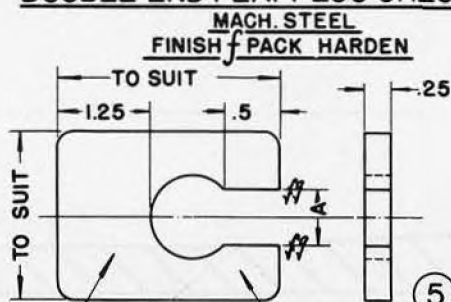
MACH. STEEL
FINISH f PACK HARDEN



STAMP:-MIN. CHECK & SIZE

STAMP:-MAX. CHECK & SIZE

DOUBLE END FLAT PLUG CHECK GAGE

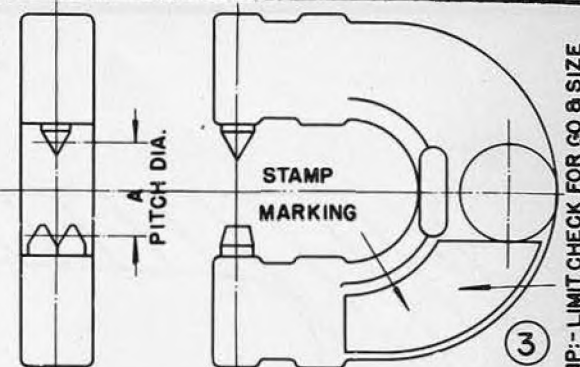


STAMP MARKING

STAMP:-LIMIT CHECK FOR GO & SIZE

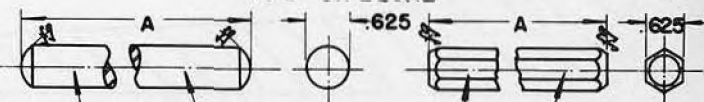
SNAP CHECK GAGE

MACH. STEEL
FINISH f PACK HARDEN



THREAD SNAP CHECK GAGE

GREENFIELD TAP & DIE CORP.
#1612 OR EQUAL



STAMP:-LIMIT CHECK FOR GO & SIZE

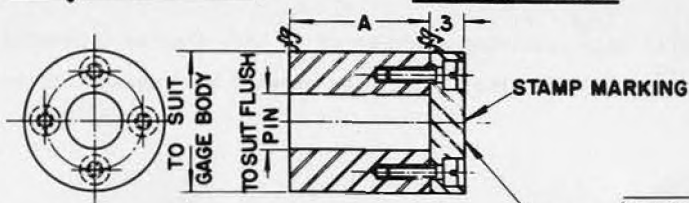
ROUNDED PIN CHECK GAGE

DRILL ROD
HARDEN ENDS

STAMP MARKING
STAMP:-LIMIT CHECK FOR GO & SIZE

PIN CHECK GAGE

DRILL ROD
HARDEN ENDS



STAMP:-CHECK FOR DEPTH & SIZE

DEPTH CHECK GAGE

MACH. STEEL
FINISH f PACK HARDEN

LAP f SURFACES
REMOVE ALL SHARP EDGES

SCALE:

STAMP:-LIMIT CHECK FOR GO & SIZE

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE

REVISIONS
5-16-35

LIMIT CHECK GAGES

FRANKFORD ARSENAL

MARCH 15, 1930

SUBMITTED

ISI. LT. ORD. DEPT., U. S. A.

APR 1930

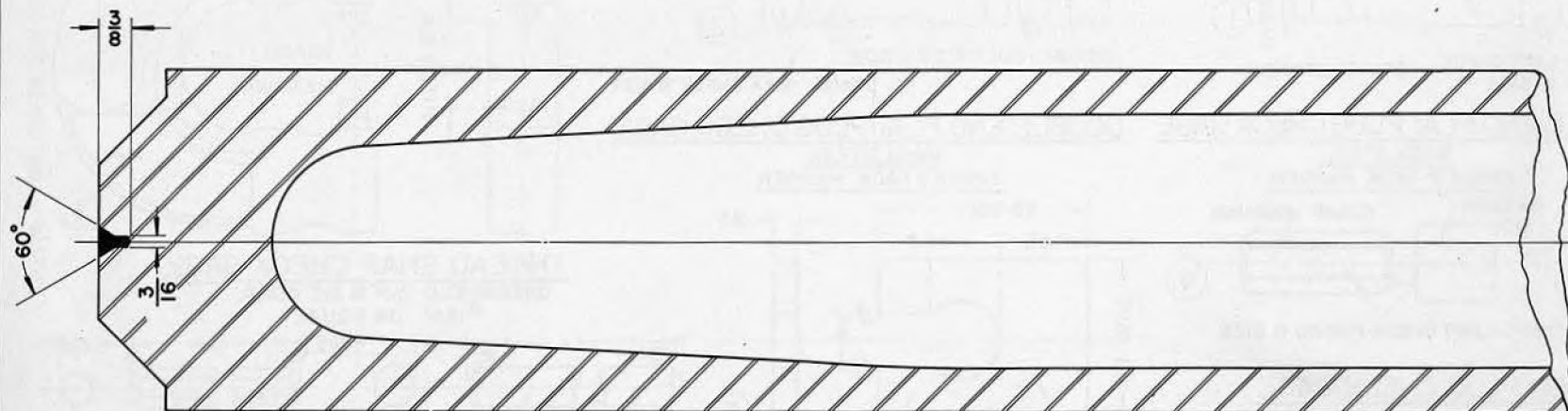
APR 1930

APR 1930

APR 1930

ORD. DEPT., U. S. A.

FB III 75

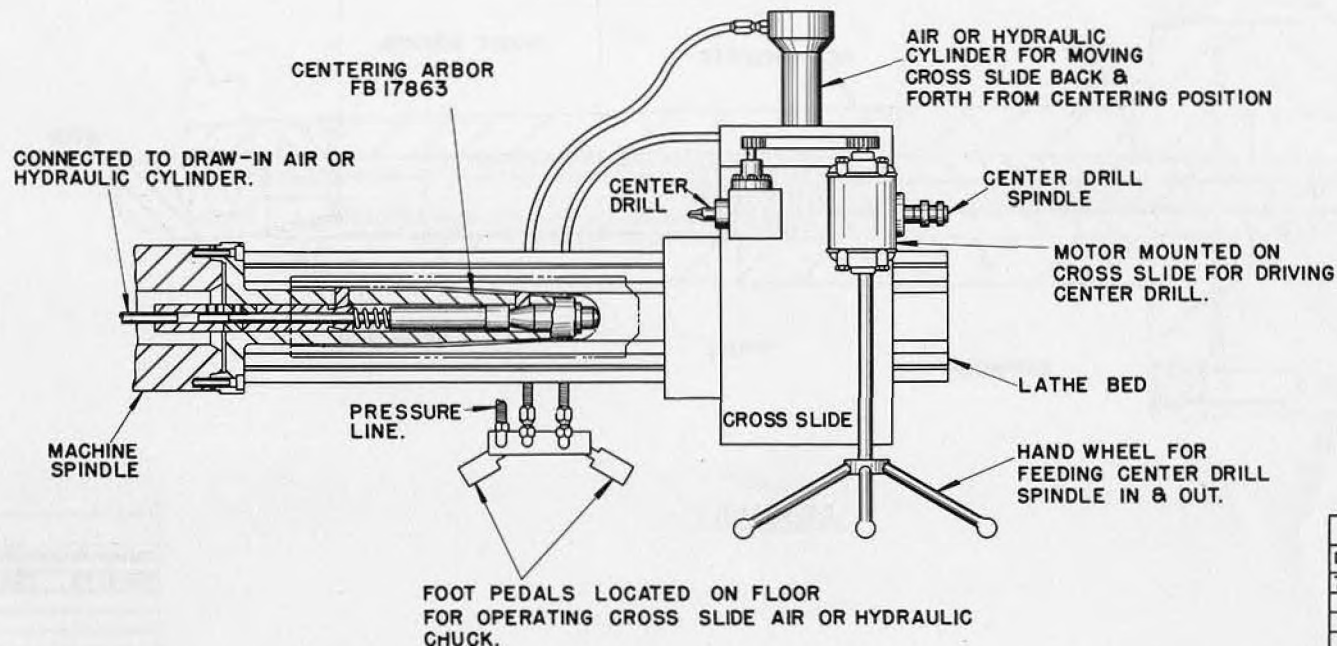


OPERATION NO. I

The shell are centered on a revolving arbor so as to have them as concentric as possible.
This operation is very important and the arbor should be checked at frequent intervals to insure its trueness.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

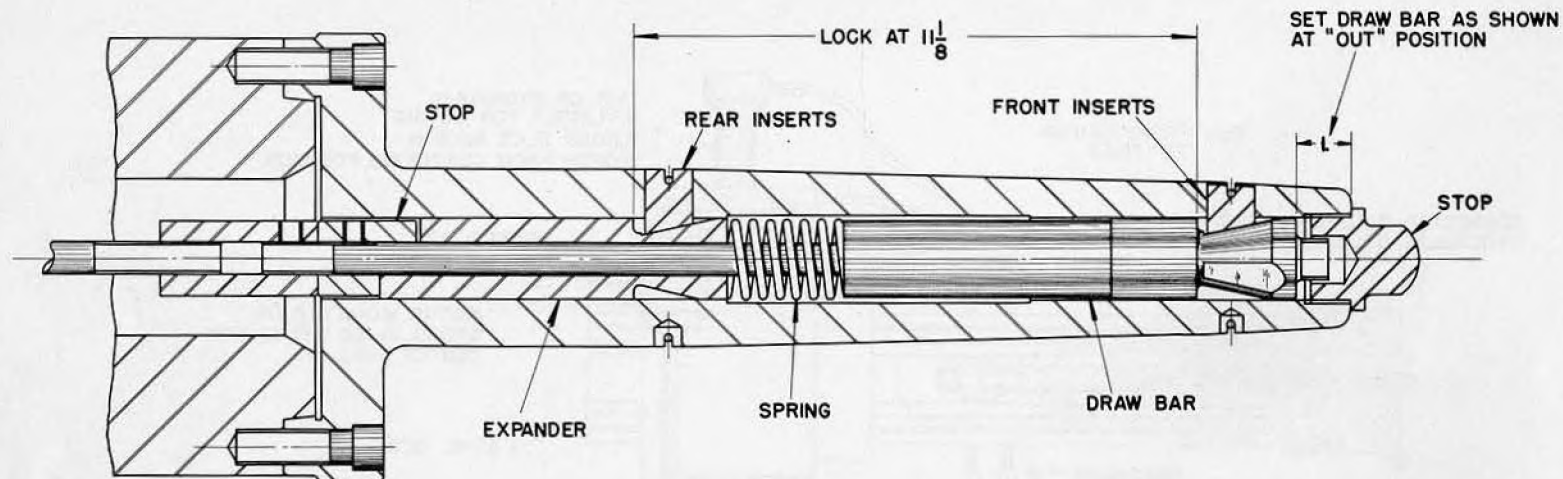
REVISIONS	SHELL, H.E., 105MM., M1			
	BODY			
	OPERATION: CENTER CLOSED END			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED <i>[Signature]</i>			
	CAPT. ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER
	APPROVED	FBI7861		
	ORD. DEPT., U. S. A.			



SETUP SKETCH

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H. E., 105 MM., MI BODY			
	OPERATION:-CENTER CLOSED END			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTER CAPT. <i>[Signature]</i>	ORD. DEPT., U. S. A.	CHECKER H. E. <i>[Signature]</i>	CHECKER H. E. <i>[Signature]</i>
	APPROVED	ORD. DEPT., U. S. A.	CHECKER H. E. <i>[Signature]</i>	CHECKER H. E. <i>[Signature]</i>
		FBI7862		



ASSEMBLY

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY CENTERING ARBOR ASSEMBLY FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTER	DRAWINGMAN	TRACER	INSTRUMENTMAN
	CAPT. <i>[Signature]</i>	RI	RI	WRS
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CITY IN-CHARGE
	APPROVED			
	ORD. DEPT., U. S. A.			

FBI7863

BODY
CHROME NICKEL STEEL, SAE - 3120
HEAT TREAT

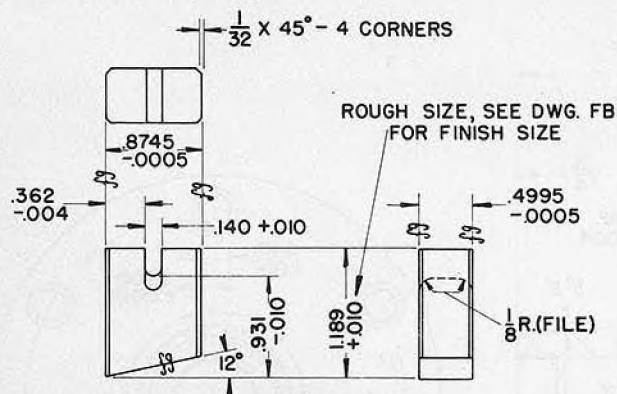
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H. E., 105 MM., MI BODY CENTERING ARBOR DETAILS			
		FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	Capt. [Signature]	DRG. MAN.	TYP. MAN.	LITH. MAN.	CHK'D BY MAN.
CAPT. APPROVED	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CNTY. ON-SMALL	
		FBI7864			
		ORD. DEPT., U. S. A.			

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

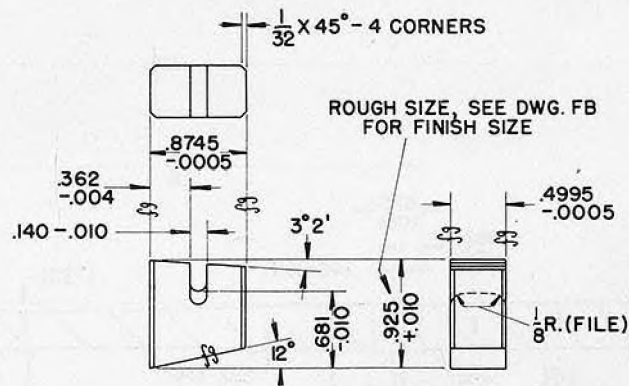
REVIEWS	SHELL, H. E., 105 MM., MI			
	BODY			
	CENTERING ARBOR DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	MANUFACTURER	TRACER	LABORATORY
	<i>[Signature]</i>	BT	BT	<i>[Signature]</i>
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CH'Y DE' ARSENAL
	APPROVED	ORD. DEPT., U. S. A.		
		ORD. DEPT., U. S. A.	FBI7864	

STAMP:-FB17865



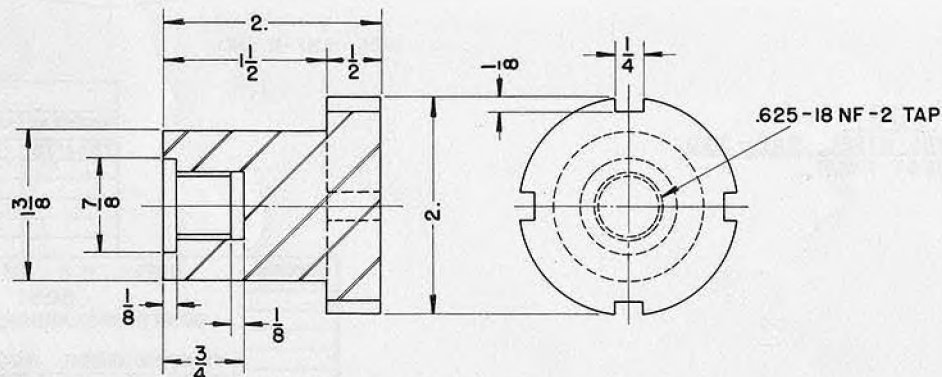
INSERT, REAR
THREE - TOOL STEEL

HARDEN
SPRING, TENSION, .0159 (NO. 26 B & S GAGE) MUSIC WIRE,
.125 O.D. CLOSE WOUND, HOOK ENDS, 8.25 LONG
AFTER FORMING HOOKS.



INSERT, FRONT
THREE - TOOL STEEL

HARDEN
SPRING, TENSION, .0159 (NO. 26 B & S GAGE) MUSIC WIRE,
.125 O.D. CLOSE WOUND, HOOK ENDS, 6.875 LONG
AFTER FORMING HOOKS.



NUT, GRINDING
STEEL - SAE - 1010

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H. E., 105 MM., MI BODY CENTERING ARBOR DETAILS		
		FRANKFORD ARSENAL AUG. 30, 1940		
		SUBMITTED	DRAWSMAN	TRACER
		CAPT. <i>[Signature]</i>	BJ	BJ
		ORD. DEPT., U. S. A.	CHECKER	CHECKER
		APPROVED	CH'S OR S.M.A.	
		ORD. DEPT., U. S. A.	FB17865	

Technical drawing of a draw bar with dimensions and labels:

- Overall length: $20\frac{1}{2}$
- Section 1 (Left):
 - Length: $10\frac{7}{8}$
 - Thread: .625 - 18 NF - 2 THD.
 - Radius: $\frac{1}{16}R$
 - Flat: $\frac{1}{16}$ FLAT
 - Length of flat: $2\frac{1}{4}$
 - Distance from end to flat: $1\frac{1}{2}$
- Section 2 (Middle):
 - Length: $5\frac{11}{16}$
 - Radius: $\frac{1}{16}R$
 - Thread: .625 - 18 NF - 2 THD.
 - Radius: $\frac{1}{8}R$
 - Length: $1\frac{1}{2}$
 - Flat: $\frac{1}{8}$ FLAT
 - Angle: 12°
 - Distance from end to flat: $13\frac{13}{16}$
 - Distance from end to flat: $5\frac{5}{8}$
 - Angle: 60°
 - Radius: $\frac{1}{16}R$
 - Thread: .625 - 18 NF - 2 THD.
 - Distance from end to flat: $1\frac{1}{4}$
 - Distance from end to flat: $\frac{1}{8}$
 - Angle: 12°
 - Distance from end to flat: $3\frac{3}{8}$
 - Radius: $\frac{1}{8}R$
- Section 3 (Right):
 - Length: $20\frac{1}{2}$
 - Radius: $\frac{1}{16}R$
 - Thread: .625 - 18 NF - 2 THD.
 - Radius: $\frac{1}{8}R$
 - Length: $1\frac{1}{2}$
 - Flat: $\frac{1}{8}$ FLAT
 - Angle: 12°
 - Distance from end to flat: $13\frac{13}{16}$
 - Distance from end to flat: $5\frac{5}{8}$
 - Angle: 60°
 - Radius: $\frac{1}{16}R$
 - Thread: .625 - 18 NF - 2 THD.
 - Distance from end to flat: $1\frac{1}{4}$
 - Distance from end to flat: $\frac{1}{8}$
 - Angle: 12°
 - Distance from end to flat: $3\frac{3}{8}$
 - Radius: $\frac{1}{8}R$
- Section 4 (Far Right):
 - Length: $10\frac{7}{8}$
 - Thread: .625 - 18 NF - 2 THD.
 - Radius: $\frac{1}{16}R$
 - Flat: $\frac{1}{16}$ FLAT
 - Length of flat: $2\frac{1}{4}$
 - Distance from end to flat: $1\frac{1}{2}$
- Labels:
 - MUST BE IN LINE
 - "A"
 - FOR STD. HEX. WRENCH

DRAW BAR
TOOL STEEL
HARDEN

.375-16NC-2 TAP,
MUST BE IN LINE
WITH TONGUE

EXPANDER
TOOL STEEL
HARDEN

STOP
STEEL-SAE-1010
SCREW, HOLLOW HD. SET,
.375-16 NC-2 X .375 LONG

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H. E., 105 MM., M I
BODY

CENTERING ARBOR DETAILS

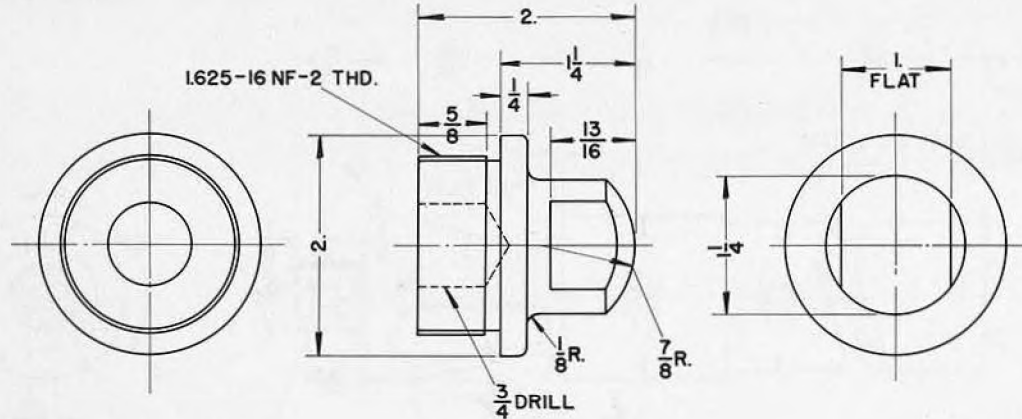
FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED	DRAFTSMAN	TRACER	INTEGRATOR
CAPT. <i>[Signature]</i>	RJ	RJ	<i>[Signature]</i>
ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHY OR SWA

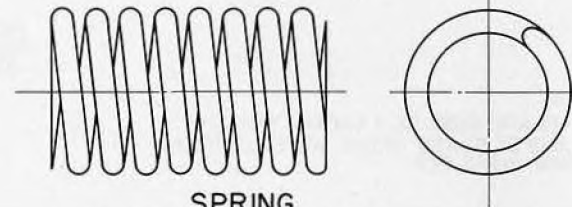
ORD. DEPT., U. S. A.

FB17866

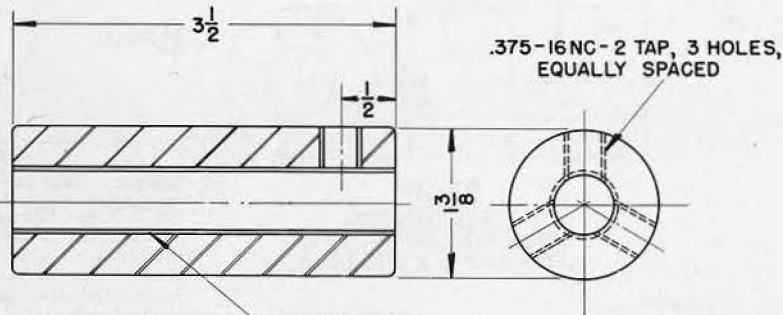
STAMP: -FB17867



STOP
STEEL-SAE-1010
PACK HARDEN



SPRING
PRODUCTO OW-50, OR EQUAL



SLEEVE
STEEL-SAE-1010
SCREW, HOLLOW HD. SET, .375-16 NC-2 X .375 LONG

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

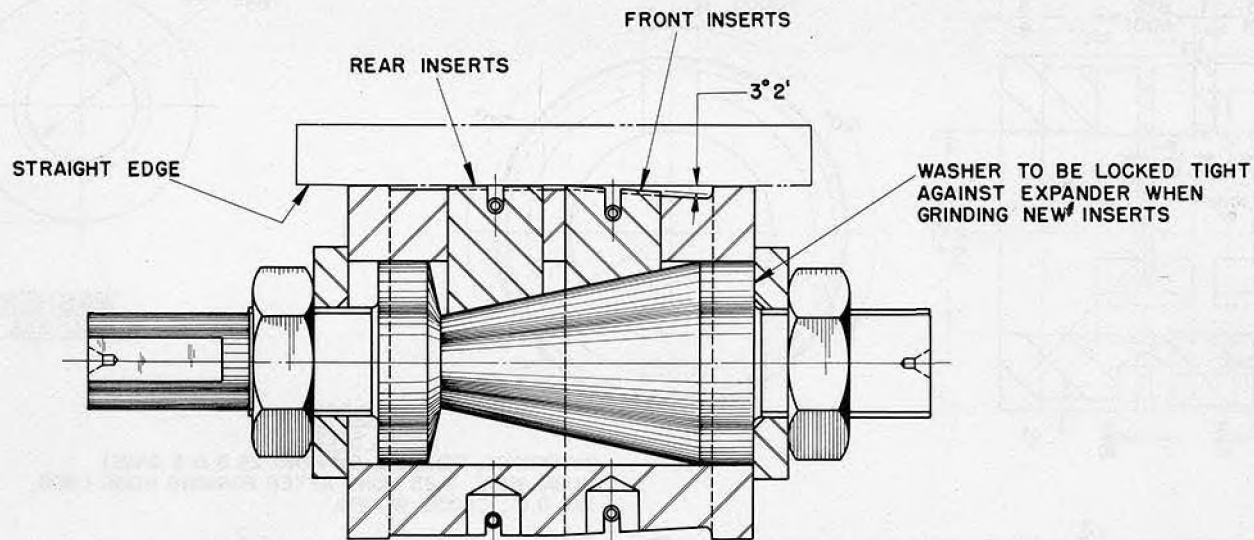
REVISIONS

SHELL, H.E., 105 MM., M1
BODY
CENTERING ARBOR DETAILS

FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED	DRAFTSMAN	TRACER	INCHES
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHEK
APPROVED	ORD. DEPT., U. S. A.	CHECKER	CHEK

FB17867



ASSEMBLY

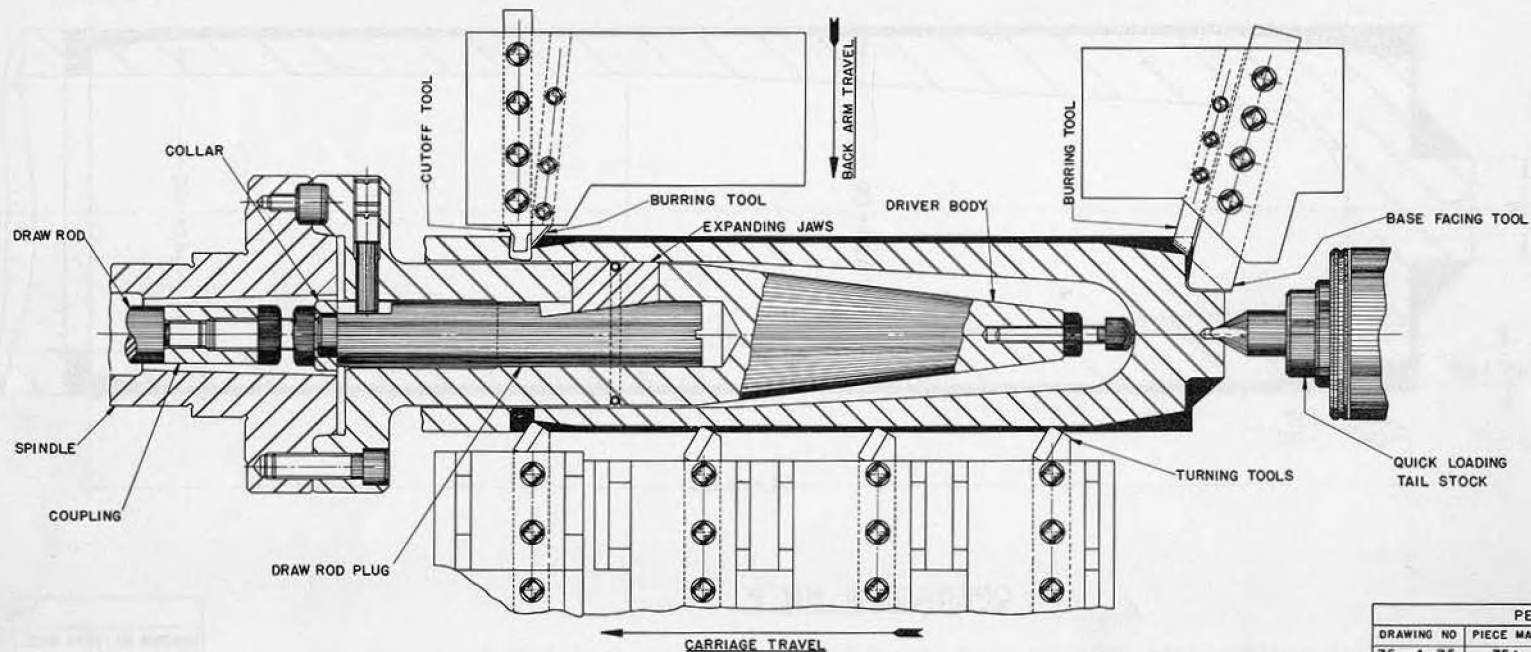
NOTE:-

INSERTS MUST BE KEPT AND USED IN SETS OF SIX, THREE FRONT AND THREE REAR. FRONT AND REAR INSERTS, IN SAME SET, MUST BE GROUND IN SAME SETTING OF FIXTURE. WHEN REGRINDING INSERTS, AFTER USE IN ARBOR, SET EXPANDER TO RAISE INSERTS SLIGHTLY ABOVE END FLANGES ON FIXTURE AND GRIND FLUSH WITH FLANGES, USING STRAIGHT EDGE AS INDICATED TO CHECK SIZE. DO NOT ALLOW GRINDING WHEEL TO TOUCH FLANGES.

FOR GRINDING ROOM USE ONLY

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

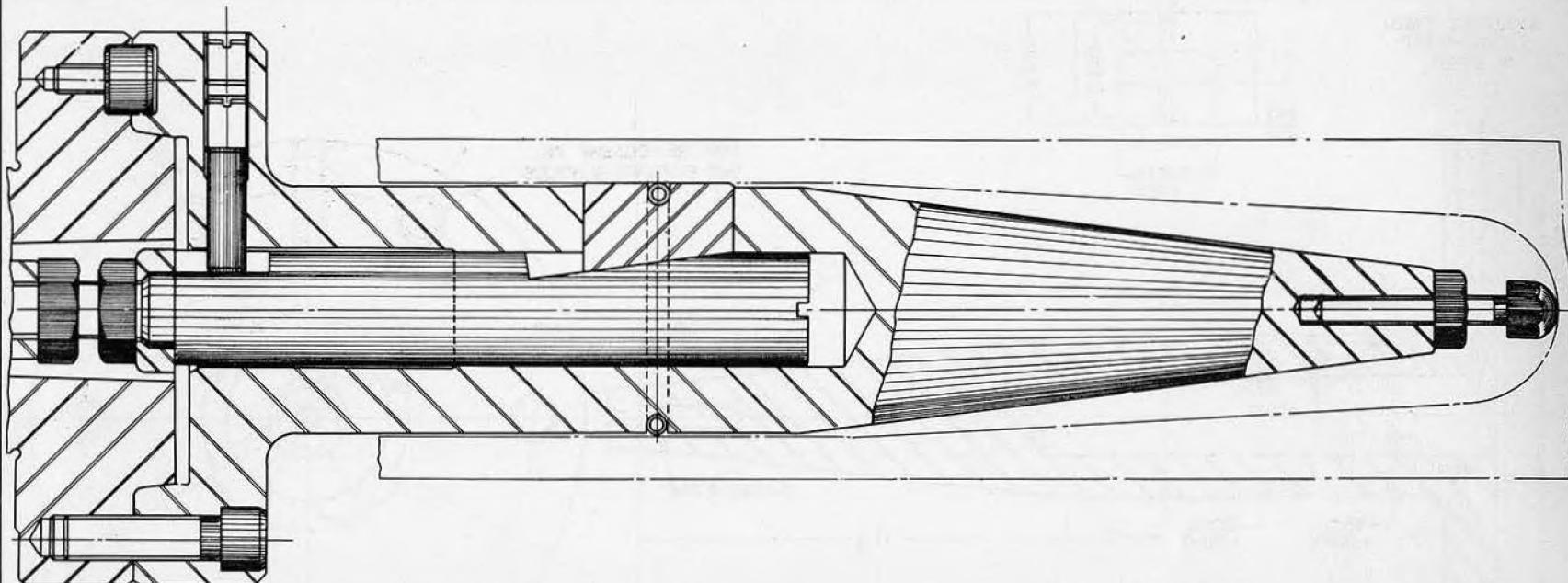
REVISIONS	SHELL, H.E., 105 MM., M1 BODY			
	INSERT GRINDING FIXTURE			
	ASSEMBLY			
	FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	DRAFTSMAN	TRACER	INCHES	
CAPT. <i>[Signature]</i>	RI	RI	CHECKER	CHECKER
ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER	CHECKER
APPROVED	FBI7868			
	ORD. DEPT., U. S. A.			



SETUP SKETCH

PERTAINS TO		
DRAWING NO	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E. 105 MM., M1 BODY			
	OPERATION:-			
	CUTOFF, TURN FOR CONCENTRICITY, ROUGH BOATTAIL, ROUGH FACE BASE & TAPER FOR NOSING			
	FRANKFORD ARSENAL AUG 30 1940			
	SUBMITTED			
CAPT	ORD DEPT. U.S.A.	DRAFTSMAN H.J.W.	TRAGER H.J.W.	INSPECTOR H.J.W.
APPROVED		CHECKER	CHECKER	CHECKER
		FBI7871		
		ORD. DEPT. U.S.A.		

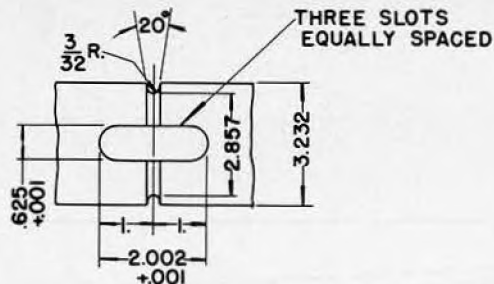


PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

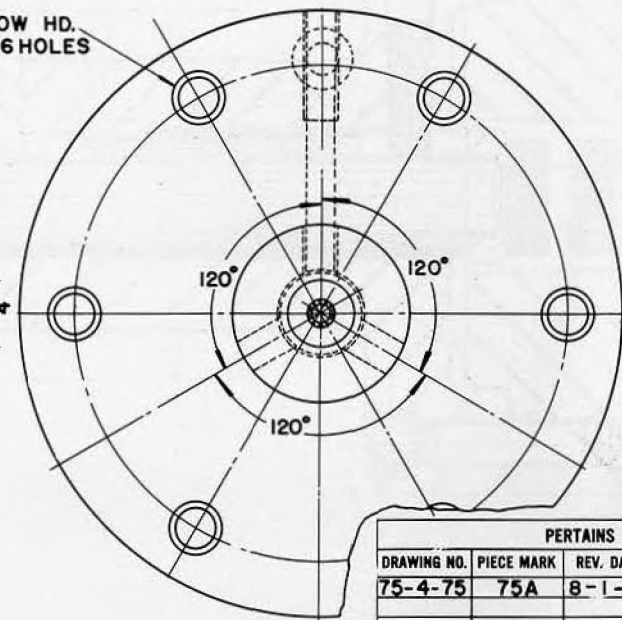
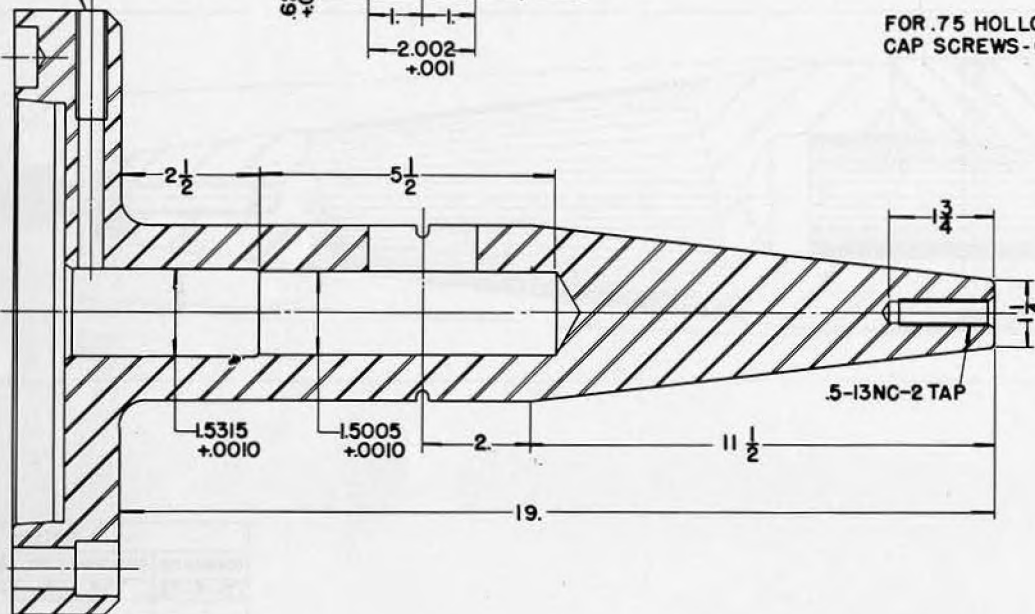
REVISIONS	SHELL, H.E., 105MM., MI BODY EXPANDING DRIVER ASSEMBLY			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTER	DRAFTSMAN	TRACER	CHK'D BY
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHECKER
	ORD. DEPT., U. S. A.			
APPROVED		FBI7872		
ORD. DEPT., U. S. A.				

STAMP--FB 17873

.437 DRILL THRU
.5-13NC-2 TAP
2. DEEP



FOR .75 HOLLOW HD.
CAP SCREWS-6 HOLES



TO SUIT MACHINE

BODY
CHROME NICKEL STEEL
HEAT TREATED
2-SCREWS, HOLLOW HD. SET, .5-13NC-2 x 1. LONG

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM, MI
BODY
EXPANDING DRIVER DETAILS

FRANKFORD ARSENAL AUG. 30, 1940

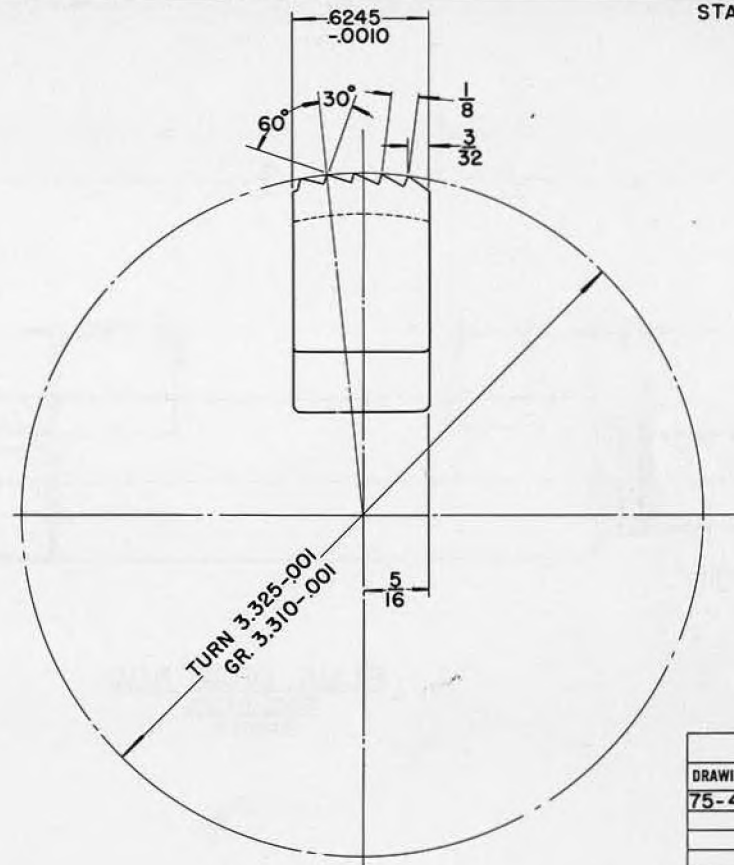
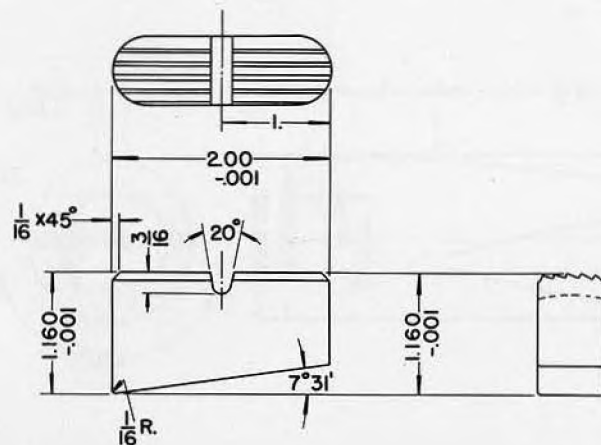
SUBMITTER CAPT. <i>[Signature]</i>	DRAFTSMAN H.J.G.	TRACER H.J.G.	LIBRARIAN H.J.G.
CHECKER	CHECKER	CHECKER	CHECKER

APPROVED

ORD. DEPT., U. S. A.

FB17873

STAMP:-FB17874

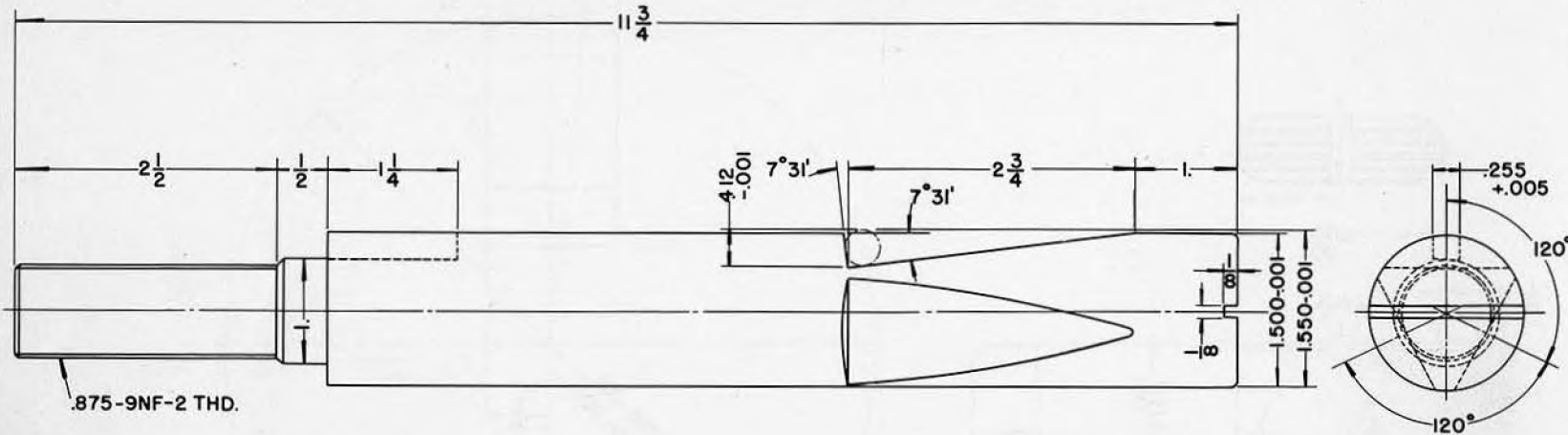


INSERT
H.S. STEEL
SET OF THREE
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105MM, MI BODY EXPANDING DRIVER DETAILS	
		FRANKFORD ARSENAL AUG. 30, 1940	
SUBMITTER	CAPT. <i>[Signature]</i>	DRAFTSMAN M.J.G.	TRACER M.J.G.
CHECKER	ORD. DEPT., U. S. A.	CHECKER	CRT. DFT. SMAN
APPROVED		FBI7874	
		ORD. DEPT., U. S. A.	

STAMP:- FB17875



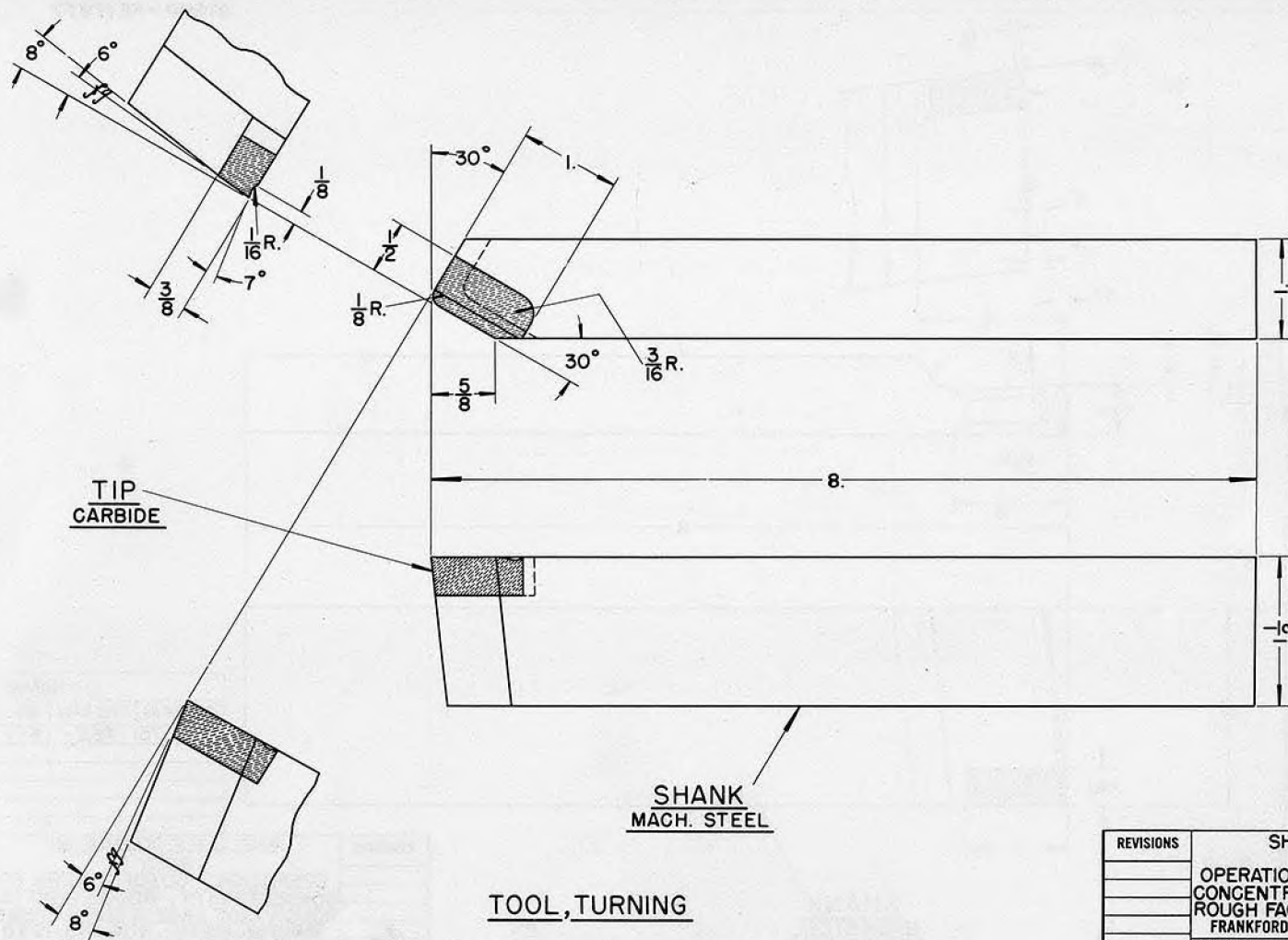
.875-9NF-2 THD.

PLUG, DRAW ROD
TOOL STEEL
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM, MI BODY EXPANDING DRIVER DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	INCHES
	CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.	CHK DR'SMAN
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	
APPROVED	ORD. DEPT., U. S. A.			FBI7875

STAMP :- FB 17876

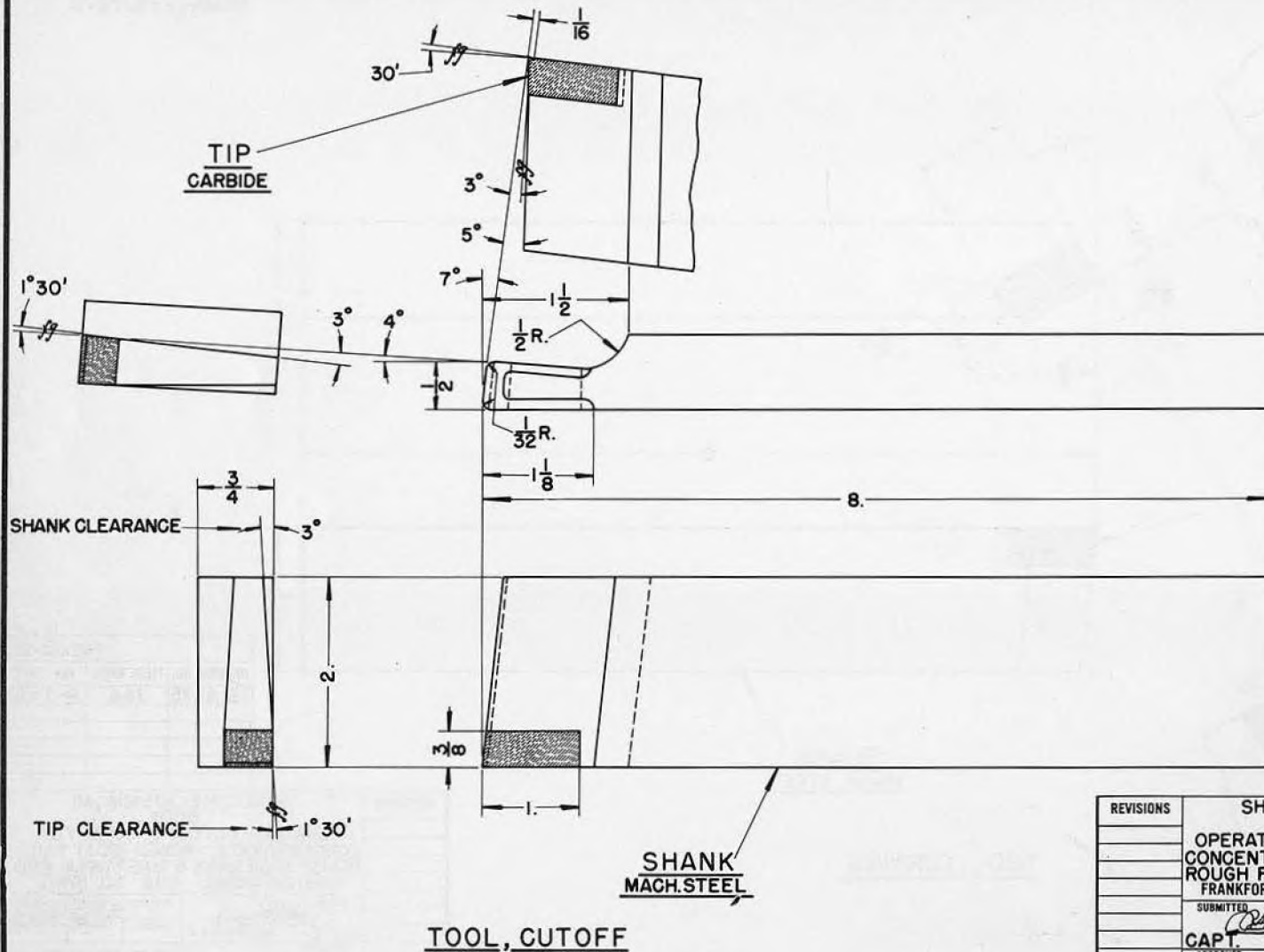


PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E. 105 MM., MI BODY			
	OPERATION:-CUTOFF, TURN FOR CONCENTRICITY, ROUGH BOAT TAIL, ROUGH FACE BASE & TAPER OPEN END FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	CHECKER	CHY OF SHAW
	CAPT. <i>[Signature]</i>	ORD. DEPT., U. S. A.	CHECKER	CHY OF SHAW
	APPROVED	ORD. DEPT., U. S. A.		

FB17876

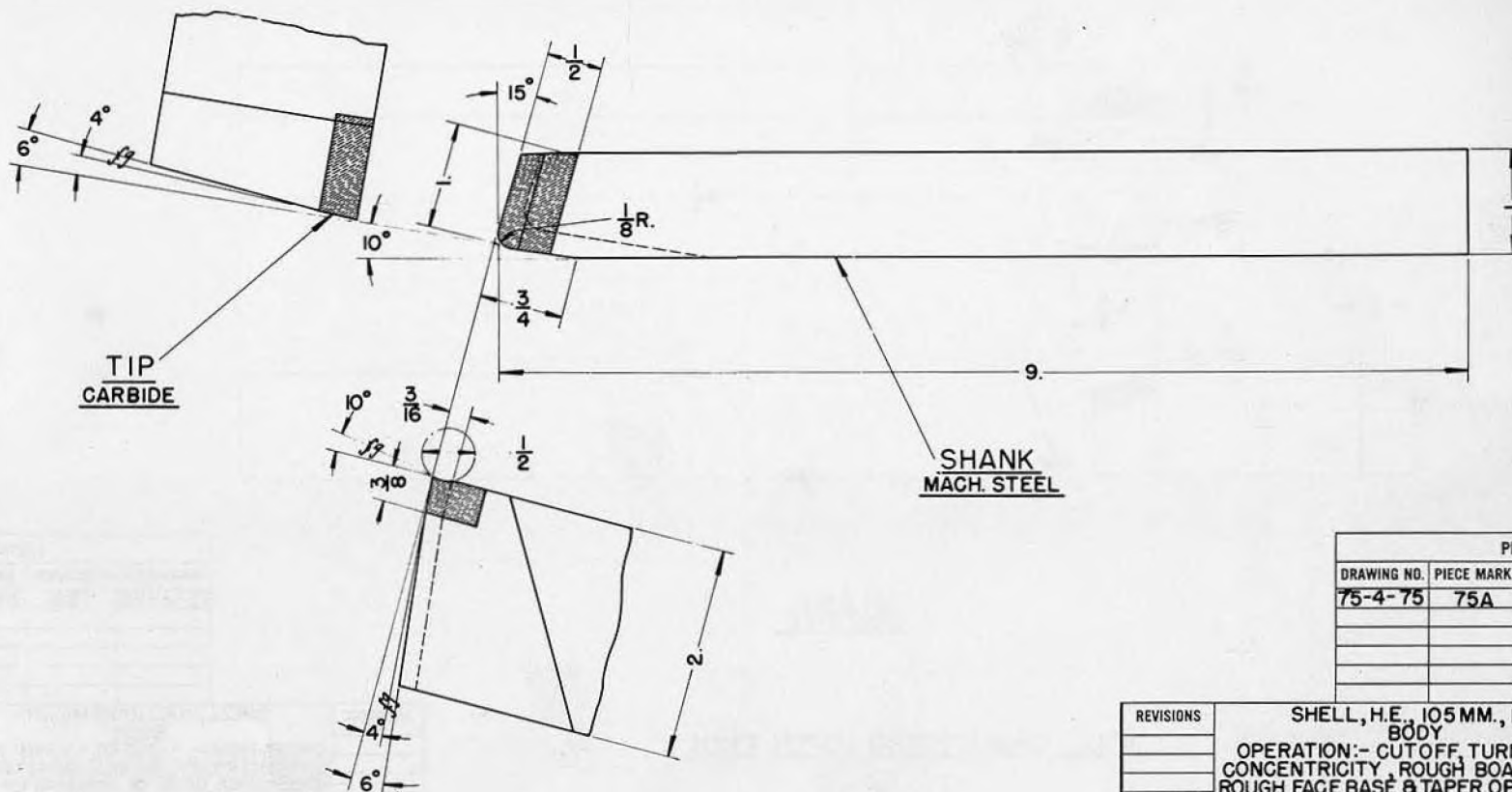
STAMP:- FB 17877



PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI BODY		
	OPERATION:- CUTOFF, TURN FOR CONCENTRICITY, ROUGH BOAT TAIL, ROUGH FACE BASE & TAPER OPEN END FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	PROJECT ENGINEER
	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
	CAPT. ORD. DEPT., U. S. A.	CHECKER	CHECKER
	APPROVED		CHT B. S. MAR
	ORD. DEPT., U. S. A.	FBI7877	

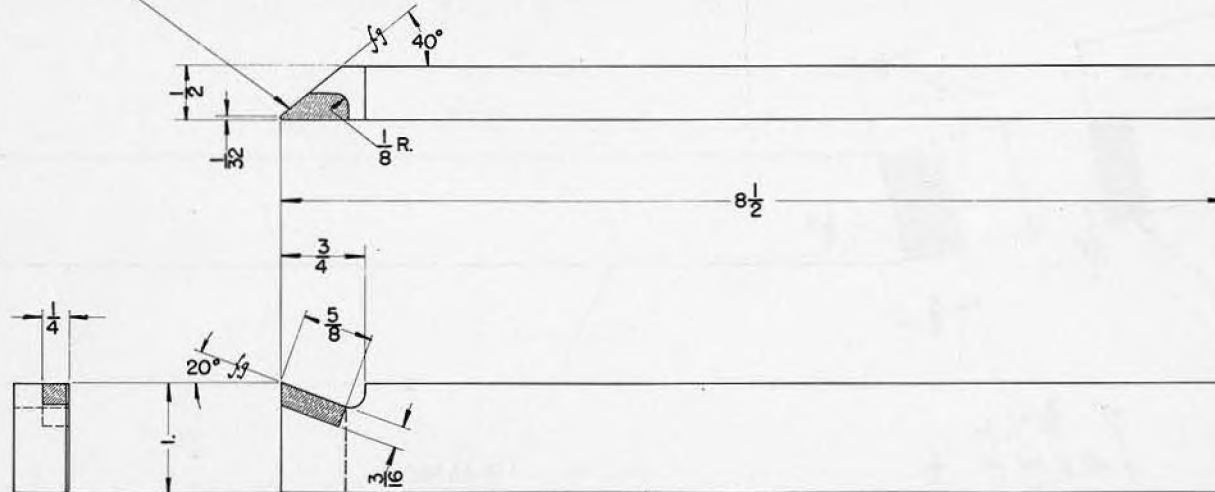
STAMP:- FB17878



PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., M1 BODY			
	OPERATION:- CUTOFF TURN FOR CONCENTRICITY, ROUGH BOAT TAIL, ROUGH FACE BASE & TAPER OPEN END			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TECHNICAL	INSTRUMENT
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CITY OF SMITH
APPROVED	ORD. DEPT., U. S. A.			FBI7878
ORD. DEPT., U. S. A.				

TIP
CARBIDE



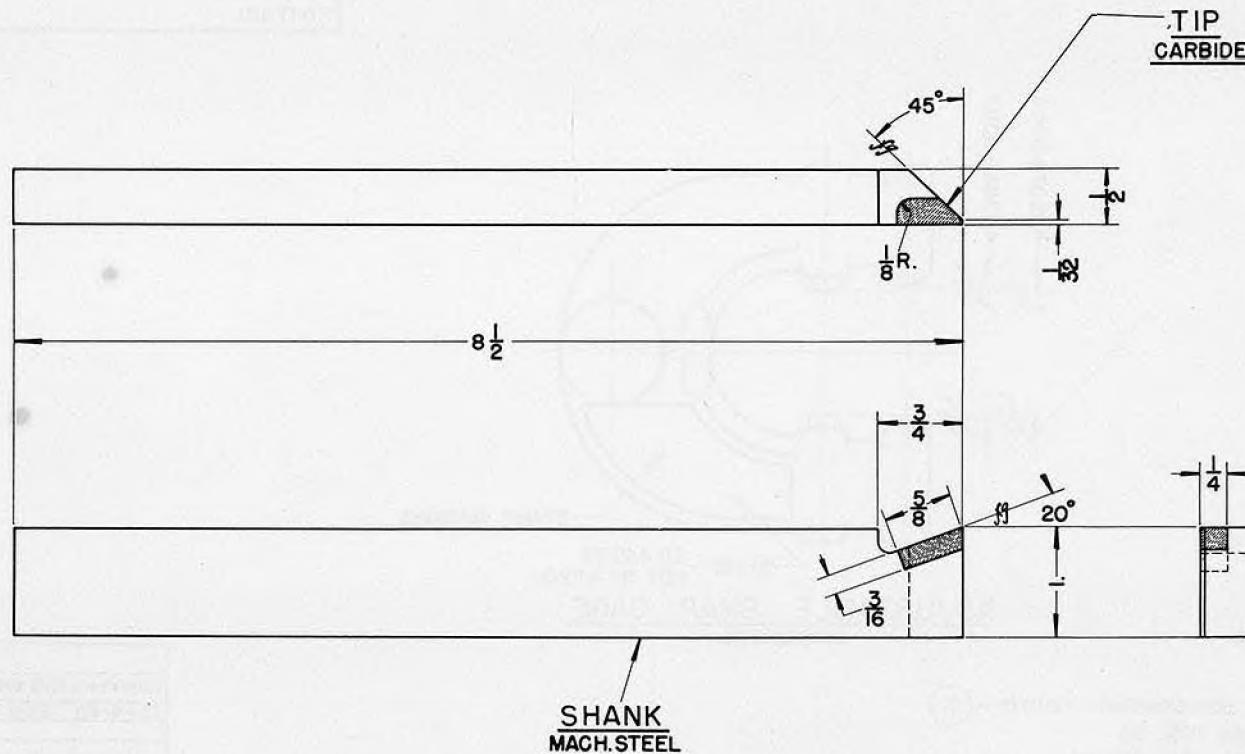
SHANK
MACH. STEEL

TOOL, CHAMFERING (OPEN END)

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVIEWS	SHELL, H.E., 105 MM., M1 BODY			
	OPERATION:- CUTOFF TURN FOR CONCENTRICITY ROUGH BOATTAIL ROUGH FACE BASE & TAPER OPEN END FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	WORK IN PROGRESS
	<i>[Signature]</i>		<i>[Signature]</i>	<i>[Signature]</i>
	CAPT.	ORD. DEPT. U. S. A.	CHECKER	CHECKER
	APPROVED			CH F FOR SMO
		ORD. DEPT., U. S. A.	FBI7879	

STAMP:-FB 17880

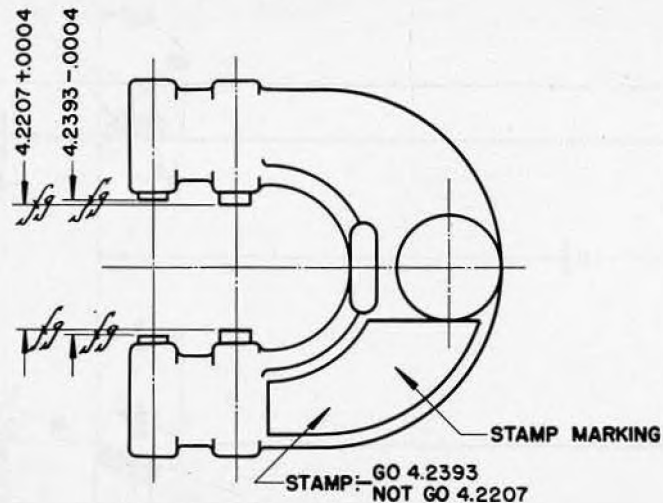


TOOL, CHAMFERING (BASE END)

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105MM., MI BODY	
		OPERATION:- CUT OFF, TURN FOR CONCENTRICITY, ROUGH BOAT TAIL, ROUGH FACE BASE & TAPER OPEN END	
		FRANKFORD ARSENAL AUG. 30, 1940	
SUBMITTED	DRAFTSMAN	CHECKER	CHECKER
CAPT. <i>[Signature]</i>	ORD. DEPT., U. S. A.	CHECKER	CHECKER
APPROVED		CHECKER	CHECKER
		FBI7880	
		ORD. DEPT., U. S. A.	

MARKING:-
105MM. H.E. SHELL MI, BODY
75-4-75, ROUGH DIA.
WORK
FB17881



ADJUSTABLE SNAP GAGE
COMMERCIAL

FOR CHECK GAGES SEE DRAWING FB11175- (7)

B = 4.2393 CHECK FOR GO
A = 4.2207 CHECK FOR NOT GO

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM, MI BODY GAGE FOR ROUGH DIA.		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TRACER
	CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.
	ORD. DEPT. U. S. A.	CHECKER	CHECKER
	APPROVED		CH'Z DA ZMAN
	ORD. DEPT., U. S. A.	FB17881	

STAMP:- MAX. 15.33

MAX. = 15.330 - .001
MIN. = 15.300 + .001

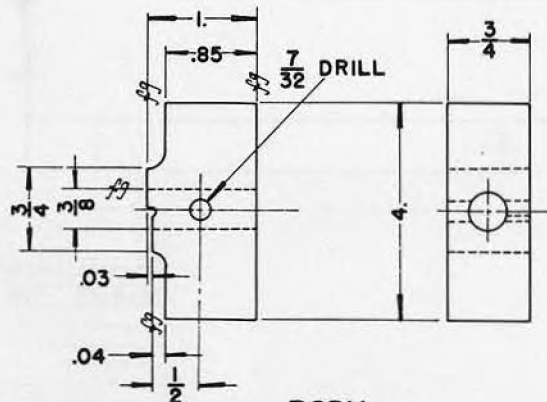
MARKING:-
105MM. H.E. SHELL, MI
75-4-75 -DEPTH OF CAVITY(ROUGH)
WORK
FB17882

STAMP:- MIN. 15.30

STAMP MARKING

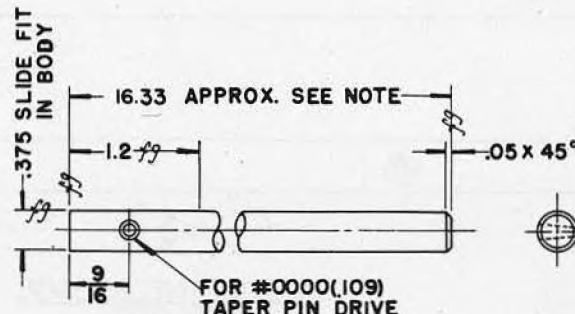
FLUSH PIN GAGE ASSEMBLY

NOTE:-
PIN TO BE FLUSH WITH STEPS
FOR MAX. & MIN. POSITIONS.



BODY
TOOL STEEL
HARDEN

1-SCREW, HDLESS., .190-32NF-4 X.25 LONG



PIN
TOOL STEEL
HARDEN

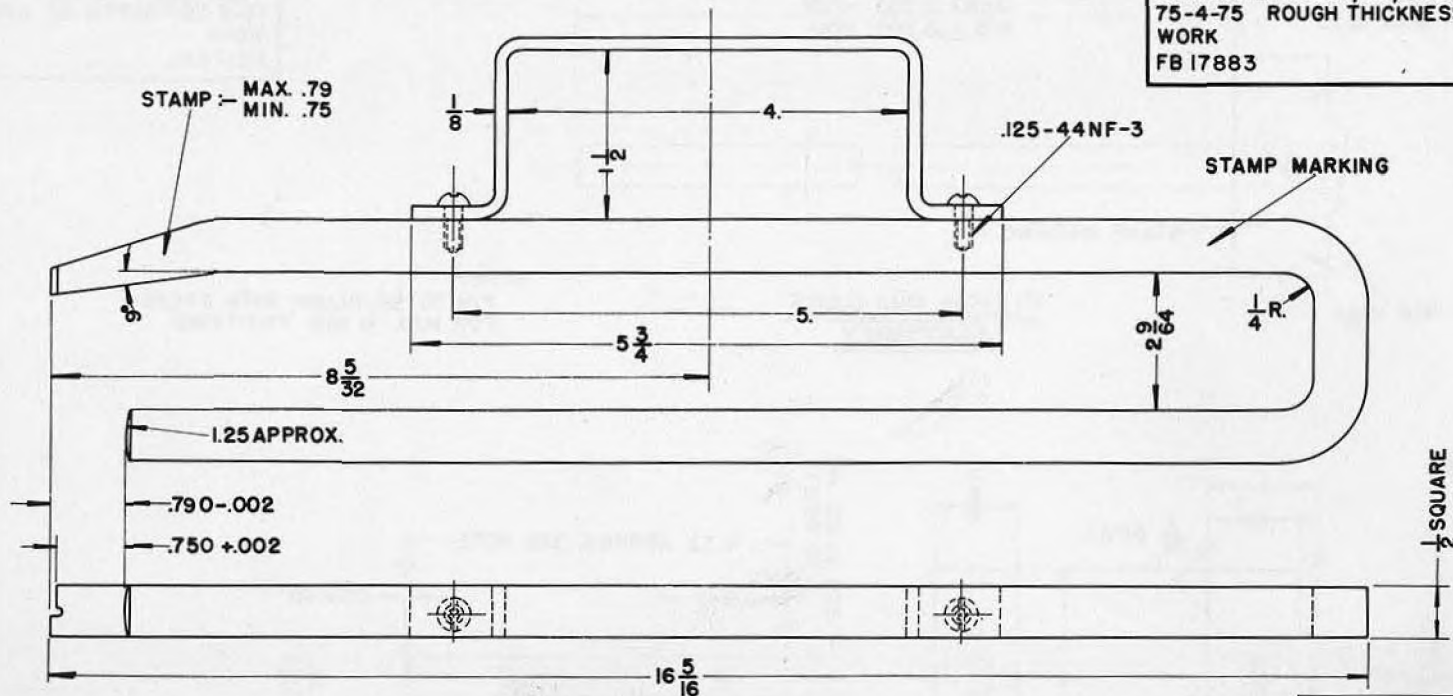
LAP $\sqrt{2}$ SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105MM., MI BODY GAGE FOR ROUGH DEPTH OF CAVITY		
		FRANKFORD ARSENAL AUG. 30, 1940		
		SUBMITTED	DRAFTSMAN	TRACER
		CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.
		APPROVED	CHECKER	CHECKER
		ORD. DEPT., U. S. A.	CNT'DR. S.M.A.	
		ORD. DEPT., U. S. A.		

FB17882

MARKING:-
105MM. H.E. SHELL, MI, BODY
75-4-75 ROUGH THICKNESS BASE
WORK
FB 17883



GOOSE NECK GAGE
MACH. STEEL
PK. HARDEN

HANDLE
MACH. STEEL OR BLACK IRON
2-SCREWS, RD. HD., .125-44NF-3 X.375 LONG

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM, MI
BODY
GAGE FOR ROUGH THICKNESS BASE
FRANKFORD ARSENAL AUG. 30, 1940

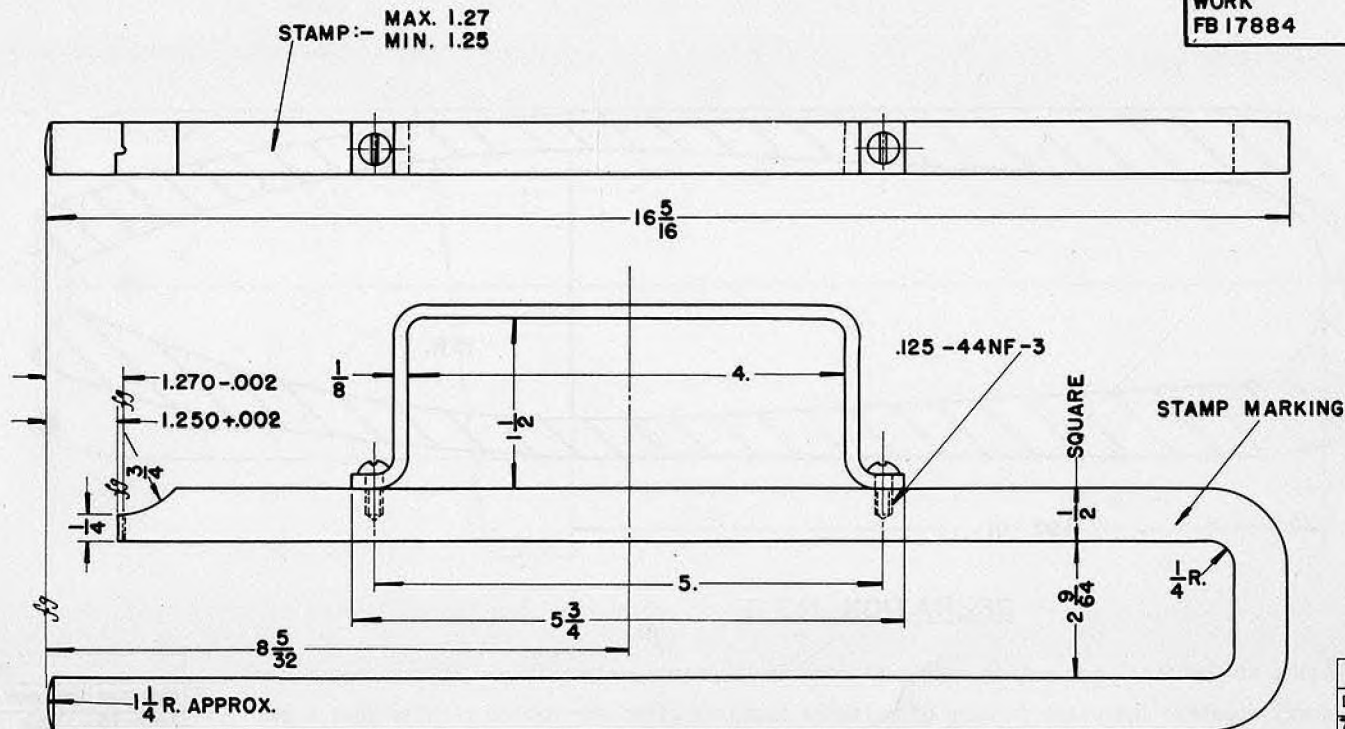
SUBMITTER *[Signature]* DRAFTSMAN H.J.G. TO-ER H.J.G. HODGSON
CAPT. ORG. DEPT., U. S. A. CHECKER CHECKER CHY OR SALS

APPROVED

ORD. DEPT., U. S. A.

FB17883

MARKING
105MM.H.E.SHELL, M1, BODY
75-4-75 - POSITION BOATTAIL(ROUGH)
WORK
FB 17884



GOOSE NECK GAGE

MACH. STEEL
PK.HARDEN

HANDLE

MACH. STEEL OR BLACK IRON

2- SCREWS, RD. HD., .125-44NF-3X .375 LONG

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM., M1
BODY

GAGE FOR POSITION BOATTAIL
(ROUGH)

FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED

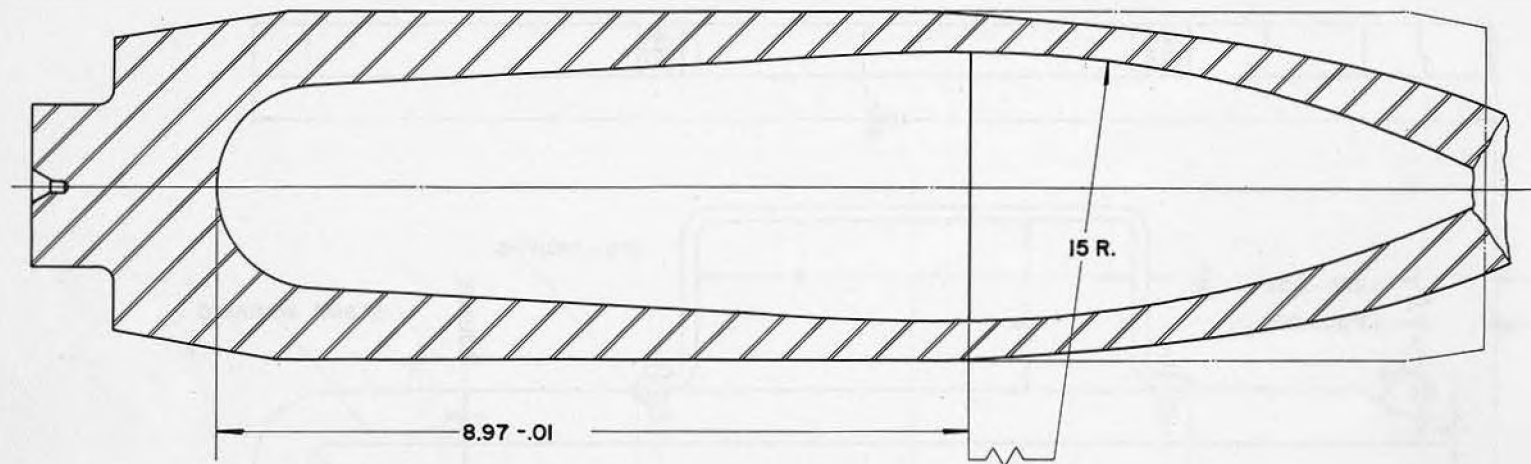
CAPT. *[Signature]*
ORD. DEPT., U. S. A.

APPROVED

DRAFTSMAN	TRACER	W.D. PR. MAN
H.J.G.	H.J.G.	<i>[Signature]</i>
CHECKER	CHECKER	CHT DR. MAN

ORD. DEPT., U. S. A.

FB17884



OPERATION NO. 3

The heating of the shell for nosing should be done as uniformly as possible. It has been found that a high frequency electric induction furnace of suitable capacity gives far better results than a gas or oil fired heating furnace. The temperature for nosing should be approximately 1900°F. The heating cycle and consequently the temperature is controlled by the use of a timing device and voltage regulation. The proper furnace time and the voltage on the furnace are determined experimentally on the first few shell. The timing device uses a light and bell signal. It has been found that furnaces utilizing two heating coils are preferable.

The shell are heated for a distance of 8 inches from the open end. After heating,

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS			
SHELL, H.E., 105MM., M1 BODY OPERATION: NOSE FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	DRAFTSMAN	TRACER	INSP. BY
<i>[Signature]</i>	CKS	CKS	CKS
CAPT. ORD. DEPT., U. S. A.	CHECKER	CHECKER	CH. FOR. MAN.
APPROVED			
ORD. DEPT., U. S. A.	FBI7885		

OPERATION NO. 3 CONT'D.

the shell are placed in the press where the nose is formed by a single stroke.

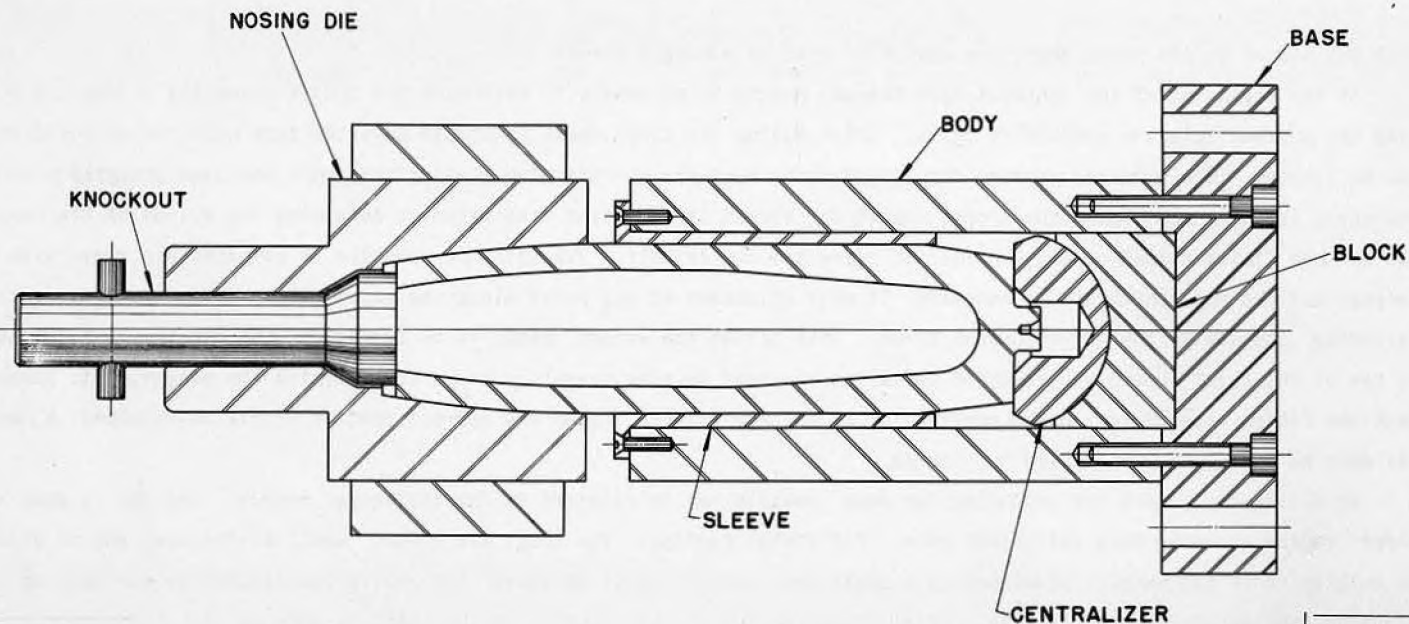
At the beginning of the contract experimental nosing is necessary to determine the radius necessary in the die for producing the correct interior profile of ogive. After nosing the first shell it should have the fuze hole finish bored and be faced to length. (The straight surface for threading is measured to determine whether the shell has been properly nosed. When the shell is nosed in to give the proper length for thread, it is filled with water to determine the volume of the cavity.) It is then finish turned on the exterior of ogive and cut in half. The interior profile is examined and gaged with a profile gage and the wall thickness is measured. If wall thickness at any point along the ogive is too great, it is corrected by grinding the die at the corresponding point. This allows the excess metal to be turned off the outside. As a final check a few of the shell should be processed as far as the band seating operation so as to determine the weight. This operation with the finish base facing is the controlling factor for weight. After the correct profile of die is obtained, a template is made so the die may be easily duplicated.

An alternate method for producing the same results can be obtained in the following manner: the die is made to the proper radius allowing only sufficient metal for finish turning. The shell are turned small at the open end to allow for the thickening of the metal. After nosing a shell and inspecting it as above, the correction is made on the next shell before nosing instead of grinding the die. After obtaining the correct contour of the shell to produce the desired results, a cam is made for use in turning the shell to form. A gage is made for inspection of the profile after turning.

DRAWING NO.	PIECE MA
75-4-75	75A

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., M1			
	BODY			
	OPERATION:- NOSE			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	L.O'S DR'SM.
	<i>[Signature]</i> CAPT. ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHK' DR'SMA
	APPROVED	FBI7885A		
	ORD. DEPT., U. S. A.			

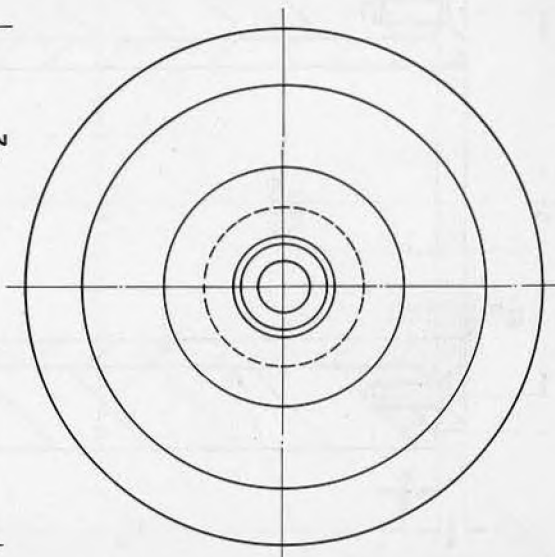
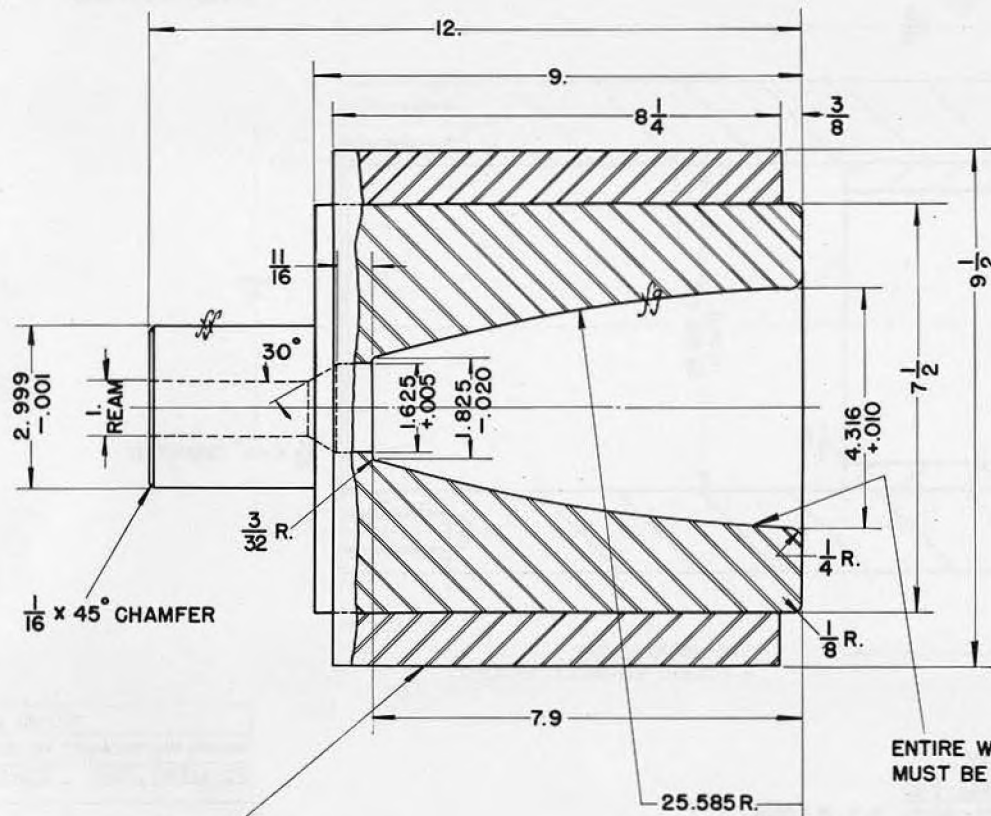


PUNCH & DIE ASSEMBLY

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., M I		
	BODY		
	OPERATION:-NOSING		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED BY <i>[Signature]</i> CAPT. ORD. DEPT., U. S. A.		
APPROVED	CHECKER	CHECKER	CITY OR SMAN
ORD. DEPT., U. S. A.			FBI7886

STAMP:-FB 17887



ENTIRE WORKING SURFACE
MUST BE GLASS HARD

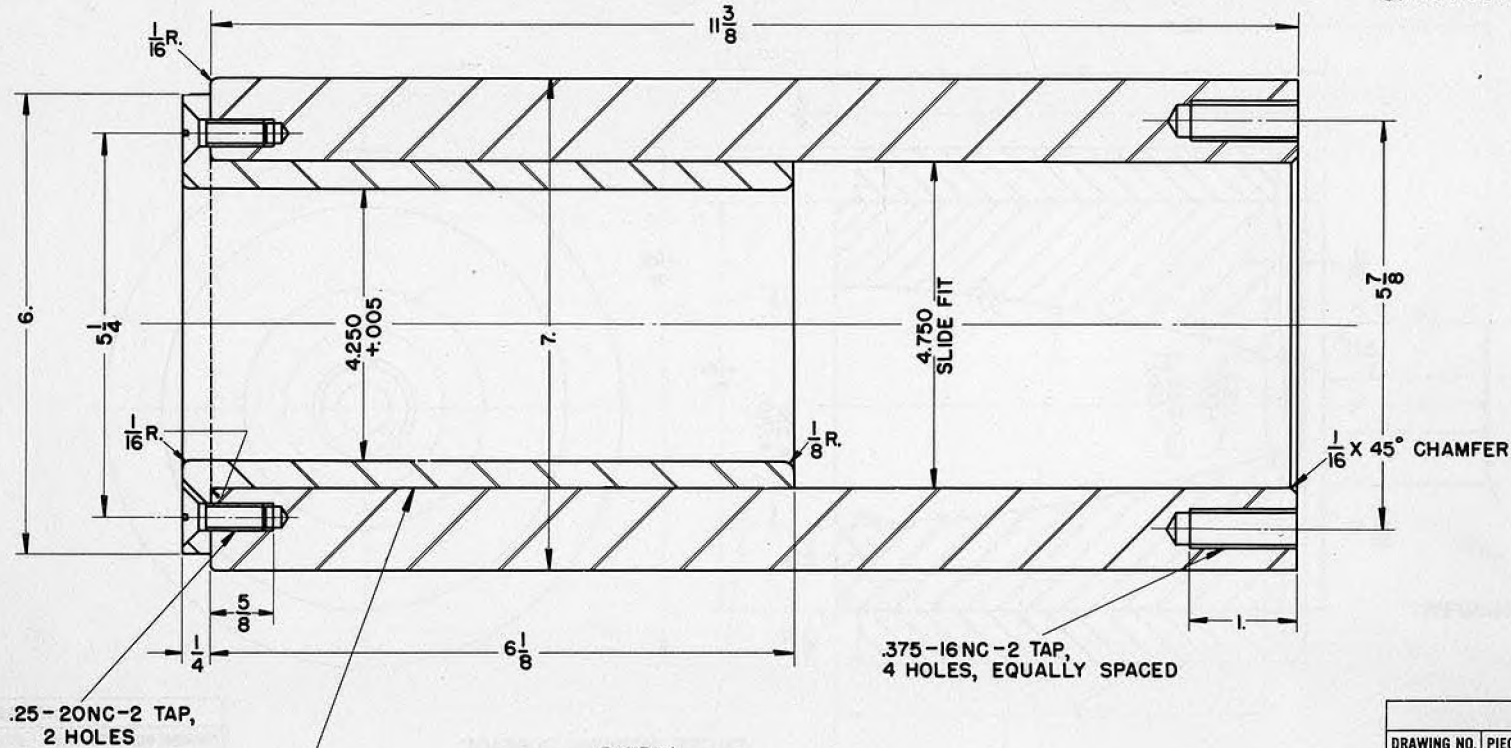
BAND
STEEL-SAE-3140
SHRINK TO DIE

DIE
STEEL-#57 HOT WORK

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI			
	BODY			
	OPERATION:- NOSE			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	L.T.'G DR'SMAN
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHEF DR'SMAN	
APPROVED	ORD. DEPT., U. S. A.			FBI7887

STAMP:-FB17888



BODY
 STEEL-SAE-1010
 2-SCREWS, FLAT HD., .25-20 NC-2 X .5 LONG

SLEEVE
 STEEL-SAE-1095
 HARDEN

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105 MM., M1
 BODY
 OPERATION:-NOSE

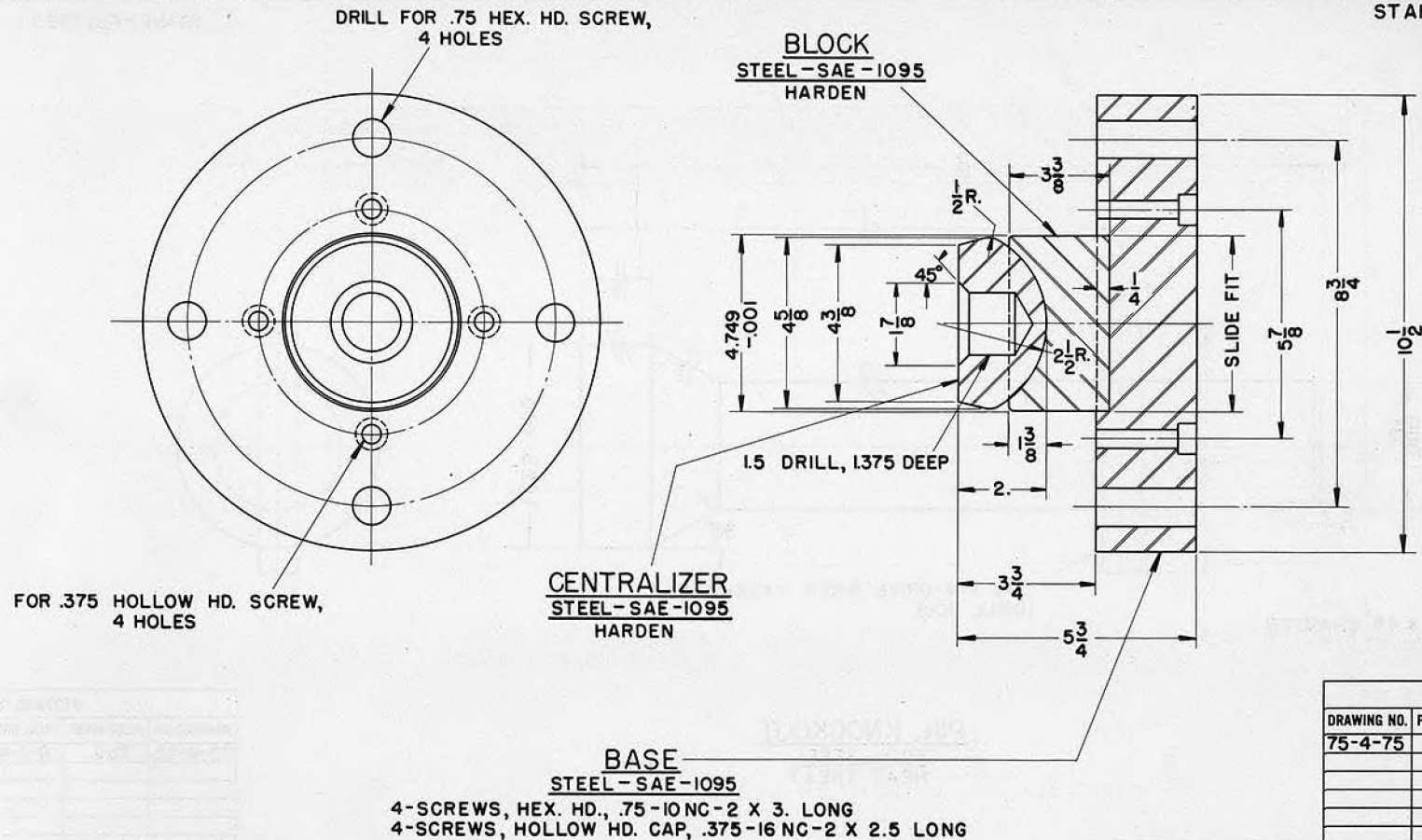
FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED *[Signature]* DRAFTSMAN *[Signature]* TRACER *[Signature]* L'D'DR'SMAN
 CAPT. *[Signature]* CHECKER *[Signature]* CHECKER *[Signature]* CHT DR'SMAN
 APPROVED

ORD. DEPT., U. S. A.

FB17888

STAMP-FB17889



PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75 A	8-1-40

REVISIONS

SHELL, H.E., 105 MM., M1
BODY
OPERATION:-NOSE

FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED	DRAWINGSMAN	TRACER	L'D'D DR'SMAN
CAPT.	CHECKER	CHECKER	CHY DR'SMAN

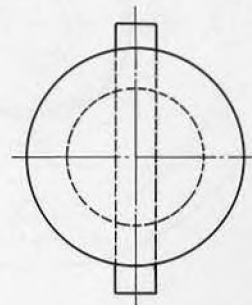
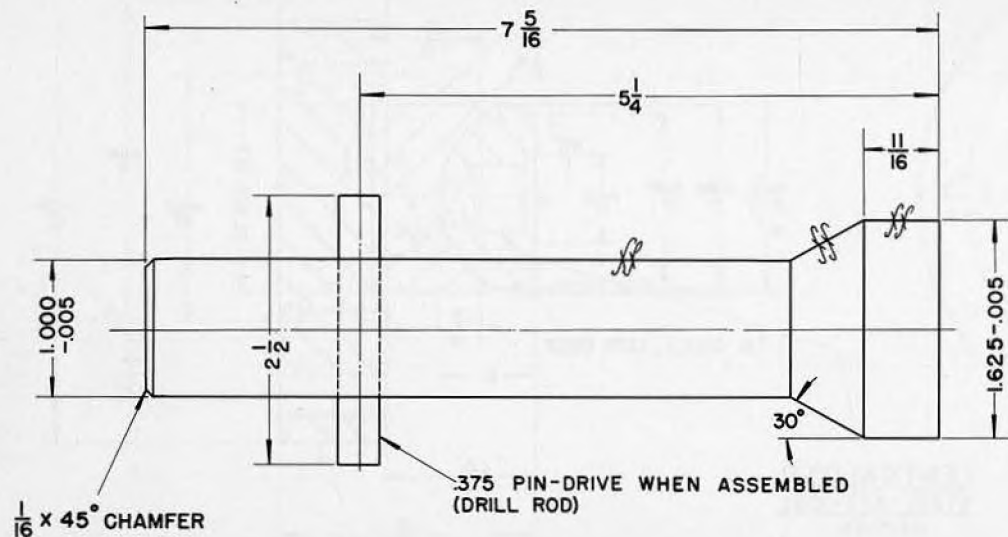
ORD. DEPT. U. S. A.

APPROVED

ORD. DEPT., U. S. A.

FB17889

STAMP:-FB 17890

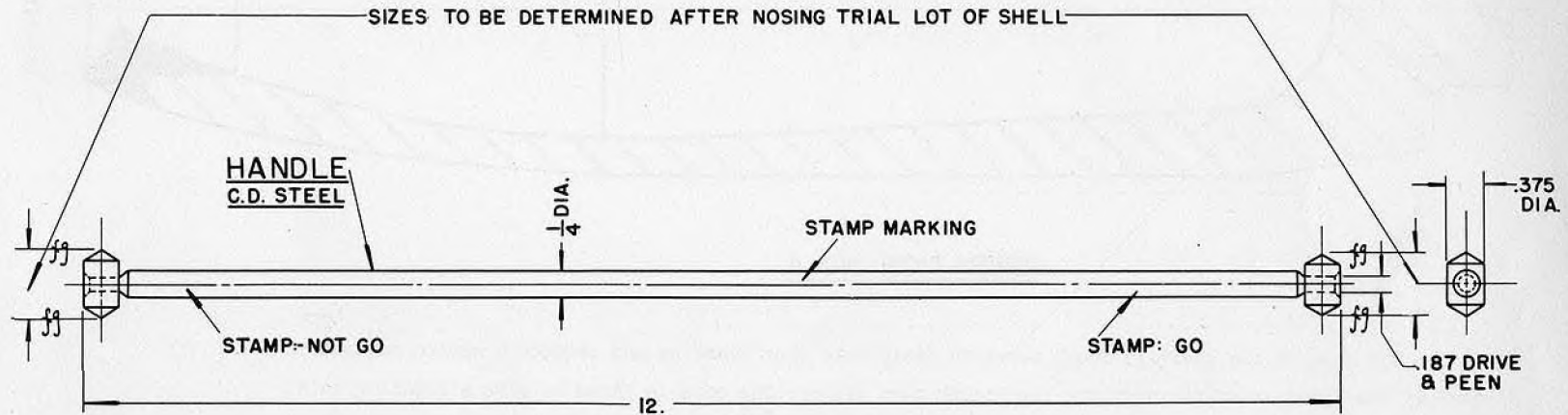


PIN, KNOCKOUT
TOOL STEEL
HEAT TREAT

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105 MM., M1 BODY	
		OPERATION:-NOSE	
		FRANKFORD ARSENAL AUG. 30, 1940	
SUBMITTED	<i>[Signature]</i>	DRAFTSMAN	TRACER
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER
APPROVED		CHEF ORSMAN	
		FBI7890	
		ORD. DEPT., U. S. A.	

MARKING:-
105MM. H.E. SHELL, MI, BODY
75-4-75-INSIDE DIA. NOSE
WORK
FB 17891

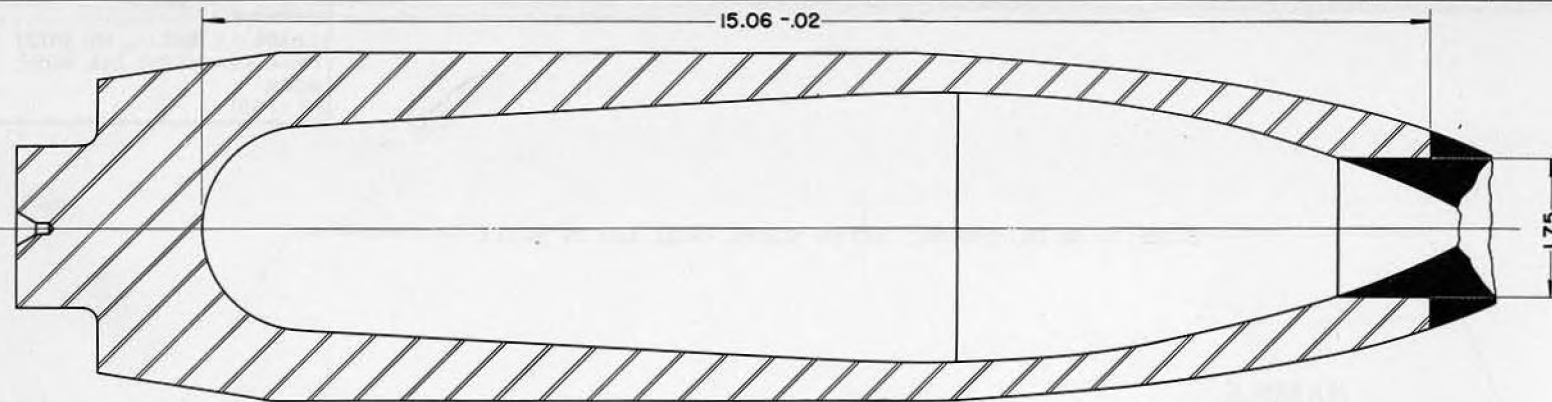


PIN GAGE
TOOL STEEL
HARDEN

NOTE:-
LONG HANDLE FOR USE
IN HOT SHELL

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY GAGE FOR INSIDE DIA. NOSE			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	LONG NOSEMAN
	CAPT. <i>[Signature]</i>	H.J.G.		
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHY DR'SMAN
	APPROVED			
	ORD. DEPT., U. S. A.	FBI7891		



OPERATION NO. 4

The nose of the shell is rough bored to facilitate shot blasting and produce a smooth concentric surface on the interior of the nose for the finish turn driver. The nose is faced to give a locating point for finish turn.

OPERATION NO. 5

All shell have the interior shot blasted to remove the scale caused by heating in the nosing operation.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY		
	OPERATION: ROUGH BORE & ROUGH FACE OPEN END		
	FRANKFORD ARSENAL AUG. 30, 1940		
SUBMITTED	DRAFTSMAN	CHECKER	IN CHARGE
	<i>Capt. S. J. Singler</i>	CKS	CKS
	CAPT. ORD. DEPT., U. S. A.	CHECKER	CHECKER
APPROVED			
	ORD. DEPT., U. S. A.		
	FBI7892		

STAMP:- MAX. 15.06

MAX. 15.060 -0.001
MIN. 15.040 +0.001

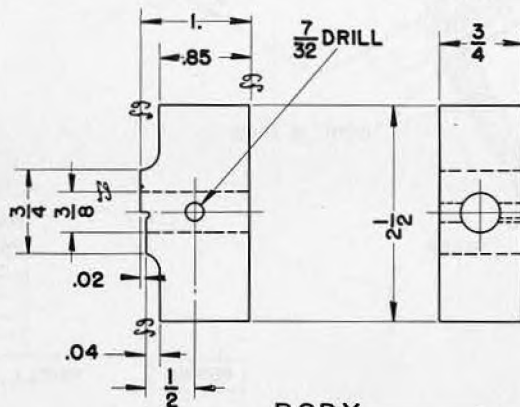
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STAMP:- MIN. 15.04

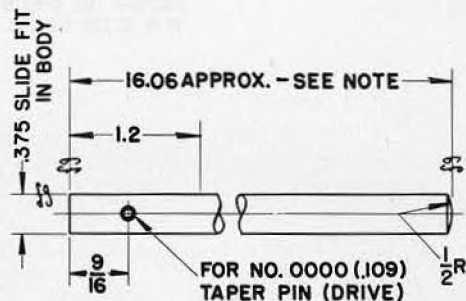
FLUSH PIN GAGE ASSEMBLY

NOTE:-
PIN TO BE FLUSH WITH STEPS
FOR MAX. & MIN. POSITIONS

MARKING:-
105 MM. H.E. SHELL, MI
75-4-75 - DEPTH OF CAVITY-ROUGH
BORE & FACE OPEN END
WORK
FB 17894



BODY
TOOL STEEL
HARDEN
PIN, STEEL TAPER NO. 0000 (.109) X .5 LONG

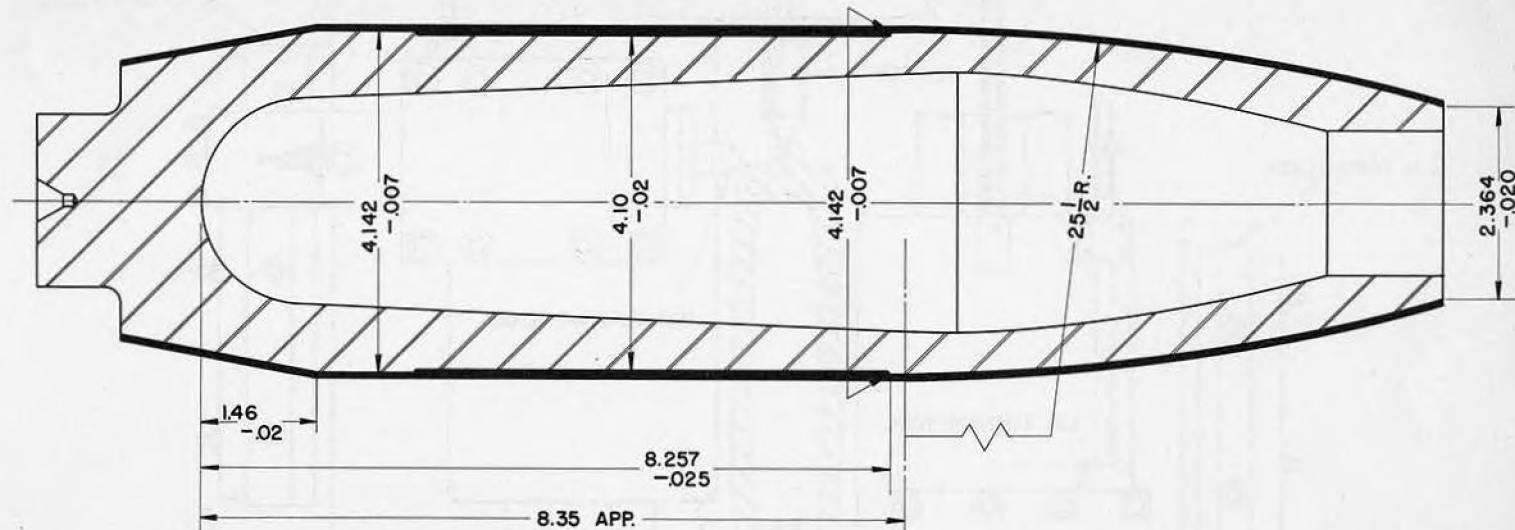


PIN
TOOL STEEL
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105 MM., MI BODY GAGE FOR ROUGH DEPTH OF CAVITY	
FRANKFORD ARSENAL		AUG. 30, 1940	
SUBMITTED	CAPT. <i>[Signature]</i>	DRAFTSMAN	TRADER <i>[Signature]</i>
CHECKER	ORD. DEPT., U. S. A.	CHECKER	CNY OR MAN
APPROVED		FB17894	
ORD. DEPT., U. S. A.			

LAP $\frac{1}{8}$ SURFACES
REMOVE ALL SHARP EDGES



OPERATION NO. 6

This operation is performed on a vertical production lathe with two tool carriages, feeding from opposite ends of the shell. Their cuts overlap directly in back of the bourrelet. The shell is chucked on the straight interior surface of the nose.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H. E., 105 MM., M1			
	BODY			
	OPERATION: - FINISH TURN			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED <i>Chambers</i>			
CHECKER	DRAFTSMAN RJ	TRACER RJ	INSP. BY MKS	ORD. DEPT., U. S. A.
APPROVED	FBI7895			
ORD. DEPT., U. S. A.				

L.H. FORM PLATE

CENTER

R.H. FORM PLATE

R.H. TURNING TOOL

L.H. TURNING TOOL

EXPANDING DRIVER

SETUP SKETCH

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM, MI
BODY
OPERATION:-FINISH TURN

FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED	DRAFTSMAN	TRACER	UNIT IN CHARGE
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
CAPT	CHECKER	CHECKER	CHY DR. S.A.
APPROVED			

ORD. DEPT., U. S. A.

FBI7896

AT ASSEMBLY SET EXPANDER
IN POSITION SHOWN

JAW

CAP

BODY

KEY

EXPANDER

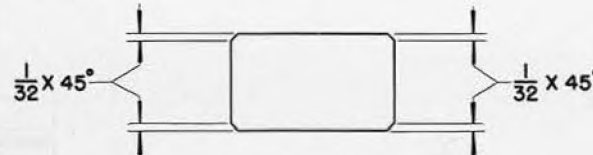
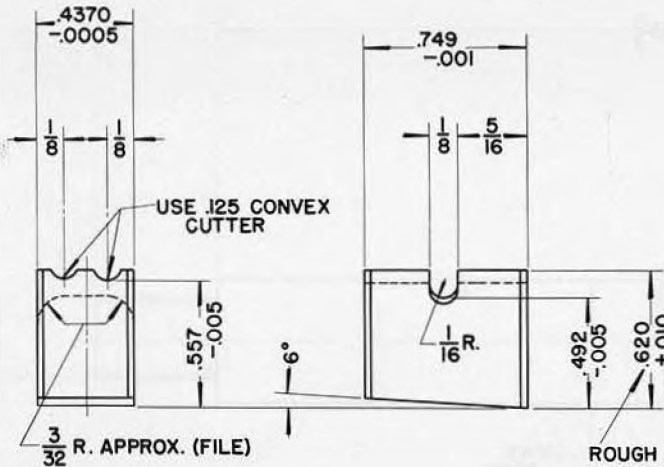
DRAW BAR

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1			
	BODY			
	FINISH TURN DRIVER			
	ASSEMBLY			
	FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	CAPT. <i>[Signature]</i>		DRAFTSMAN	TRACER
APPROVED	ORD. DEPT. U. S. A.		CHECKER	CHECKER
ORD. DEPT., U. S. A.		FBI7897		

FOR EXCELLO MACHINE

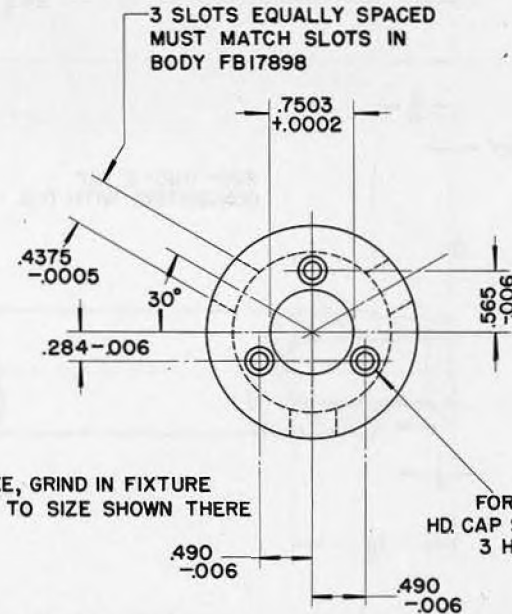
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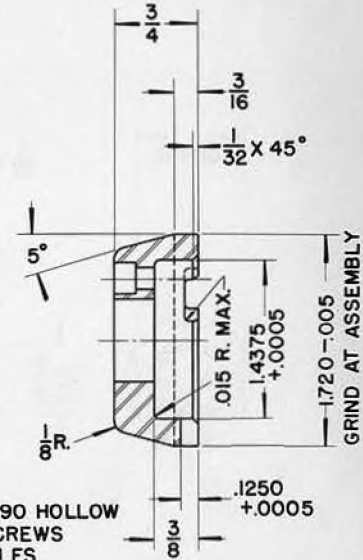
JAW
TOOL STEEL
HARDEN
ROCKWELL "C" 50-55

SPRING, TENSION, .0126 (*28 B. & S. GAGE) MUSIC WIRE,
4.75 LONG, .093 O.D., HOOK ENDS

FOR USE ON EXCELLO MACHINE



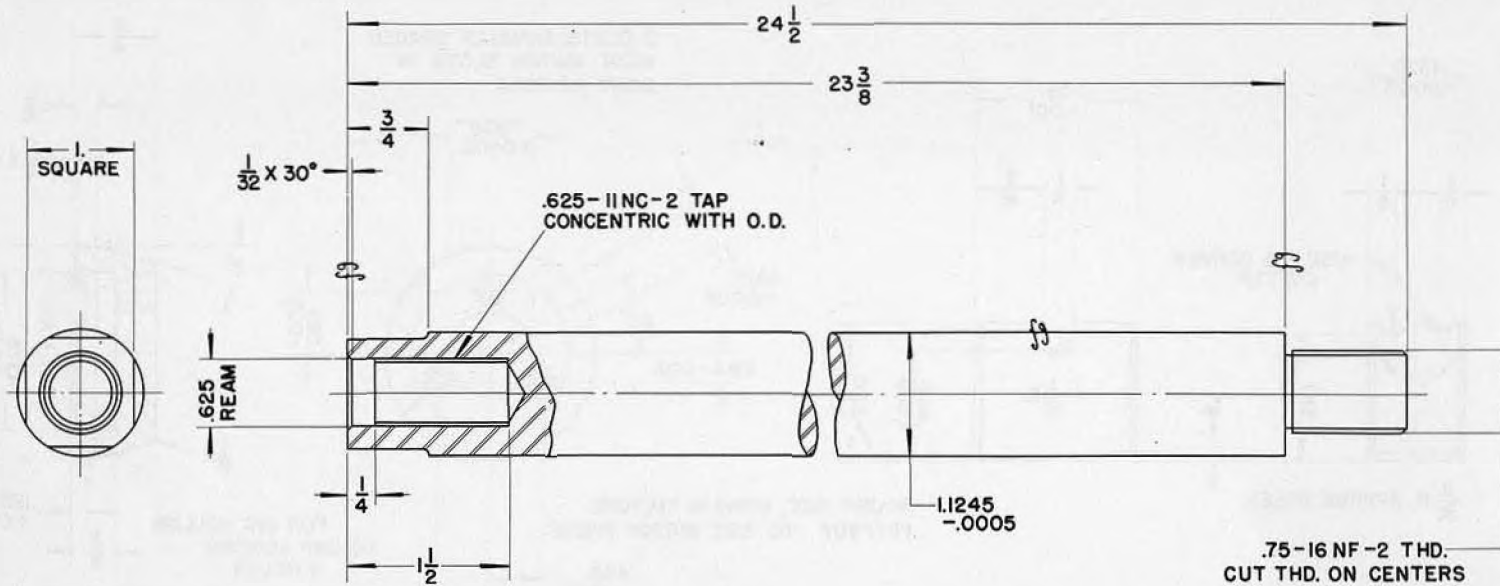
CAP
CHROME NICKEL STEEL, 5-317
HEAT TREAT
ROCKWELL "C" 50-55



REVISIONS		SHELL, H.E., 105 MM, M1 BODY FINISH TURN DRIVER DETAILS	
		FRANKFORD ARSENAL AUG. 30, 1940	
SUBMITTED	DRAFTSMAN	TRACER	CHECKER
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER
APPROVED			
		ORD. DEPT., U. S. A.	

FB17899

STAMP:- FB 17900



BAR, DRAW
STEEL - SAE - 1010
PACK HARDEN

PERTAINS TO

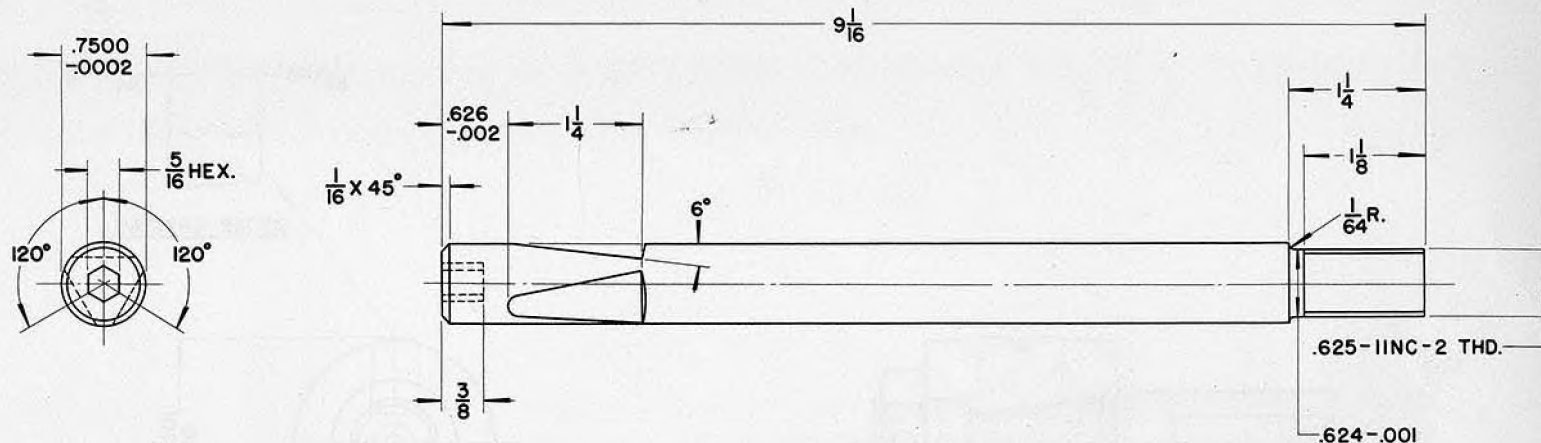
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI BODY FINISH TURN DRIVER DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	CAPT. <i>[Signature]</i>	DRAFTSMAN	TRACER	CH. OF WORK
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CH. OF WORK
APPROVED				
	ORD. DEPT., U. S. A.			

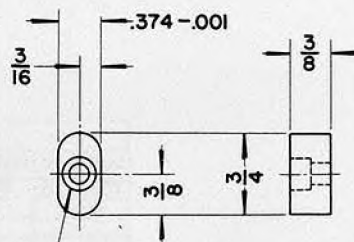
FOR EXCELLO MACHINE

FB17900

STAMP:- FB 17901



EXPANDER
TOOL STEEL
HARDEN
ROCKWELL "C" 60-62



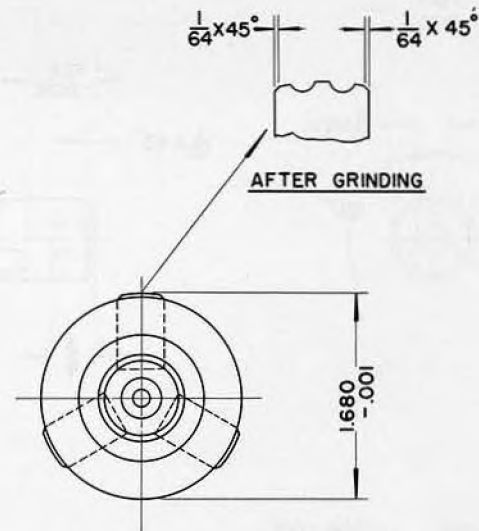
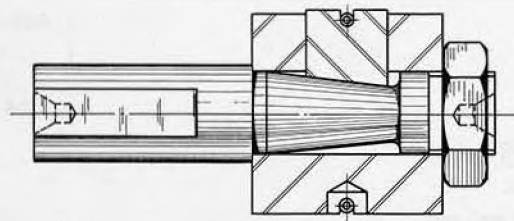
DRILL & C' BORE FOR
 .190 HOLLOW HD. CAP SCREW

KEY
TOOL STEEL
HARDEN

FOR EXCELLO MACHINE

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY FINISH TURN DRIVER DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTER	DRAFTSMAN	TRACER	INSP. MAN
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CH. MAN
	APPROVED			
	ORD. DEPT., U. S. A.			
	FBI7901			



AFTER GRINDING

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105 MM., M1
BODY
DRIVER INSERTS GRINDING FIXTURE
ASSEMBLY

FRANKFORD ARSENAL AUG. 30, 1940

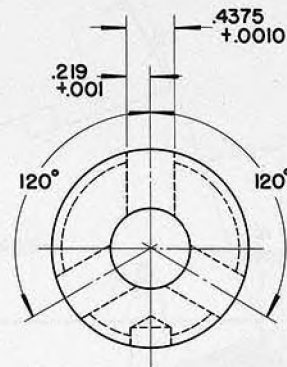
SUBMITTED *[Signature]* DRAFTSMAN TRACER *[Signature]*
CAPT. *[Signature]* ORD. DEPT., U. S. A. CHECKER CHECKER CNY OR SMAN

APPROVED

ORD. DEPT., U. S. A.

FBI7902

FOR USE IN GRINDING ROOM ONLY



SPRING, TENSION, .015 MUSIC WIRE
.093 O.D., 4.375 LONG, CLOSE WOUND, HOOK ENDS



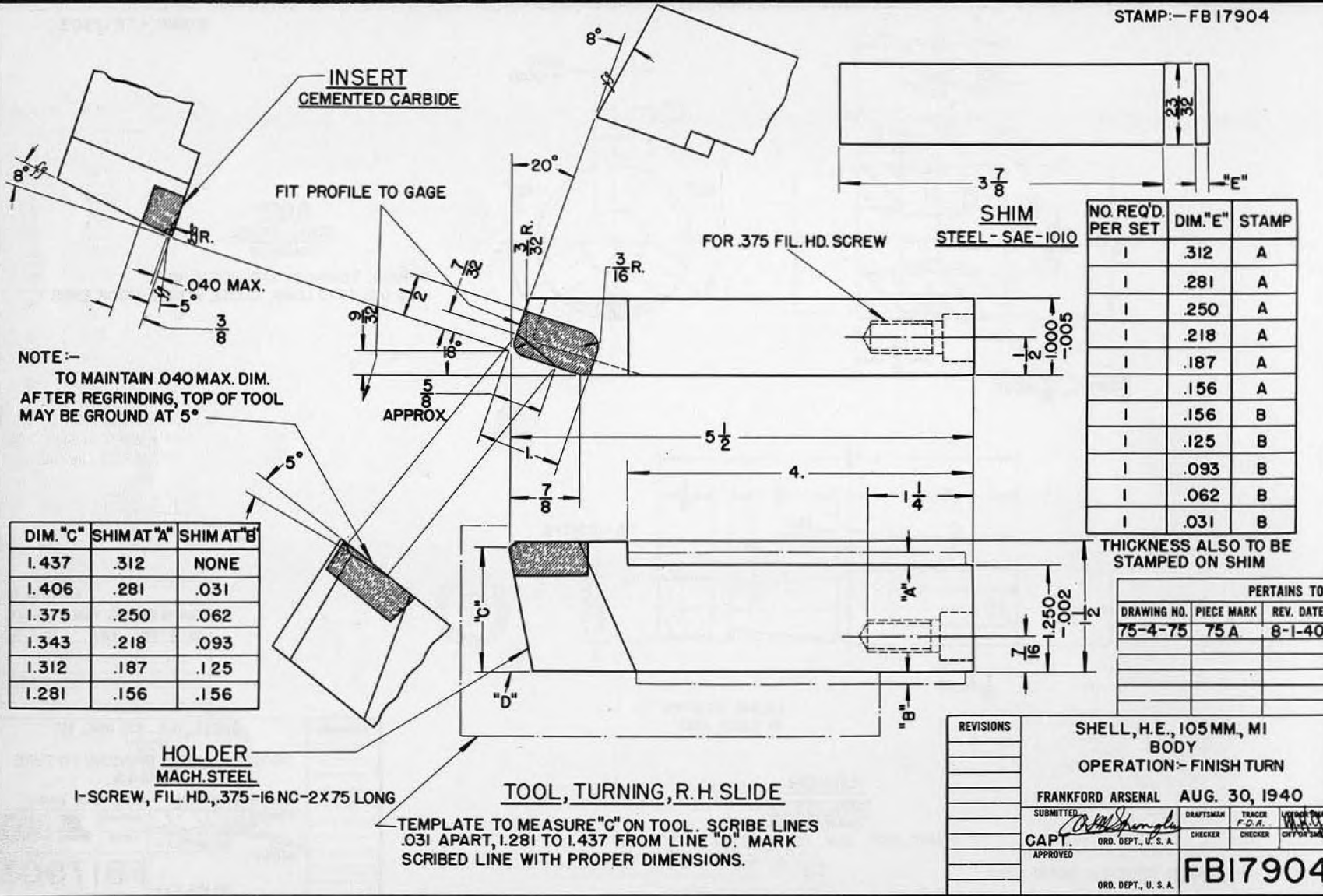
1-NUT, HEX. JAM, .75-10 NC-2 X .437 THICK

FOR USE IN GRINDING ROOM ONLY

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI BODY DRIVER INSERTS GRINDING FIXTURE DETAILS			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTER <i>Wm. J. Hughes</i>	DRAFTSMAN	TRACER	IN CHARGE
	CAPT. ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHT OR SMAN
	APPROVED	FBI7903		
	ORD. DEPT., U. S. A.			

STAMP:-FB 17904



INSERT
CEMENTED CARBIDE

NOTE:-
TO MAINTAIN .040 MAX. DIM.
AFTER REGRINDING, TOP OF TOOL
MAY BE GROUND AT 5°

8°

5°

20°

7/8

3/16 R.

3/32 R.

18°

2/8

5

281

5 1/2

4

1 1/4

FOR .375 FIL.
HD. SCREW

1/2

1.000
-.005

SHIM
STEEL-SAE-1010

3 7/8

968

"E"

5/8 APPROX.

8°

5°

.040 MAX.

3/8

1/4 R.

FIT TO PROFILE GAGE

"C"

"D"

7/16

1.250
-.002

1/2

"A"

"B"

TEMPLATE TO MEASURE "C" ON TOOL. SCRIBE
LINES, .031 APART, 1.281 TO 1.437 FROM LINE "D".
MARK SCRIBED LINES WITH PROPER DIMENSIONS.

TOOL, TURNING, L.H. SLIDE

DIM. "C"	SHIM AT "A"	SHIM AT "B"
1.437	.312	NONE
1.406	.281	.031
1.375	.250	.062
1.343	.218	.093
1.312	.187	.125
1.281	.156	.156

NO. REQD. PER SET	DIM. "E"	STAMP
1	.312	A
1	.281	A
1	.250	A
1	.218	A
1	.187	A
1	.156	A
1	.156	B
1	.125	B
1	.093	B
1	.062	B
1	.031	B

THICKNESS ALSO TO BE
STAMPED ON SHIM.

HOLDER
MACH. STEEL
I-SCREW, FIL. HD., .375-16NC-2X.75LG

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS			

SHELL, H.E., 105 MM., M I
BODY
OPERATION:- FINISH TURN
FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED
CAPT. *[Signature]*
APPROVED

DRAFTSMAN
TRACER
CHECKER
CHK'D BY

ORD. DEPT., U. S. A.

FBI7905

DIM. "C"	SHIM AT "A"	SHIM AT "B"
1.437	.312	NONE
1.406	.281	.031
1.375	.250	.062
1.343	.218	.093
1.312	.187	.125
1.281	.156	.156

NO. REQ'D. PER SET	DIM."E"	STAMP
1	.312	A
1	.281	A
1	.250	A
1	.218	A
1	.187	A
1	.156	A
1	.156	B
1	.125	B
1	.093	B
1	.062	B
1	.031	B

THICKNESS ALSO TO BE
STAMPED ON SHIM.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105 MM., MI
BODY

OPERATION:- FINISH TURN

FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED *[Signature]*
CAPT. ORD. SEPT., U. S. A.

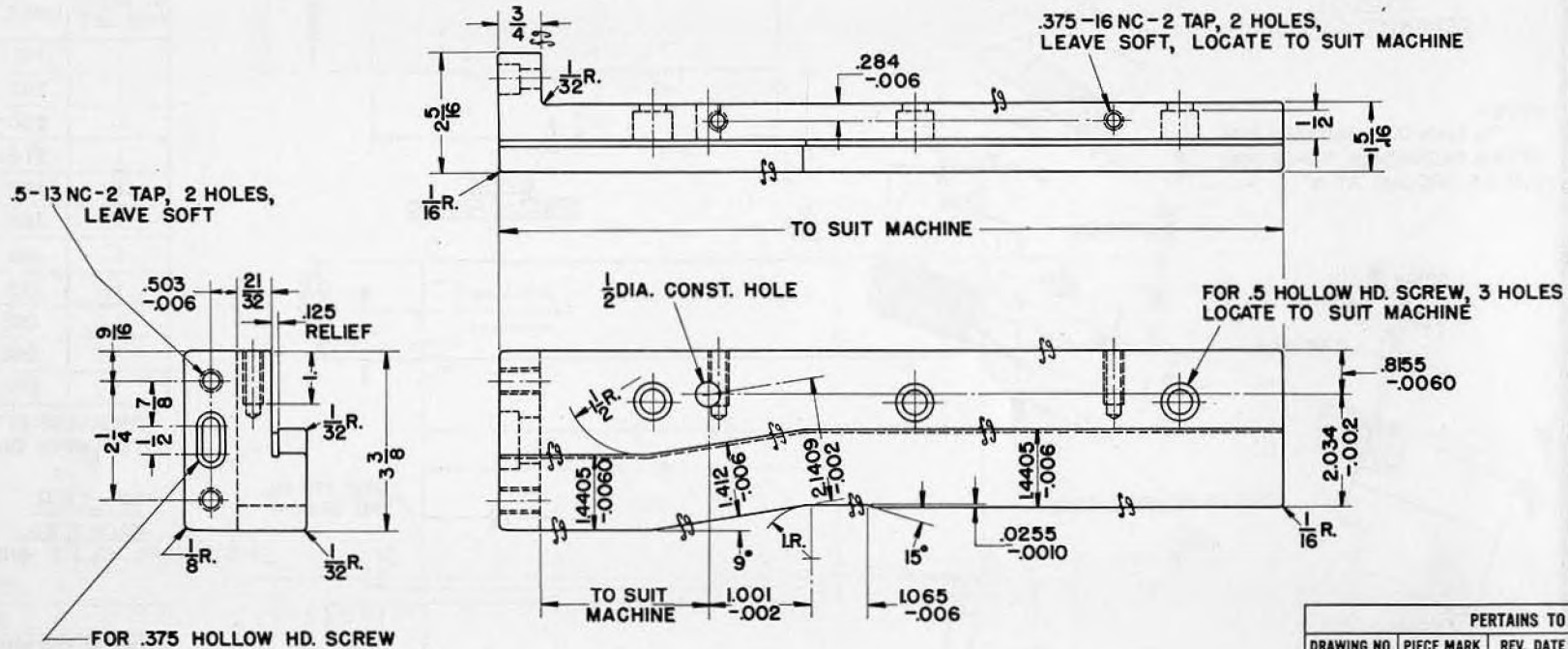
DRAFTSMAN	TRACER <i>F.D.A.</i>	LONG DESK <i>A.K.A.</i>
CHECKER	CHECKER	CH'F DR'SMA

APPROVED

ORD. DEPT., U. S. A.

FBI7905

STAMP: - FB 17906



FORMING CAM, R. H.
TOOL STEEL
HARDEN

FOR USE ON EXCELLO MACHINE

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY OPERATION:- FINISH TURN			
	FORD ARSENAL AUG. 30, 1940			
	SUBMITTED <i>[Signature]</i>	TRACER FBI	INVESTIGATOR <i>[Signature]</i>	
	CAPT.	ORD. DEPT., U. S. A.	CHECKER	CITY DRSM
	APPROVED	ORD. DEPT., U. S. A.	FBI7906	

**FOR .5 HOLLOW HD. SCREWS,
3 HOLES, LOCATE TO
SUIT MACHINE**

**.5-13NC-2 TAP,
2 HOLES**

**FOR .375 HOLLOW HD.
CAP SCREW**

TO SUIT MACHINE

TO SUIT MACHINE

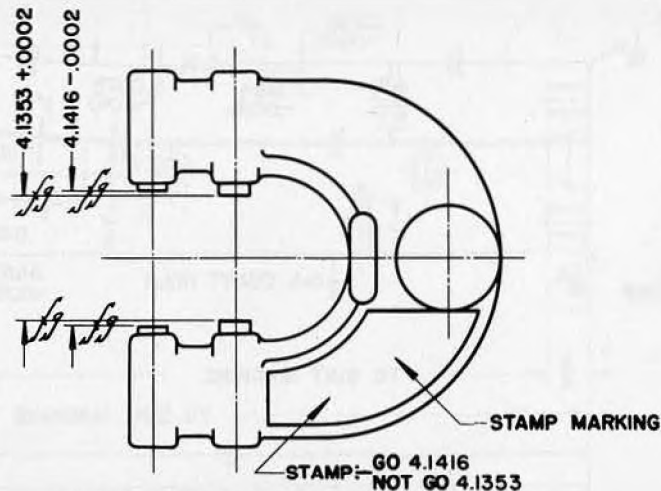
**.375-16NC-2 TAP,
2 HOLES, LOCATE TO
SUIT MACHINE**

DRAWING NO.	PIECE
75-4-75	75

FORMING CAM, L.H.
TOOL STEEL
HARDEN

REVISIONS	SHELL, H.E., 105 MM., MI BODY OPERATION:- FINISH TURN			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED <i>[Signature]</i>	DRAFTSMAN	TRACED	NO OF SUBS 1-10
	CAPT. ORD. DEPT. U. S. A.	CHECKER	CHECKER	CHG OF SALN
	APPROVED	FBI7907		
	ORD. DEPT. U. S. A.			

MARKING:-
105 MM. H.E. SHELL, M1
75-4-75 - ROUGH DIA. BOURRELET
WORK
FB 17908



ADJUSTABLE SNAP GAGE
COMMERCIAL

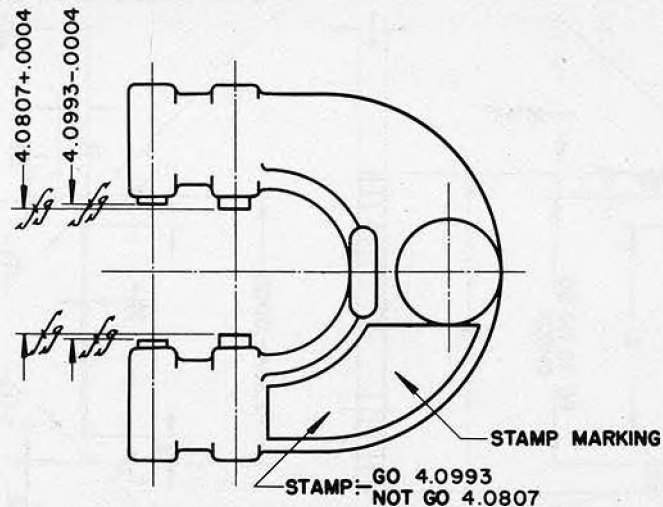
FOR CHECK GAGES SEE DRAWING FB IIII75 - (7)

B = 4.1416 CHECK FOR GO
A = 4.1353 CHECK FOR NOT GO

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY GAGE FOR ROUGH DIA. BOURRELET FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	INSP. BY
	CAPT. <i>[Signature]</i>	RI	RI	W. H. H. H.
	CHECKER	CHECKER	CHECKER	CHECKER
	APPROVED	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.
		FBI7908		

MARKING -
 105MM. H.E. SHELL MI, BODY
 75-4-75- DIA. BODY
 WORK
 FB 17909



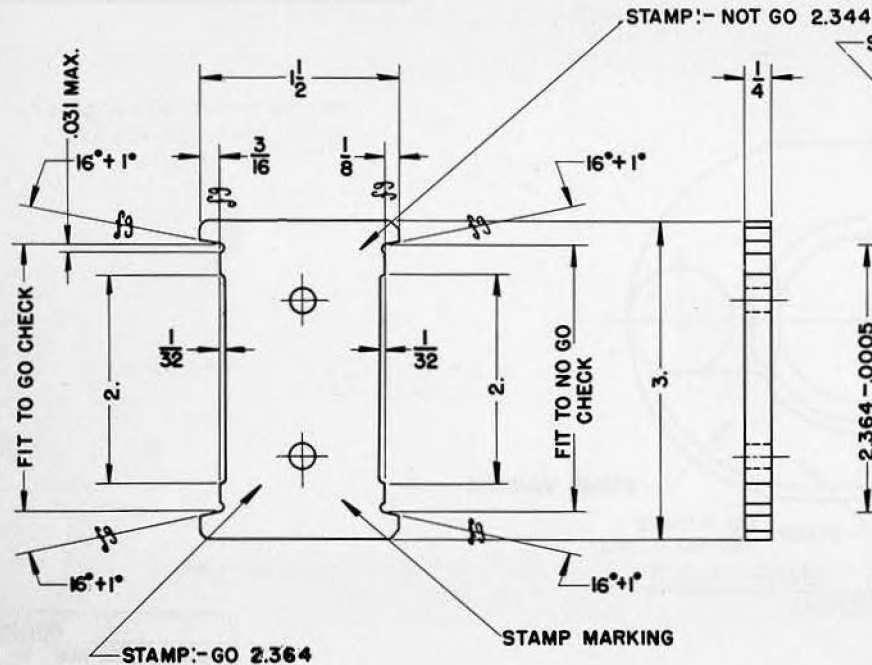
ADJUSTABLE SNAP GAGE
 COMMERCIAL

FOR CHECK GAGES SEE DRAWING FB 11175- (7)
 B=4.0993 CHECK FOR GO
 A=4.0807 CHECK FOR NOT GO

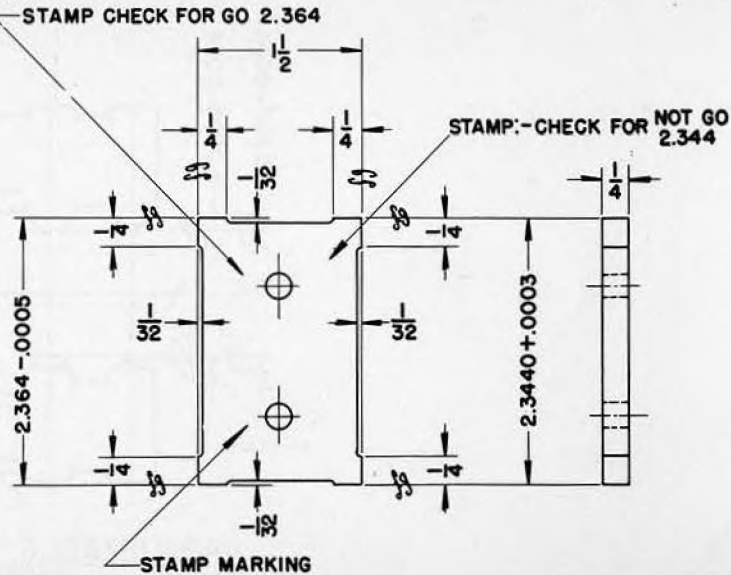
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY GAGE FOR DIA. BODY			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	
	CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.	<i>[Signature]</i>
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CNT. DE. S. A.
	APPROVED			
	ORD. DEPT., U. S. A.	FB17909		

MARKING:-
 105 MM. H.E. SHELL, M1
 75-4-75 - ROUGH DIA. NOSE
 WORK
 FB 17910



SNAP GAGE
 TOOL STEEL
 HARDEN



FLAT PLUG CHECK GAGE
 TOOL STEEL
 HARDEN

LAP $\frac{1}{8}$ SURFACES
 REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

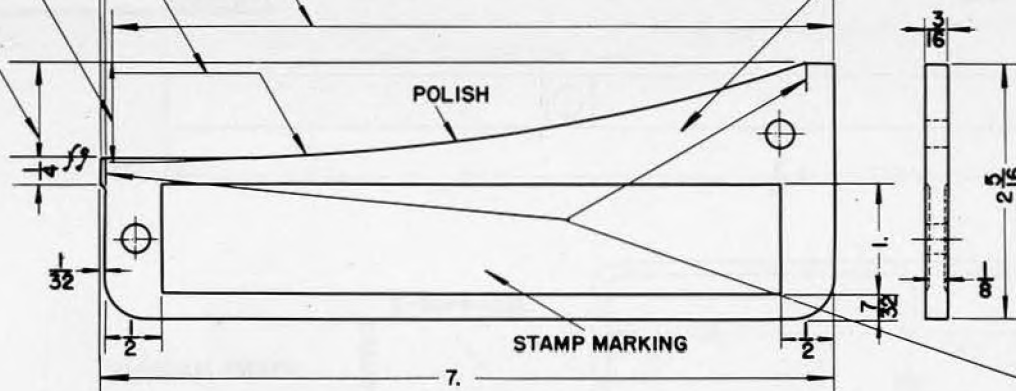
REVISIONS		SHELL, H.E., 105 MM., M1 BODY GAGE FOR ROUGH DIA. NOSE	
FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	<i>[Signature]</i>	DRAFTSMAN	TRACER
CAPT. <i>[Signature]</i>	ORD. DEPT., U. S. A.	CHECKER	CHECKER
APPROVED		CHECKER	CHECKER
ORD. DEPT., U. S. A.		FB17910	

FIT TO CHECK

STAMP:- 25.5R
MAX. 6.78
MIN. 6.73

MARKING:-
105 MM. H.E. SHELL MI - BODY
75-4-75 - PROFILE OGIVE
WORK
FB 17911

NOTE:-
START OF SURFACE PARALLEL
WITH LINES - .25 HOLES
PERMISSIBLE

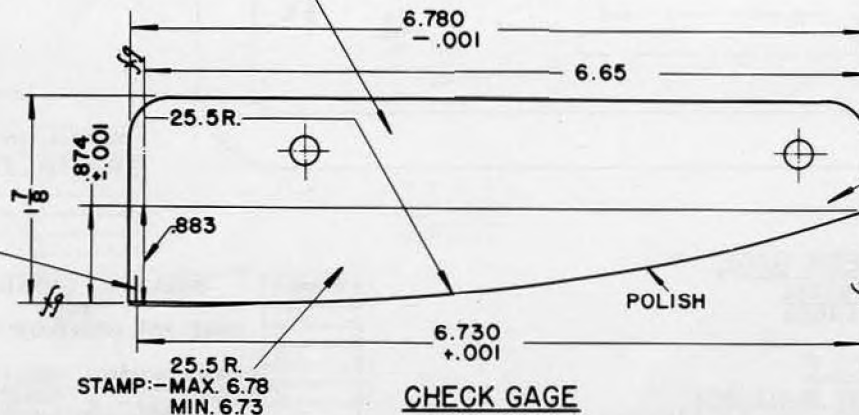


SCRIBE LINES .01 x .01 x .25 LONG
ON BOTH SIDES

PROFILE GAGE
TOOL STEEL
HARDEN

SCRIBE LINES .01 x .01 x .25 LONG
ON BOTH SIDES

STAMP MARKING & CHECK



STAMP:- CHECK TO BE RETAINED
IN GAGE STORAGE

CHECK GAGE
TOOL STEEL
HARDEN

LAP SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E. 105 MM., MI BODY GAGE FOR PROFILE OGIVE			
		FRANKFORD ARSENAL AUG. 30, 1940			
		SUBMITTED	DRAFTSMAN	TRACER	WORKMAN
		CAPT. <i>[Signature]</i>	F.O.R.	F.O.R.	W.P.S.
		APPROVED	CHECKER	CHECKER	CHECKER
		ORD. DEPT., U. S. A.			
		FBI7911			
		ORD. DEPT., U. S. A.			

STAMP:- MAX. 1.425
MIN. 1.405



HANDLE

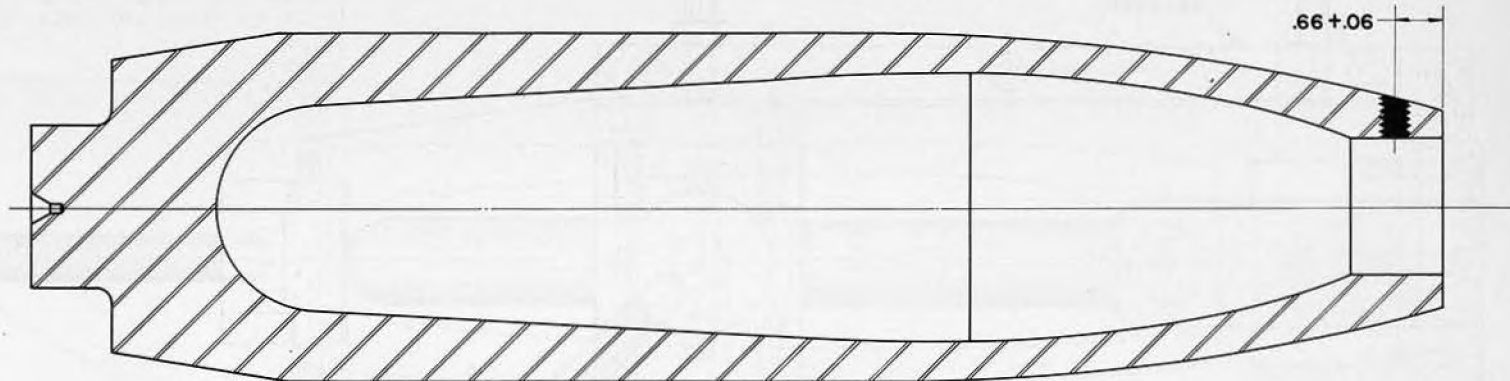
REVISIONS

FRANKFORD ARSENAL AUG. 30, 1940

DRAFTSMAN H. J. G.	TRACER H. J. G.	L'ING DRAFTSMAN H. J. G.
CHECKER	CHECKER	CHEF DRAFTSMAN

FBI7912

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

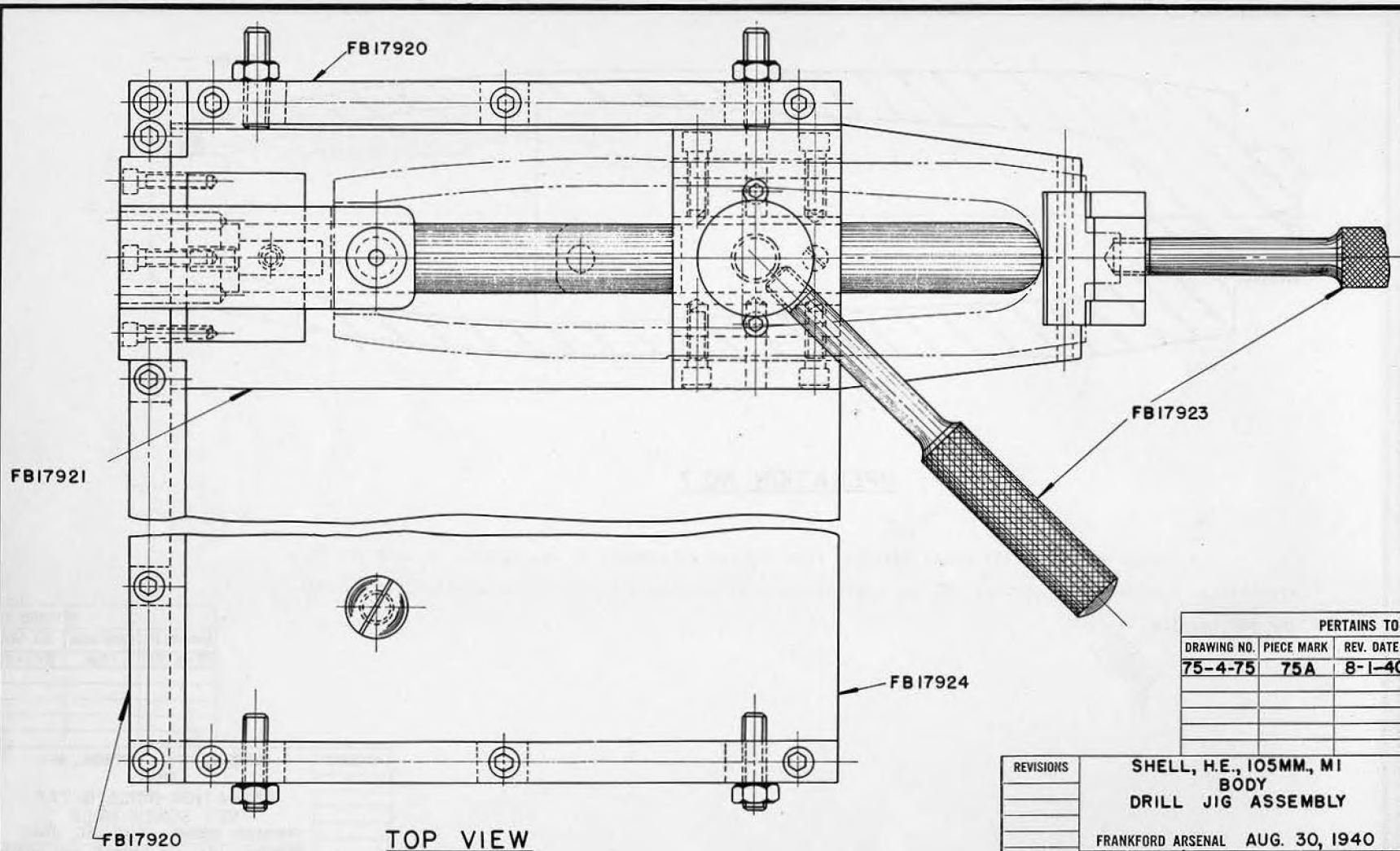


OPERATION NO. 7

A double spindle drill press equipped with tapping attachment in one spindle is used for this operation. A solution of cutting oil and approximately 5% sulphur works very satisfactorily for drilling and tapping.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

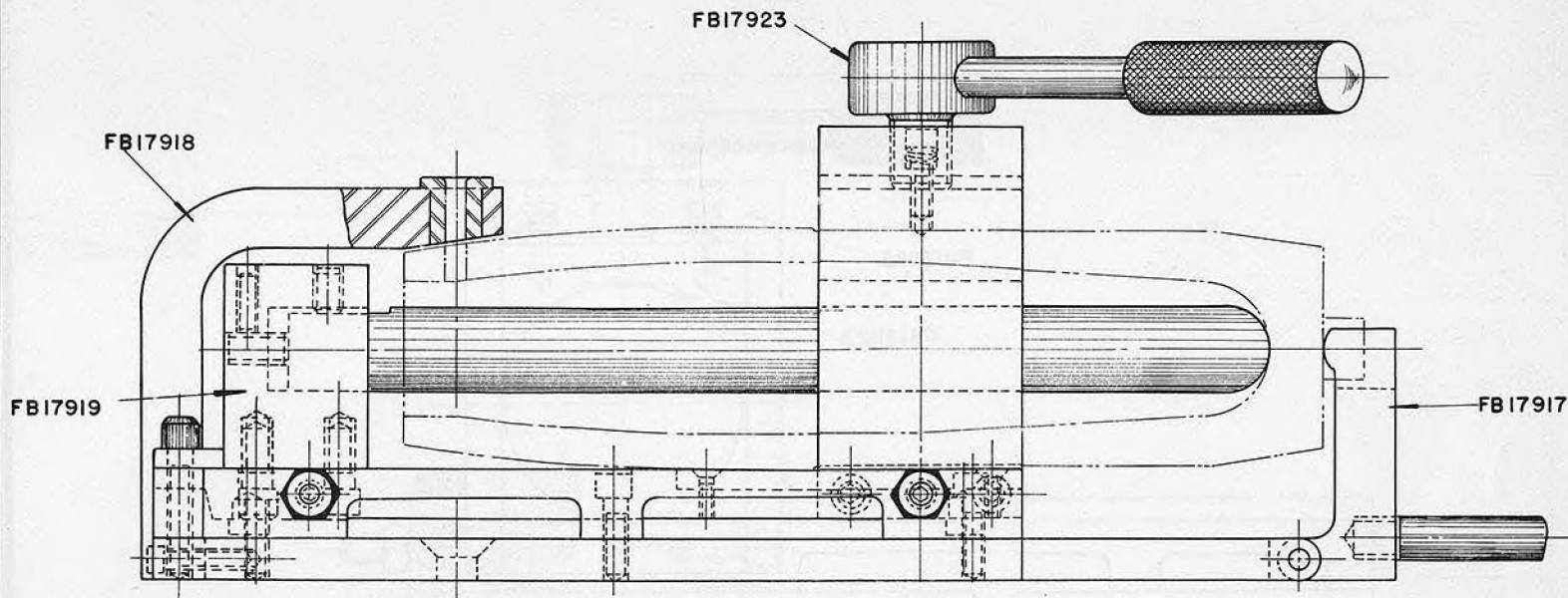
REVISIONS	SHELL, H.E., 105MM., M1			
	BODY			
	OPERATION: DRILL & TAP			
	SET SCREW HOLE			
	FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	DRAFTSMAN	TRACER	CHECKER	CHECKER
CAPT. <i>[Signature]</i>	CKS	CKS	CKS	CKS
ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER	CHECKER
APPROVED	FBI7913			
ORD. DEPT., U. S. A.				



FOR ADDITIONAL VIEWS SEE DRGS. FB17915 & FB17916

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM, M1 BODY DRILL JIG ASSEMBLY			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	INCHES
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHECKER
	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.
APPROVED	FBI7914			

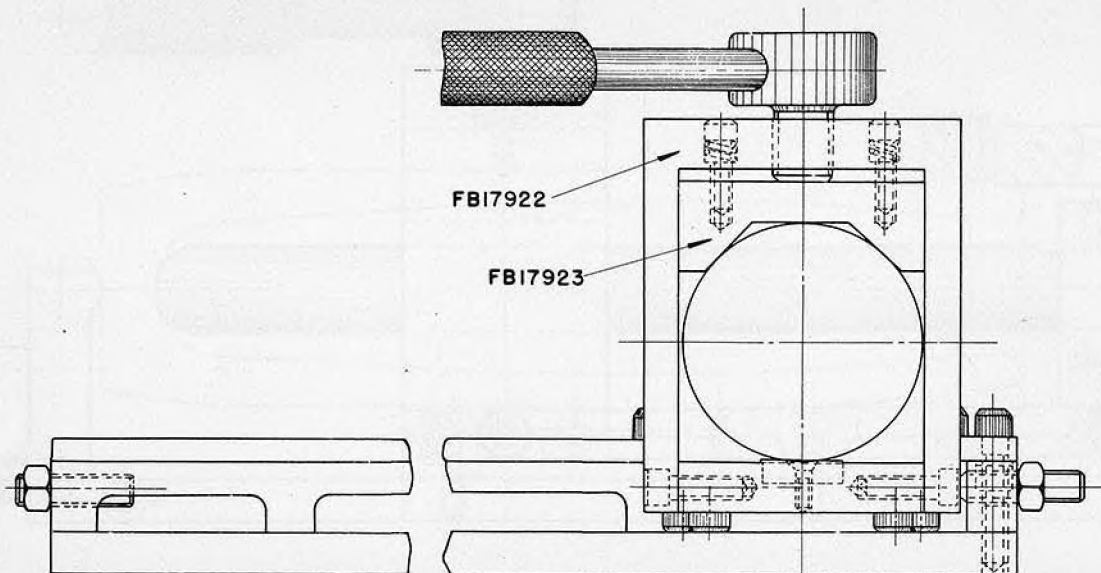


SIDE VIEW

FOR ADDITIONAL VIEWS SEE DRGS. FB17914 & FB17916

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY DRILL JIG ASSEMBLY			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	WORKMAN
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHEF DR. SMAN
	ORD. DEPT., U. S. A.			
APPROVED	ORD. DEPT., U. S. A.			FB17915



END VIEW

FOR ADDITIONAL VIEWS SEE DRGS FBI7914 & FBI7915

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY DRILL JIG ASSEMBLY			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	INSP. BY
	CAPT. <i>[Signature]</i>	H. J. G.	CHECKER	CHEF DRSMAN
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHEF DRSMAN
APPROVED	ORD. DEPT., U. S. A.			FBI7916

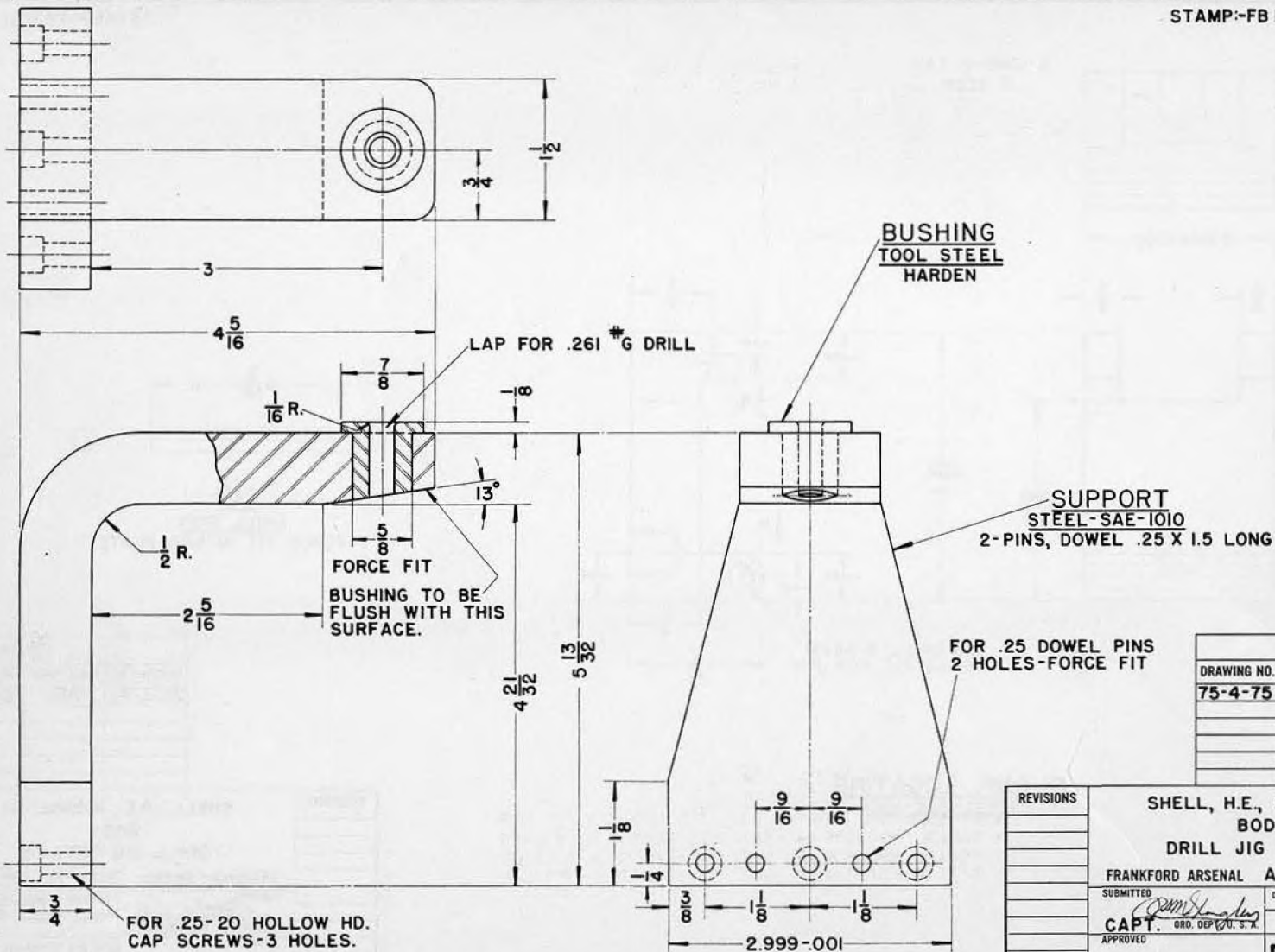
[illegible]

Technical drawing of a cylinder. The length is dimensioned as $3 \frac{9}{16}$ and the diameter is dimensioned as $1 \frac{1}{4}$. A front view and a top view are shown.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

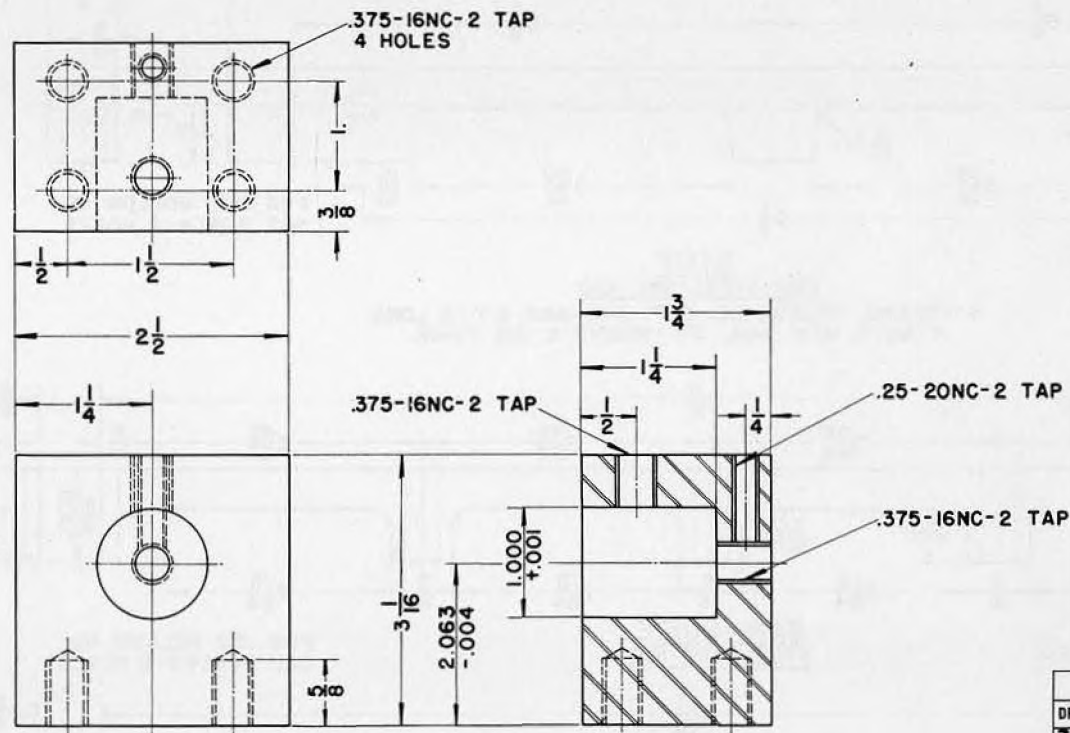
REVISIONS	SHELL, H.E., 105MM., M1			
	BODY			
	DRILL JIG DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	<i>[Signature]</i>	DRAFTSMAN	TRACED	INSTRUMENTED
CAPT. ORD. DEPT. U. S. A.		CHECKER	CKS	CH'Y OR SUGAN
APPROVED				
	ORD. DEPT. U. S. A.			
	FBI7917			

STAMP:-FB 17918



PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVIEWS	SHELL, H.E., 105MM., M I BODY DRILL JIG DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	RECTOR	CHIEF OF DRAWING
	<i>James H. [Signature]</i> CAPT. ORD. DEPT. U. S. A.	CHECKER	CKS [Signature]	CH. FOR SKILL
	APPROVED	FBI7918		
	ORD. DEPT., U. S. A.			

**BLOCK, LOCATING****STEEL-SAE-1010**

4-SCREWS, HOLLOW HD. CAP. .375-16NC-2 X .75 LONG
 1-SCREW, HOLLOW HD. SET. .375-16NC-2 X .75 LONG
 1-SCREW, HOLLOW HD. SET. .375-16NC-2 X .5 LONG
 1-SCREW, HOLLOW HD. SET. .25-20NC-2 X .75 LONG

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM., M1

BODY

DRILL JIG DETAILS

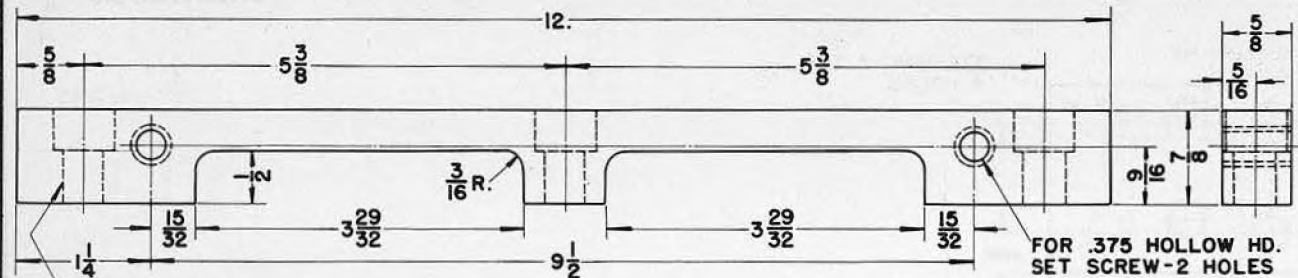
FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED	DRAFTSMAN	TRACER	WITNESSED
CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHECKER

APPROVED

ORD. DEPT., U. S. A.

FB17919

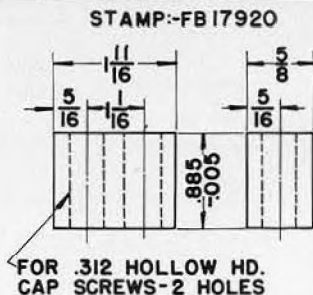


FOR .312 HOLLOW HD.
CAP SCREW-3 HOLES

STOP

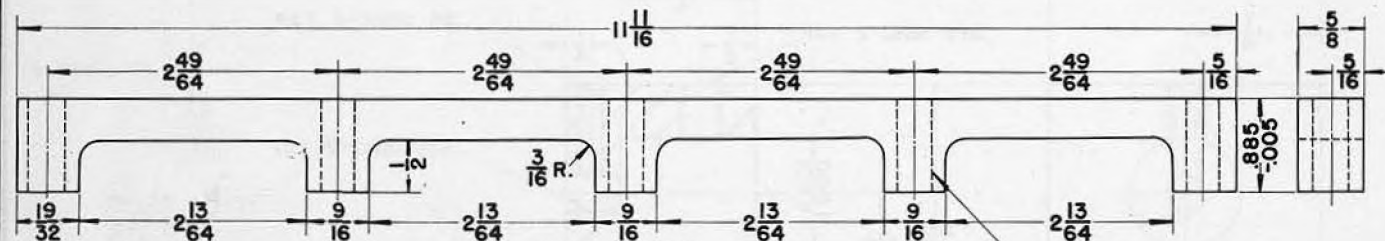
TWO-STEEL-SAE-1010

4-SCREWS, HOLLOW HD. SET .375-16NC-2 X 1.5 LONG
4-NUTS, HEX. JAM, .375-16NC-2 X .312 THICK.



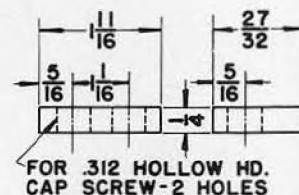
FOR .312 HOLLOW HD.
CAP SCREWS-2 HOLES

BAR, GUIDE
STEEL-SAE-1010



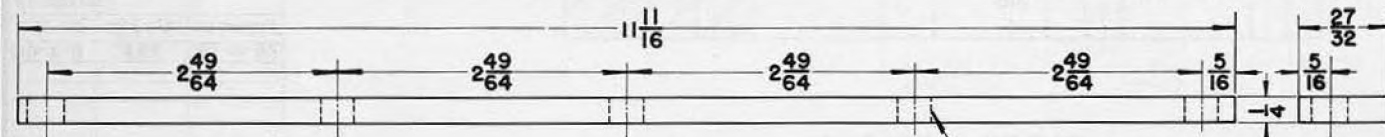
BAR, GUIDE
STEEL-SAE-1010

FOR .312 HOLLOW HD.
CAP SCREWS-5 HOLES



FOR .312 HOLLOW HD.
CAP SCREW-2 HOLES

STRIP, HOLD DOWN
STEEL-SAE-1010



FOR .312 HOLLOW HD.
CAP SCREWS-5 HOLES

STRIP, HOLD DOWN
STEEL-SAE-1010

REVISIONS

SHELL, H.E., 105MM., M I
BODY

DRILL JIG DETAILS

FRANKFORD ARSENAL AUG. 30, 1940

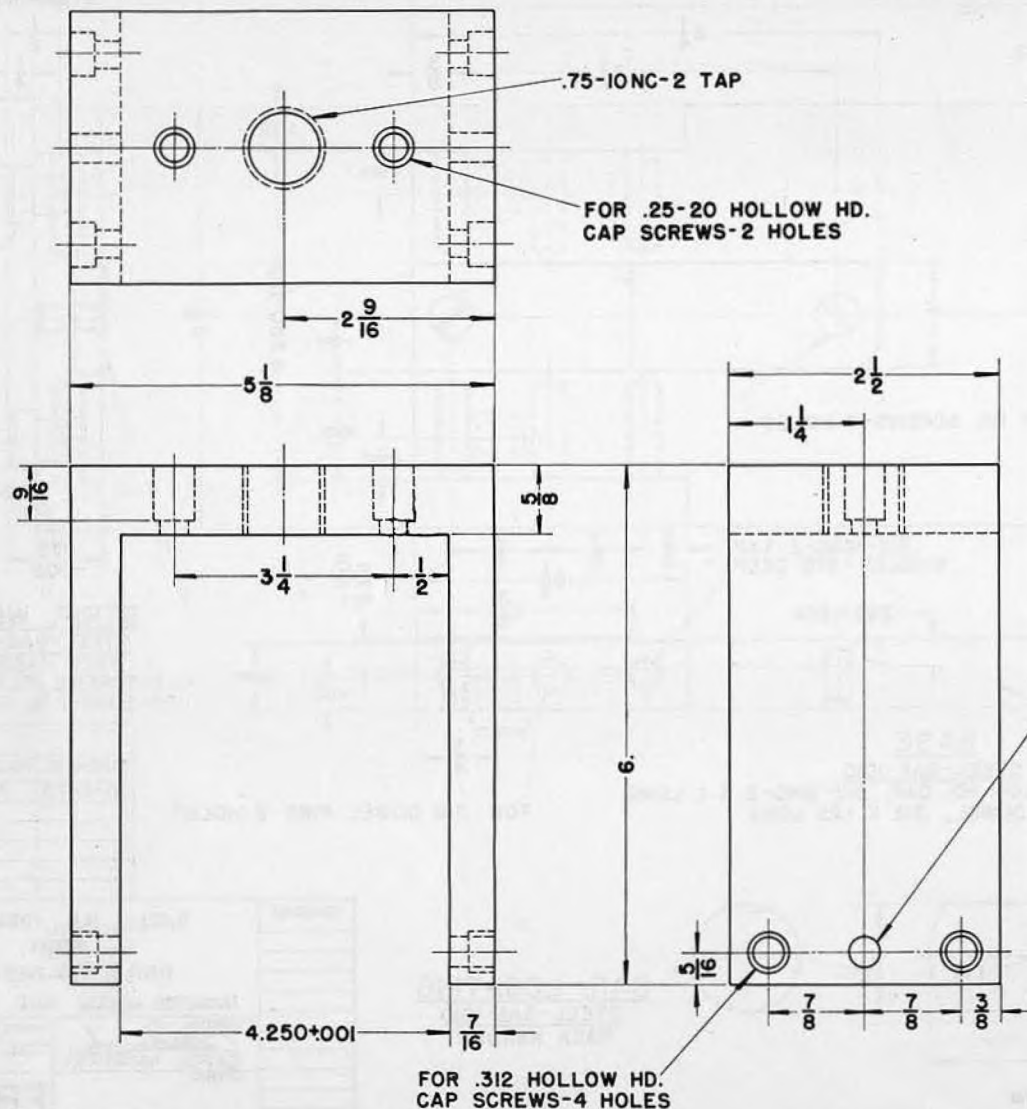
SUBMITTED	DRAFTSMAN	CHECKER	APPROVED
CAPT. [Signature]	[Signature]	[Signature]	[Signature]

ORD. DEPT., U. S. A. **FB17920**

ORD. DEPT., U. S. A.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

STAMP-FB 17922

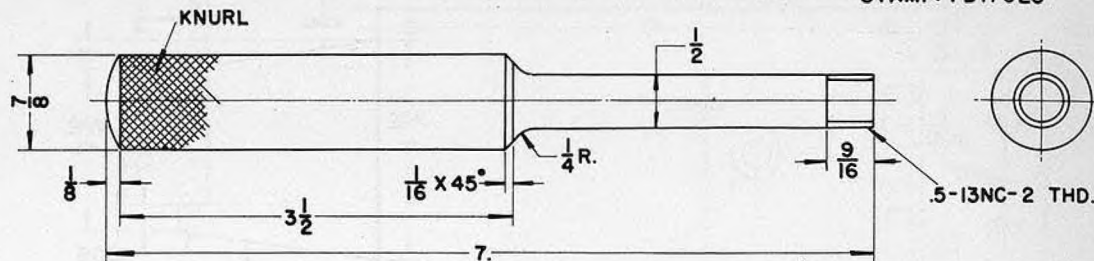


GUIDE, CLAMP
STEEL-SAE-1010

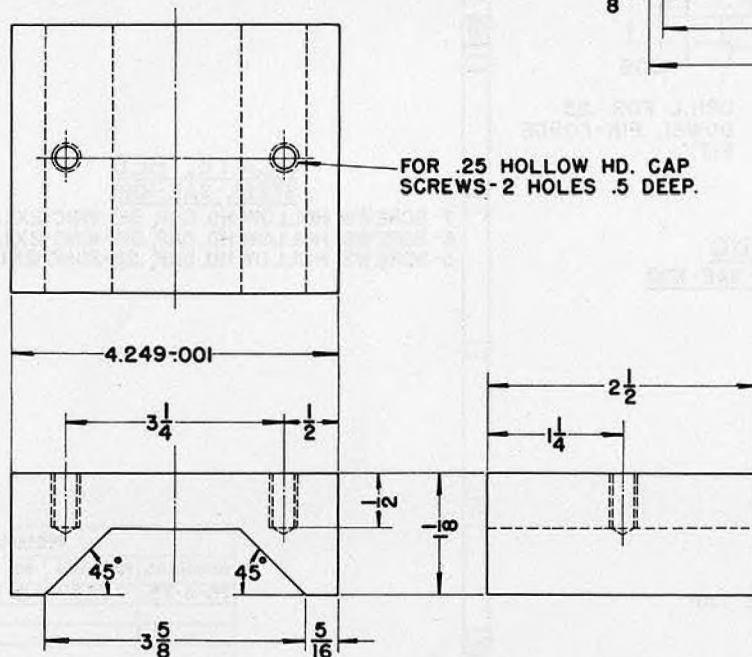
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

SHELL, H.E., 105MM., M1 BODY DRILL JIG DETAILS FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	DRAFTSMAN	CHECKER	APPROVED
CAPT. <i>[Signature]</i>	ORD. DEPT. S. A.	CHECKER	CAPT. <i>[Signature]</i>
ORD. DEPT., U. S. A.		FBI7922	

STAMP:-FB17923

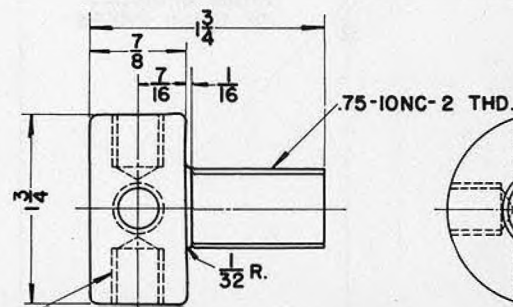


HANDLE, CLAMP
TWO-STEEL-SAE-1010



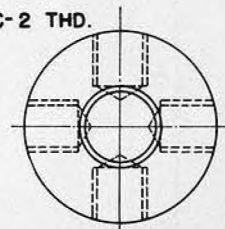
CLAMP
TOOL STEEL
HARDEN

2-SCREWS, HOLLOW HD. CAP .25-20NC-2 X 1 LONG
2-SPRINGS, COMPRESSION .040 MUSIC WIRE
.35-.01 O.D. 5 FREE LENGTH, WIND ENDS CLOSE
APPROX. 8 COILS PER INCH.



5-13NC-2 TAP
4 HOLES .5 DEEP.

NUT, CLAMP
STEEL-SAE-1010
PACK HARDEN



PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM., M1
BODY
DRILL JIG DETAILS

FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED
CAPT. [Signature]
ORD. DEPT., U. S. A.

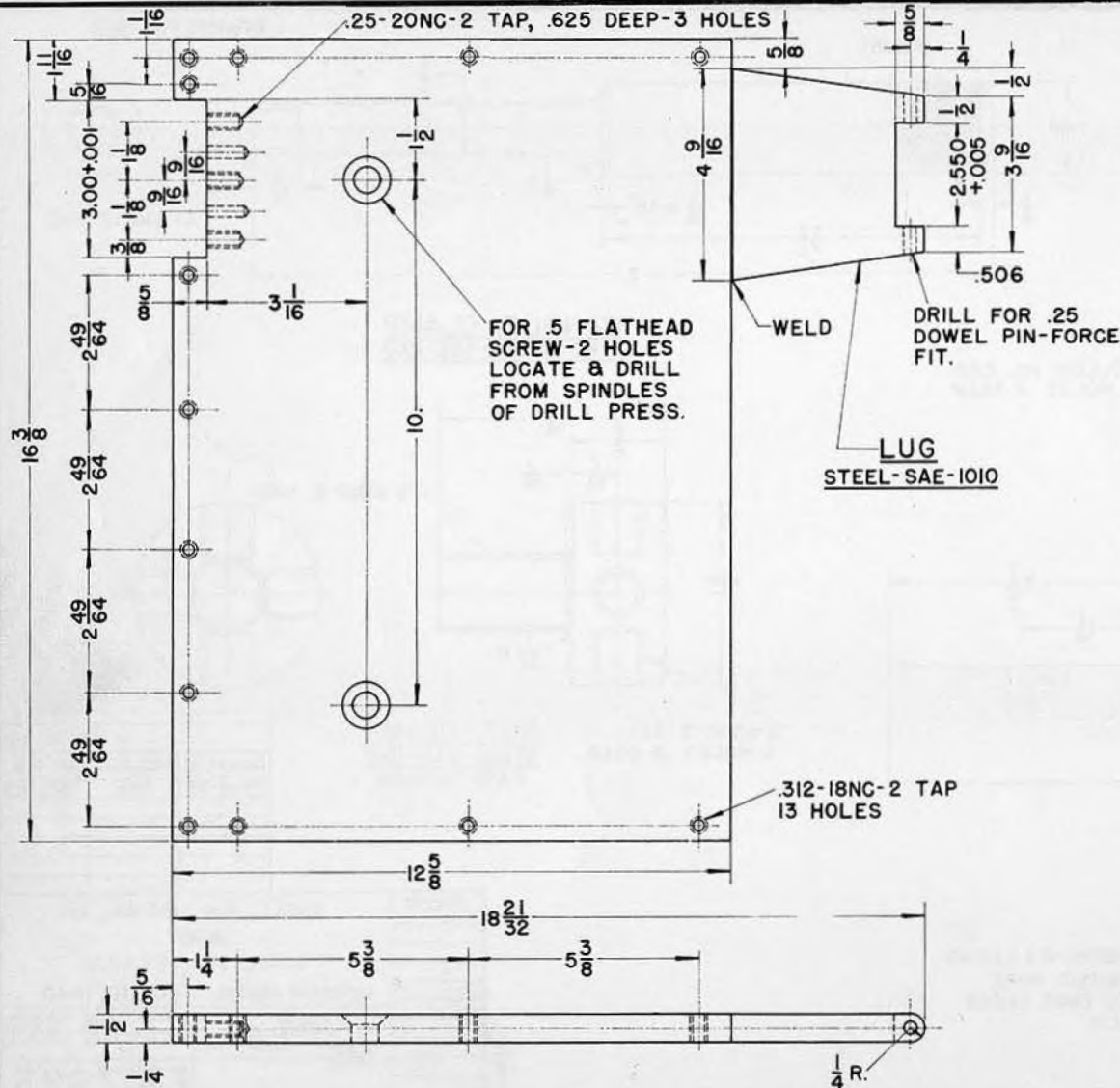
DRAFTSMAN	TRACER	FOR DRSMAN
CKS	CKS	CKS

APPROVED

ORD. DEPT., U. S. A.

FB17923

STAMP:-FB17924



**PLATE, BED
STEEL-SAE-1010**

- 7- SCREWS, HOLLOW HD. CAP. .312-18NC-2X1.5 LG.
- 6- SCREWS, HOLLOW HD. CAP. .312-18NC-2X1. LG.
- 3- SCREWS, HOLLOW HD. CAP. .25-20NC-2X1. LG.

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

**SHELL, H.E., 105MM, M1
BODY
DRILL JIG DETAILS**

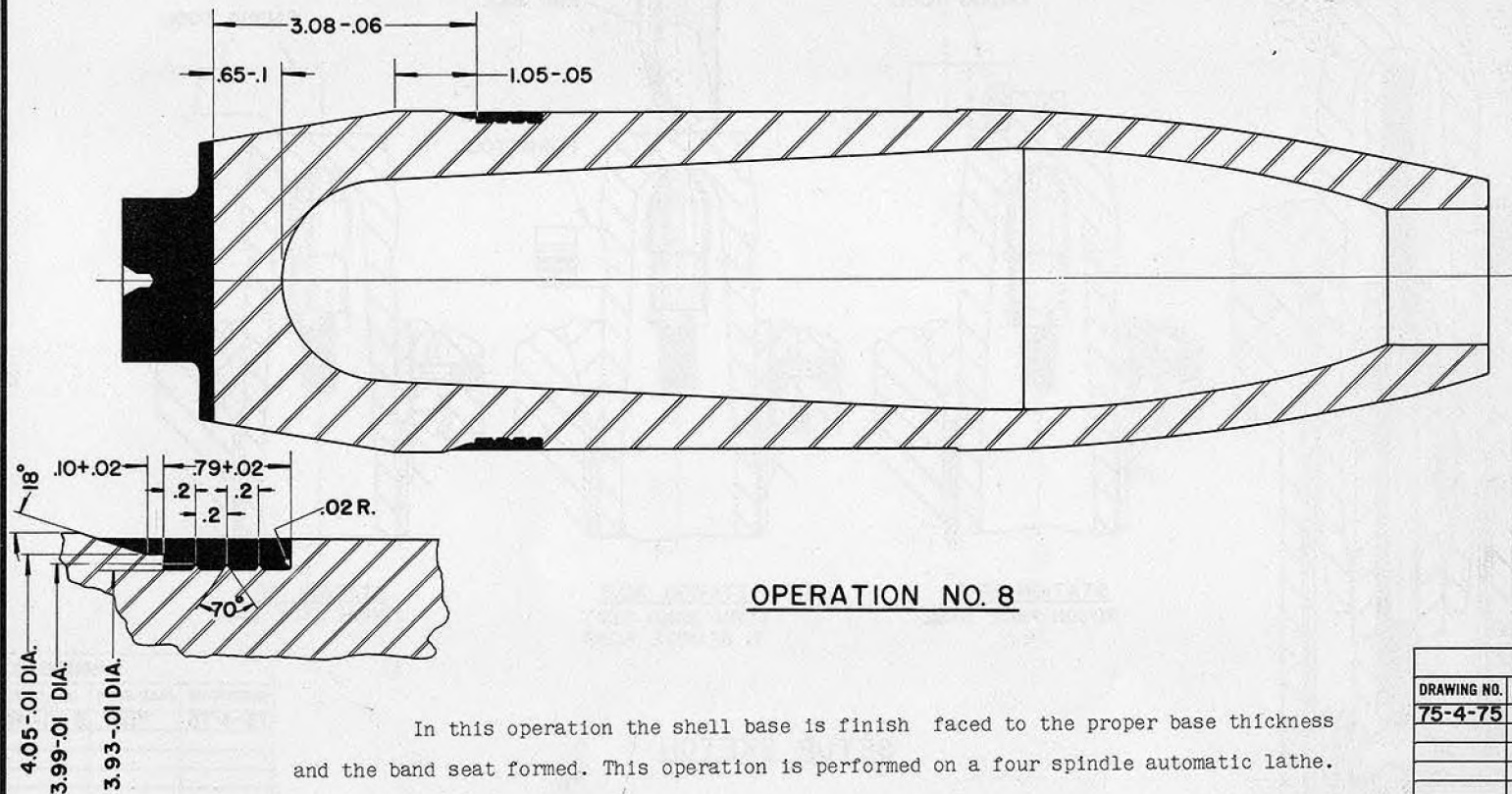
FRANKFORD ARSENAL AUG. 30, 1940

SUBMITTED	DRAFTSMAN	CHECKER	CHECKER	CHECKER
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER

APPROVED

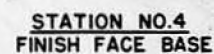
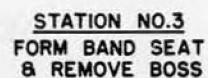
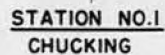
FB17924

ORD. DEPT., U. S. A.



PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

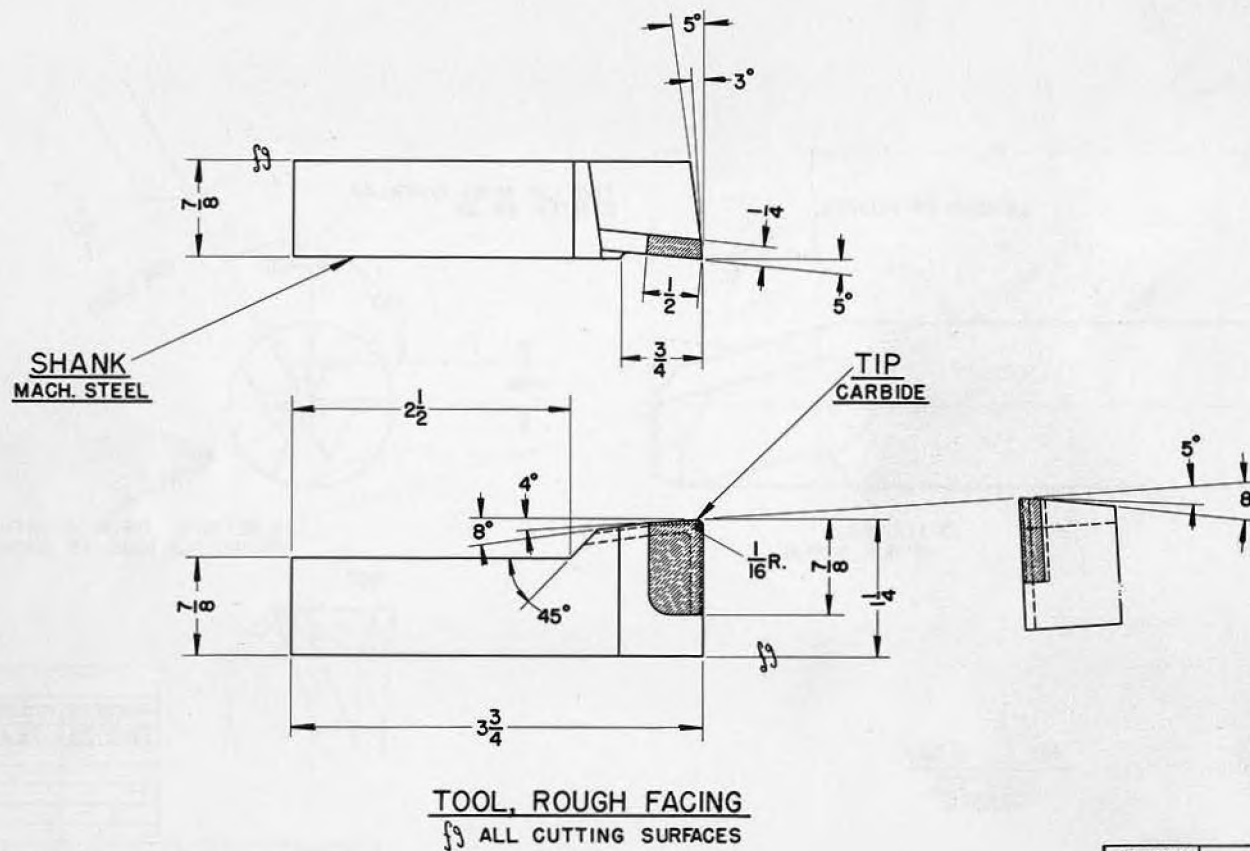
REVISIONS	SHELL, H.E., 105 MM., MI BODY			
	OPERATION-FINISH BASE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
SUBMITTED	CAPT. <i>[Signature]</i>		DRAWINGMAN	CHECKER
	ORD. DEPT., U. S. A.		CHECKER	CHECKER
APPROVED	ORD. DEPT., U. S. A.		ORD. DEPT., U. S. A.	
			FBI7925	



SETUP SKETCH

REVISIONS	SHELL, H.E., 105MM., M1			
	BODY			
	OPERATION:-FINISH BASE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACED	WORKING DRAWING
	<i>[Signature]</i>	CHECKER	CHEKED	OK'D
	CAPT.	ORD. DEPT. U. S. A.	CHECKER	OK'D
	APPROVED	FBI7926		
	ORD. DEPT., U. S. A.			

STAMP:-FBI7928



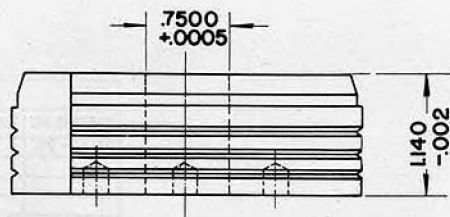
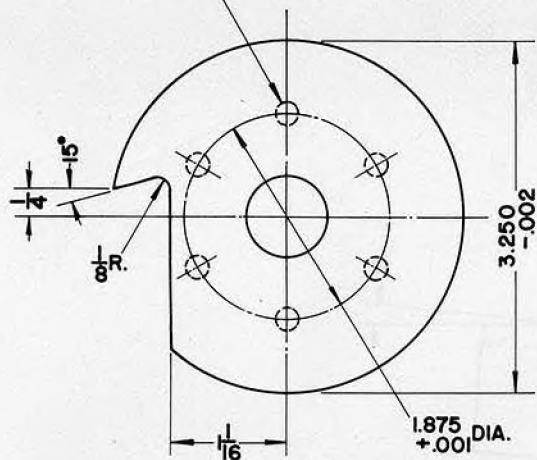
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

TOOL, ROUGH FACING
 ALL CUTTING SURFACES

REVISIONS	SHELL, H. E., 105 MM., MI BODY			
	OPERATION:-FINISH BASE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
SUBMITTED	CAPT. <i>[Signature]</i>		DRAFTSMAN	TRACER
APPROVED	ORD. DEPT., U. S. A.		CHECKER	CHECKER
	ORD. DEPT., U. S. A.		FBI7928	

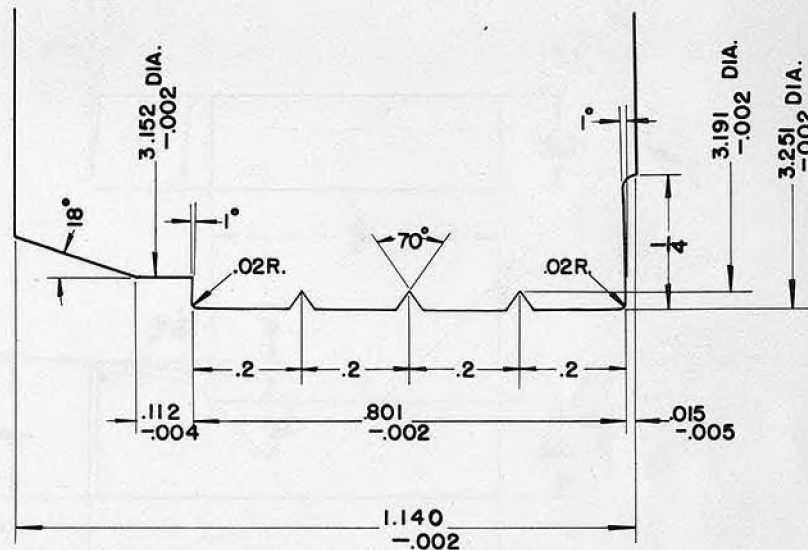
STATION NO. 2

.2520+.0005 REAM, .25 DEEP,
6 HOLES, EQUALLY SPACED



TOOL, FORM
TOOL STEEL

g ALL TOOL STEEL
CUTTING SURFACES



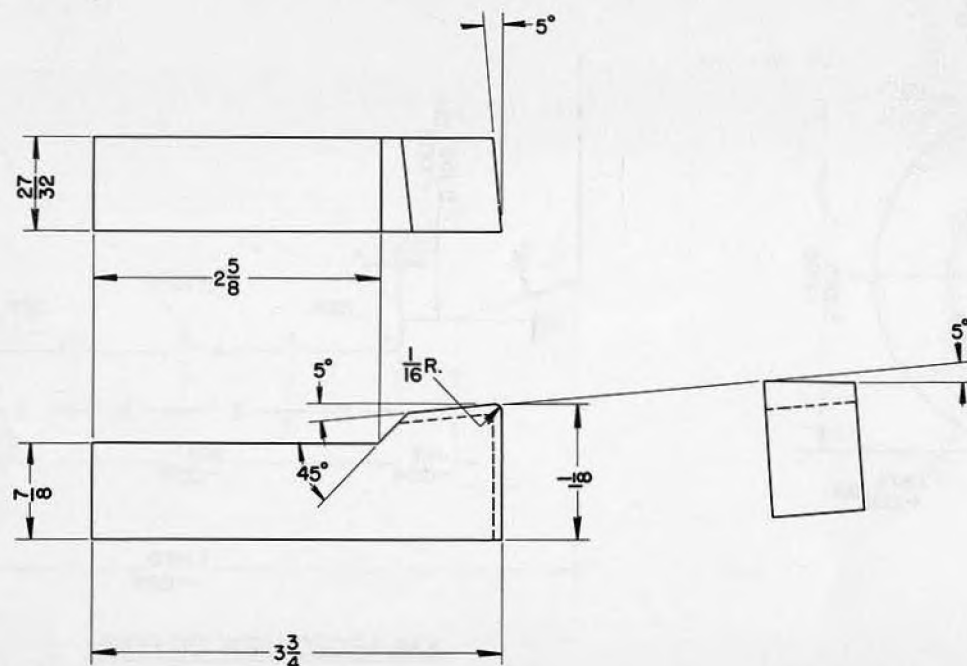
ENLARGED VIEW OF FORM

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVIEWS	SHELL, H. E., 105 MM., MI BODY OPERATION:- FINISH BASE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED <i>[Signature]</i> CAPT.	DRUGGISH RI CHECKER	TRACER F.O.R. CHECKER	DR. OR. MAN W.R.D. CHY DR. MAN
	APPROVED		FB 17 929	
ORD. DEPT., U. S. A.				

STATION NO. 3

STAMP:- FBI7930



TOOL, FACING

TOOL STEEL

HARDEN

ALL CUTTING SURFACES

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105 MM., M1
BODY

OPERATION:- FINISH BASE END

FRANKFORD ARSENAL

AUG. 30, 1940

SUBMITTED
CAPT. *[Signature]*
ORD. DEPT., U. S. A.

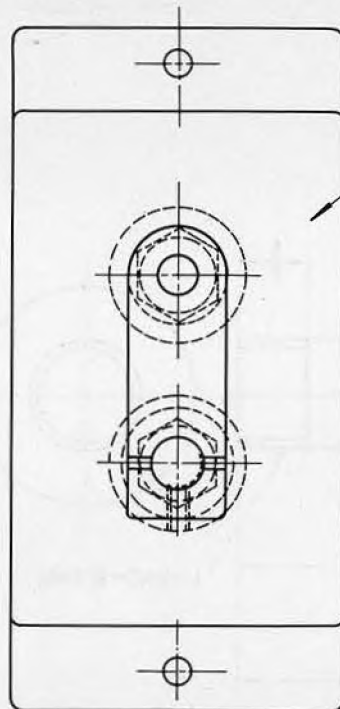
DRAFTSMAN
TRACER
CHECKER
CHECKER
CITY MECHANIC

APPROVED

ORD. DEPT., U. S. A.

FBI7930

STATION NO. 4



STAMP MARKING

STAMP:-
MAX. .6093
MIN. .5907

MAX. .6093 - .0004
MIN. .5907 + .0004

NOTE:-

TO BE FLUSH WITH STEPS
FOR MAX. & MIN. POSITIONS.

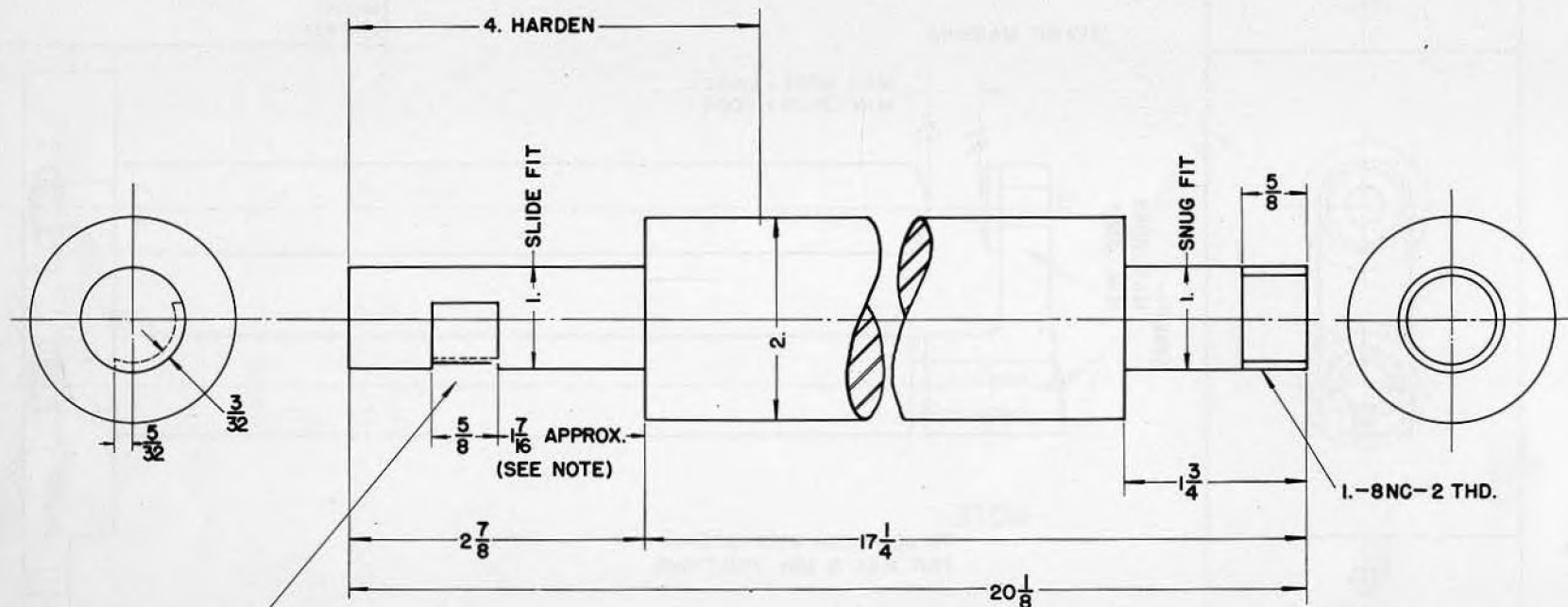
PEDESTAL TYPE FLUSH PIN GAGE

LAP f_3 SURFACES
REMOVE ALL SHARP EDGES

MARKING:-
105MM. H.E. SHELL MI, BODY
75-4-75- THICKNESS BASE-FINISH
WORK
FBI7931

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105 MM., MI BODY GAGE FOR THICKNESS BASE ASSEMBLY			
		FRANKFORD ARSENAL		AUG. 30, 1940	
		SUBMITTED	DRAFTSMAN	TRACER	INCHES
		CAPT. <i>[Signature]</i>	N.J.G.	N.J.G.	N.J.G.
		CHECKER	CHECKER	CHECKER	CHECKER
		ORD. DEPT., U. S. A.			
		APPROVED			
		ORD. DEPT., U. S. A.			
		FBI7931			



GRIND CLEARANCE SO AS TO GIVE
ARM .0186 MIN. MOVEMENT ABOVE
& BELOW GAGING SURFACE

SUPPORT, ARM
TOOL STEEL
NUT, HEX. CHECK, 1.-8NC-2

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105 MM., MI
BODY
GAGE FOR THICKNESS BASE-DETAILS

FRANKFORD ARSENAL

AUG. 30, 1940

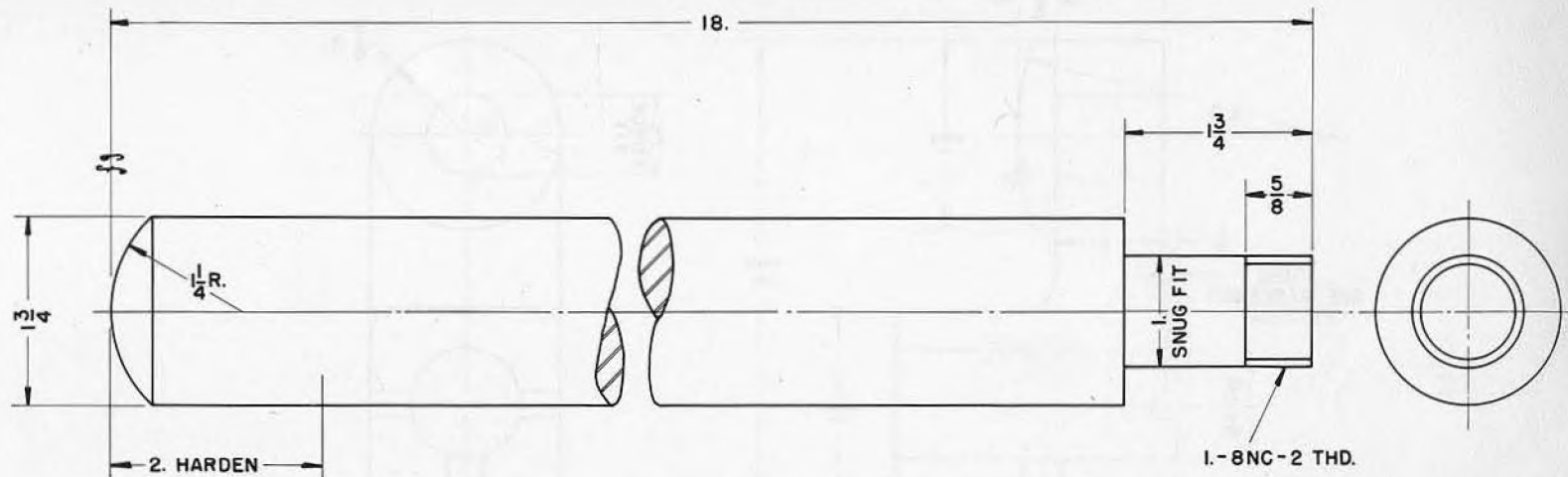
SUBMITTED
CAPT. *[Signature]*
ORD. DEPT., U. S. A.

DRAFTSMAN
TRACER
CHECKER
CHECKER
CHK'D BY

APPROVED

ORD. DEPT., U. S. A.

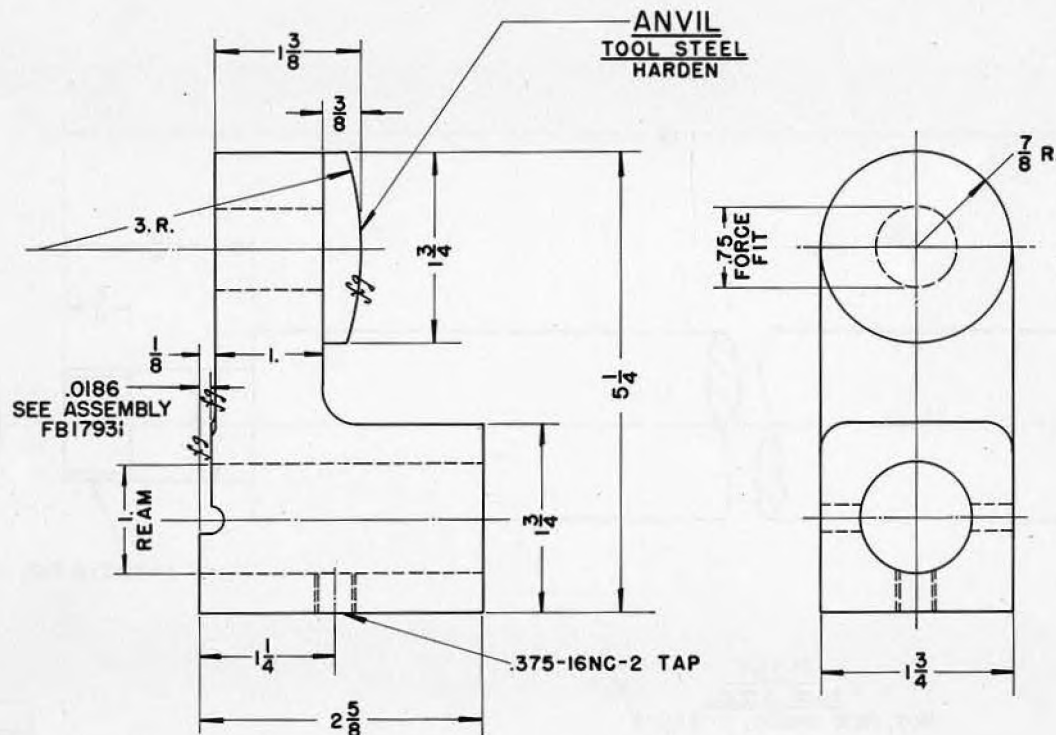
FBI7932



POST
TOOL STEEL
NUT, HEX. CHECK, 1-8NC-2

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

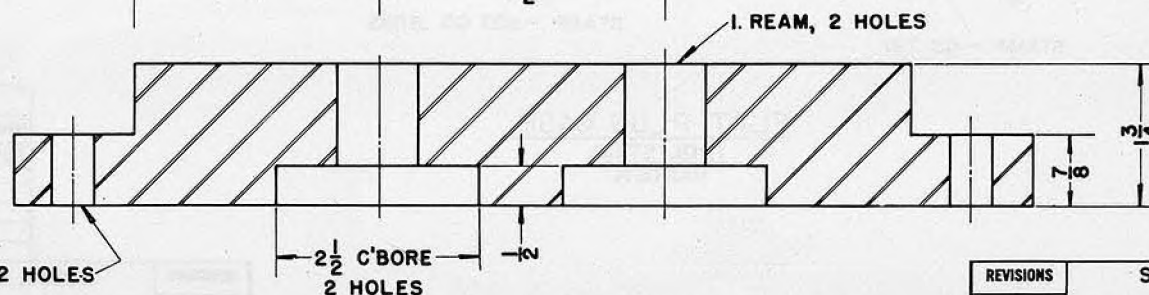
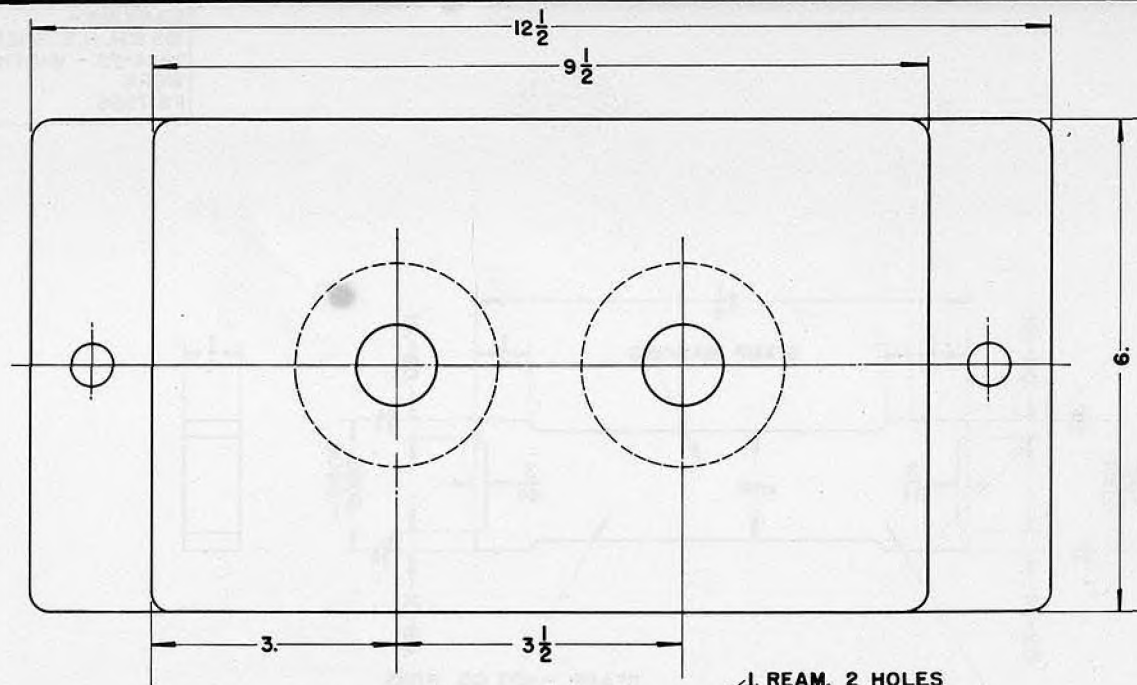
REVISIONS	SHELL, H.E., 105 MM., M1			
	BODY			
	GAGE FOR THICKNESS BASE			
	DETAILS			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	LOGGERSMAN
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHK'DRSMAN
	ORD. DEPT., U. S. A.			
	APPROVED			
	ORD. DEPT., U. S. A.			
	FB17933			



ARM
TOOL STEEL
HARDEN
SCREW, HEADLESS, .375-16NC-2 X .5 LONG

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., M1 BODY GAGE FOR THICKNESS BASE DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	CHIEF DESIGNER
	CAPT. <i>[Signature]</i>	HIG	CRS	W.F.O.
	CHECKER	CHECKER	CHECKER	CHECKER
APPROVED	ORD. DEPT., U. S. A.			
ORD. DEPT., U. S. A.		FB17934		

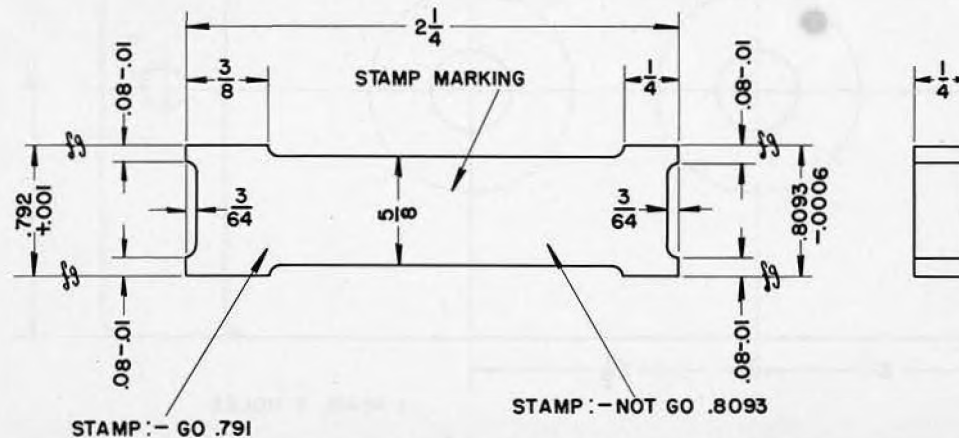


BASE
MACH. STEEL

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY GAGE FOR THICKNESS BASE DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRICER	FOR REVIEW
	CAPT. <i>[Signature]</i>	HIG	CKR	CHK'D BY <i>[Signature]</i>
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHK'D BY <i>[Signature]</i>
APPROVED	ORD. DEPT., U. S. A.			FBI7935

MARKING:-
105 MM. H.E. SHELL, M1
75-4-75 - WIDTH BAND SEAT
WORK
FB17936



FLAT PLUG GAGE
TOOL STEEL
HARDEN

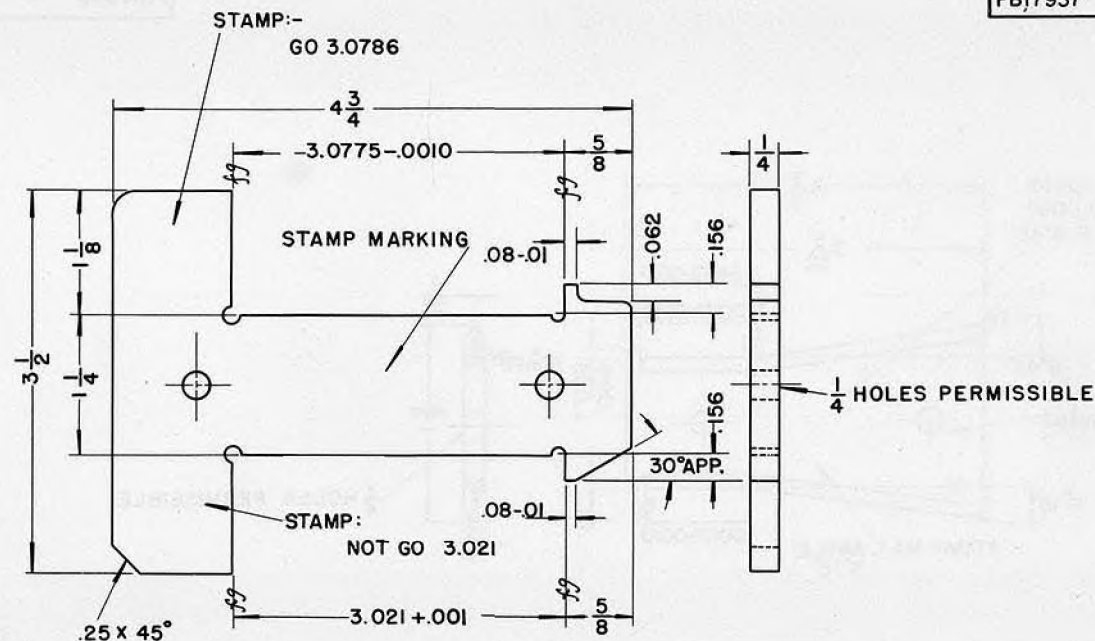
LAP ff SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY GAGE FOR WIDTH BAND SEAT			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	INSP. BY
	<i>[Signature]</i>	RI		
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHT. BY
APPROVED				
	ORD. DEPT., U. S. A.			

FB17936

MARKING:-
105MM.H.E. SHELL, MI, BODY
75-4-75 - POSITION OF BAND SEAT
WORK
FBI7937



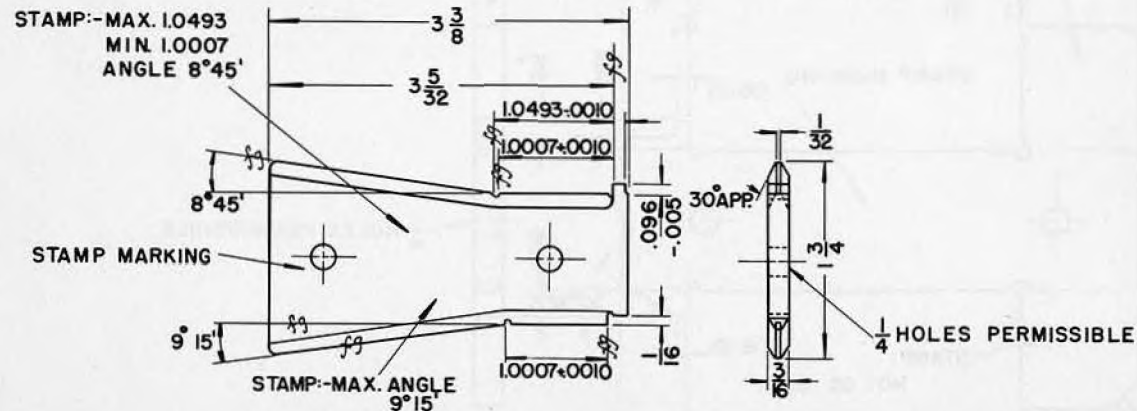
SNAP GAGE
TOOL STEEL
HARDEN

LAPf_g SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY		
	GAGE FOR POSITION OF BAND SEAT		
	FRANKFORD ARSENAL	AUG. 30, 1940	
SUBMITTED	DRAFTSMAN	TRACER	FOR COPIES
CAPT. <i>[Signature]</i>	H.G. CHECKER	H.G. CHECKER	CHY FOR 3M
APPROVED	ORD. DEPT., U. S. A.		
	FBI7937		
	ORD. DEPT., U. S. A.		

MARKING:-
 105MM.H.E. SHELL MI, BODY
 75-4-75-PROFILE & POSITION BOATTAIL
 WORK FROM BAND SEAT
 FBI7938

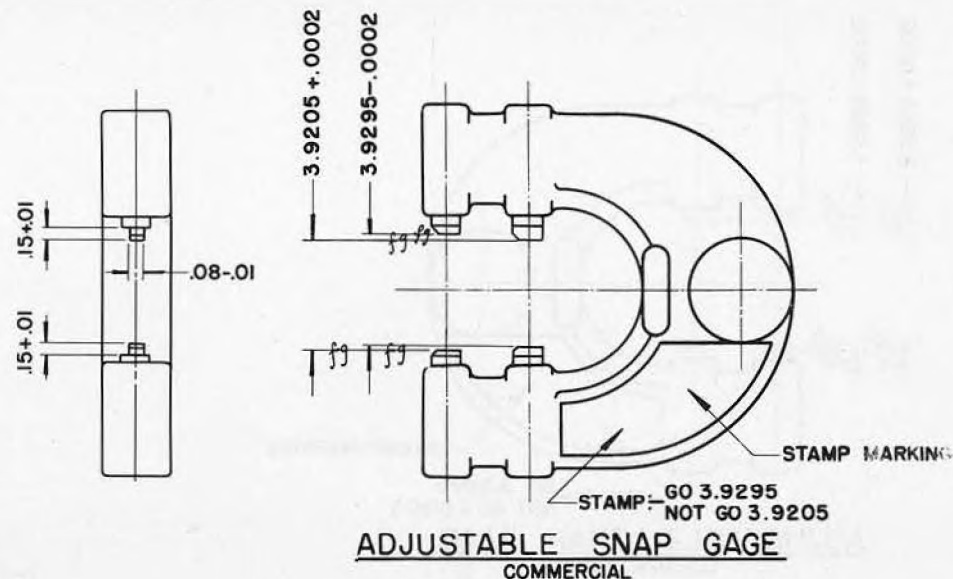


PROFILE GAGE
 TOOL STEEL
 HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI			
	BODY			
	GAGE FOR PROFILE & POS BOATTAIL			
	FROM BAND SEAT			
	FRANKFORD ARSENAL		AUG. 30, 1940	
SUBMITTER	CAPT. <i>[Signature]</i>	DRAFTSMAN H.J.G.	TRACER H.J.G.	INSP. OF WORK W.H.G.
APPROVED	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CITY OF NEW YORK
FBI7938		ORD. DEPT., U. S. A.		

MARKING:-
105MM. H.E. SHELL MI, BODY
75-4-75-DIA. BAND SEAT
WORK
FBI7939



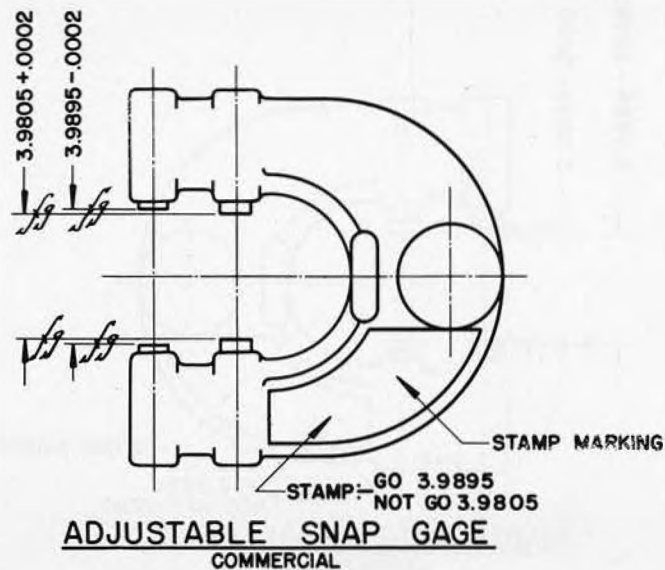
FOR CHECK GAGES SEE DRAWING FB11175- (2)
B = 3.9295 CHECK FOR GO
A = 3.9205 CHECK FOR NOT GO

LAP_{fg} SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY GAGE FOR DIA. BAND SEAT			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	INSP. & DESIGN
	CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.	CH. P. SWAN
	APPROVED	CHECKER	CHECKER	CH. P. SWAN
ORD. DEPT., U. S. A.		ORD. DEPT., U. S. A.		
FBI7939				

MARKING:-
105MM. H.E. SHELL MI, BODY
75-4-75-DIA. OVER RIBS
WORK
FB17940



FOR CHECK GAGES SEE DRAWING FB11175-(2)

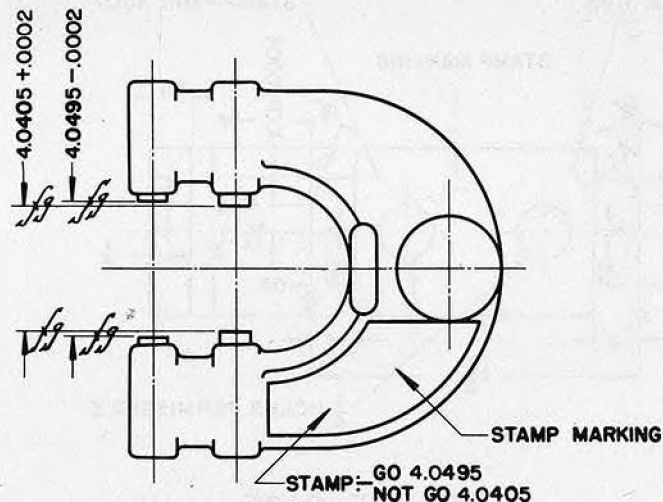
B = 3.9895 CHECK FOR GO
A = 3.9805 CHECK FOR NOT GO

LAP_{fg} SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY GAGE FOR DIA. OVER RIBS			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTER	DRAFTSMAN	TRACER	INSP. BY
	CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.	H.J.G.
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER
APPROVED	FBI7940			ORD. DEPT., U. S. A.

MARKING:-
105 MM. H.E. SHELL, MI
75-4-75 - DIA. RECESS
WORK
FBI794I



ADJUSTABLE SNAP GAGE
COMMERCIAL

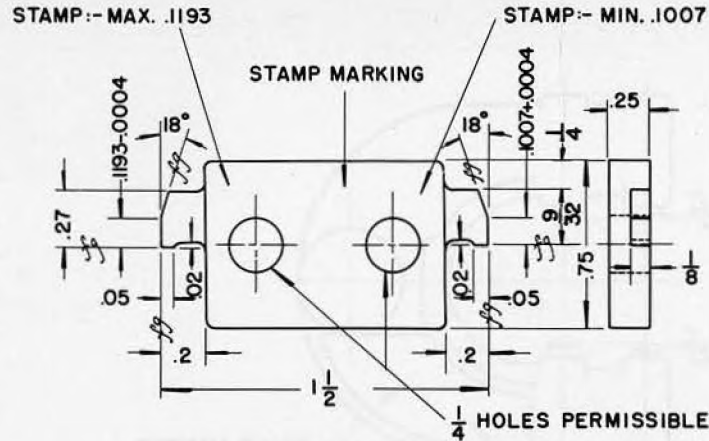
FOR CHECK GAGES SEE DRAWING FB11175-(7)
B = 4.0495 CHECK FOR GO
A = 4.0405 CHECK FOR NOT GO

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI			
	BODY			
	GAGE FOR DIA. RECESS IN REAR			
	OF BAND SEAT			
	FRANKFORD ARSENAL	AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TRACER	INSP BY
	CAPT. <i>[Signature]</i>	RI	RI	CH'F DES'GN
	CHECKER	CHECKER	CHECKER	CHECKER
	APPROVED	ORD. DEPT., U. S. A.		
	FBI794I			
	ORD. DEPT., U. S. A.			

MARKING:-

105MM. H.E. SHELL, MI, BODY
75-4-75-PROFILE REAR OF BAND SEAT
WORK
FB17942



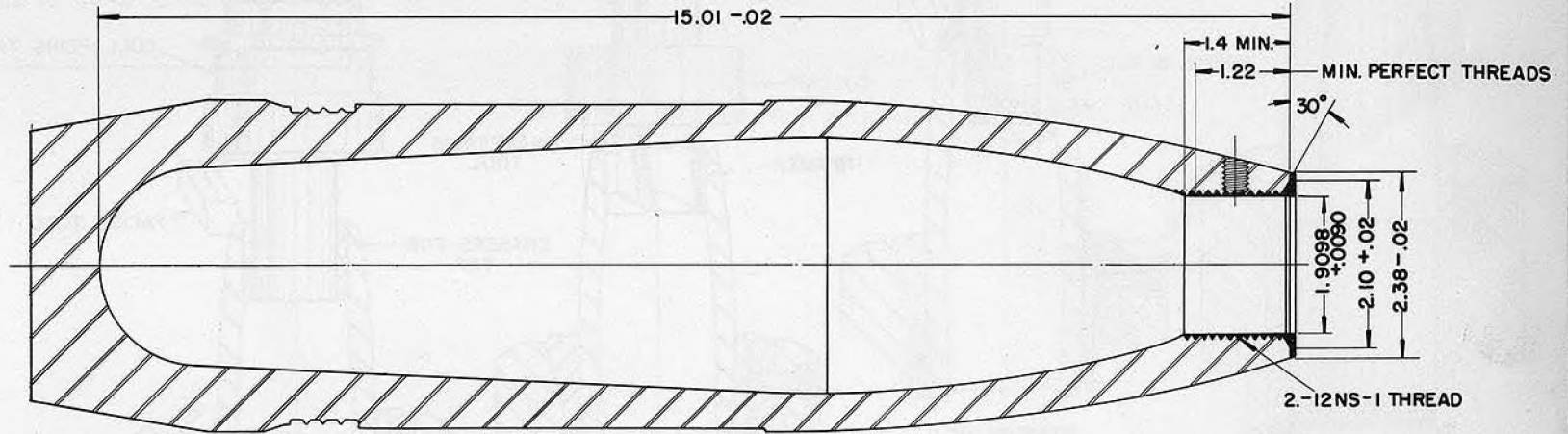
TEMPLATE GAGE
TOOL STEEL
HARDEN

LAP f_g SURFACES.
REMOVE ALL SHARP EDGES.

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY GAGE FOR PROFILE REAR OF BAND SEAT FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	FORWARDED BY
	CAPT. <i>[Signature]</i>	H.G.	H.G.	W.R.
	CHECKER	CHECKER	CHECKER	CHECKER
	APPROVED	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.	ORD. DEPT., U. S. A.
		FB17942		

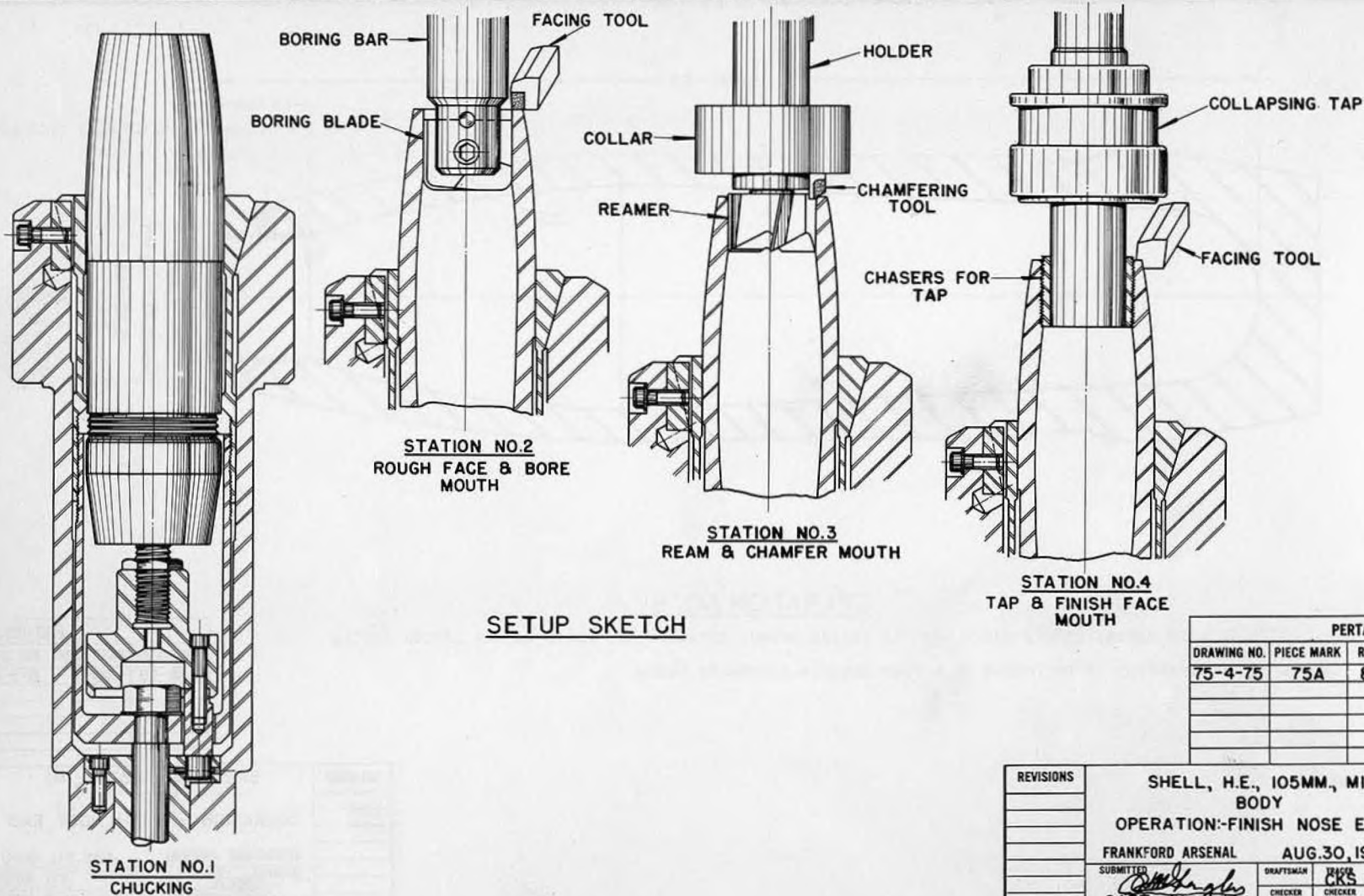


OPERATION NO. 9

In this operation the shell nose is finish bored, threaded and faced to the proper cavity depth. This operation is performed on a four spindle automatic lathe.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75 A	8-1-40

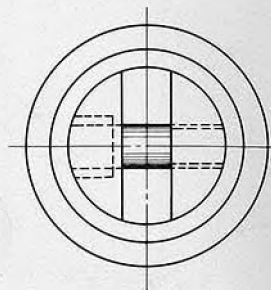
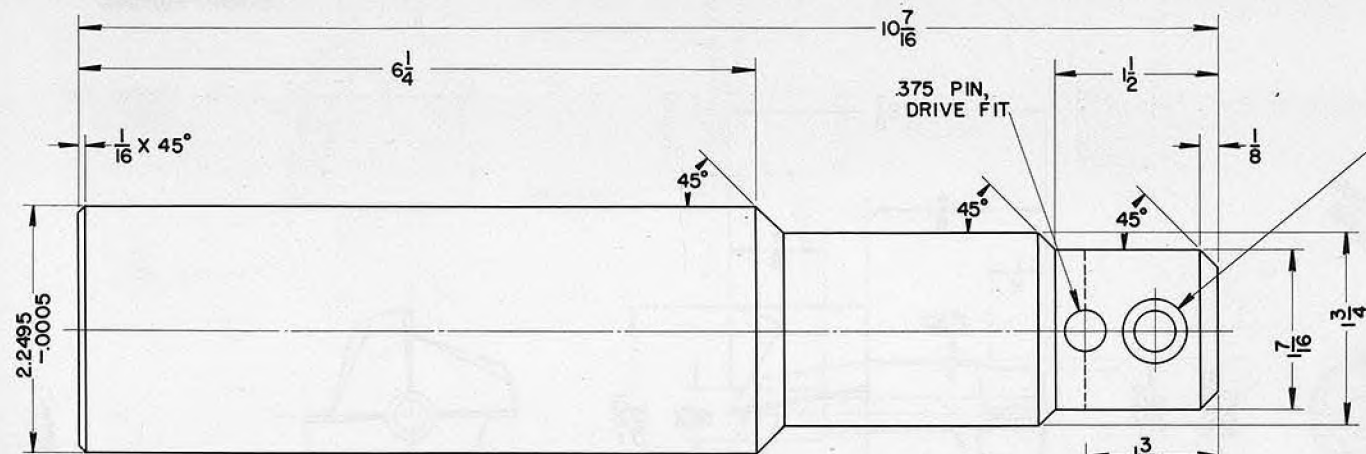
REVISIONS	SHELL, H.E., 105 MM., M1 BODY			
	OPERATION:-FINISH NOSE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	INSP.
	CAPT. <i>[Signature]</i>	C.D.	C.D.	C.D.
APPROVED	ORD. DEPT., U. S. A.		CHECKER	CHECKER
ORD. DEPT., U. S. A.		FBI7943		



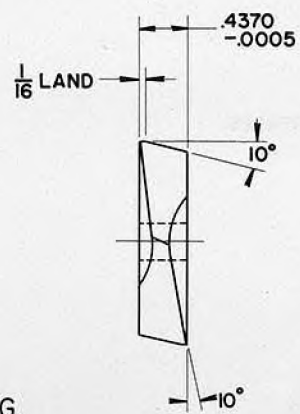
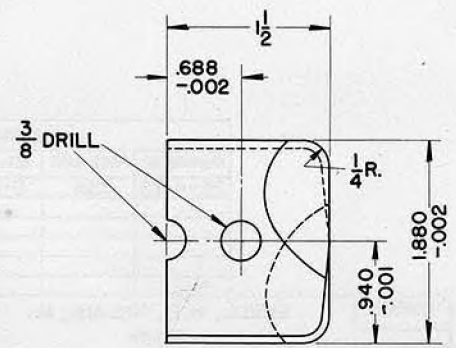
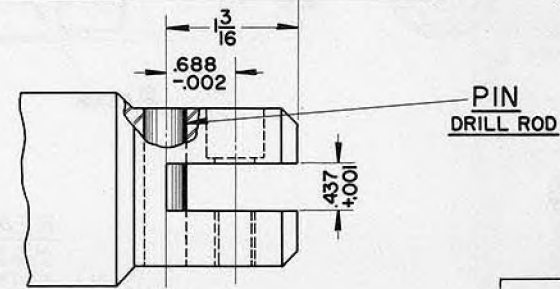
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM, MI BODY			
	OPERATION: FINISH NOSE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED <i>[Signature]</i> CAPT.	DRAFTSMAN ORD. DEPT., U. S. A.	CHECKER CKS	CH'F DESIGNER M.A.V.
	APPROVED			
ORD. DEPT., U. S. A.		FB17944		

STAMP:-FB17945



BAR, BORING
STEEL - CHROME NICKEL - 5-317



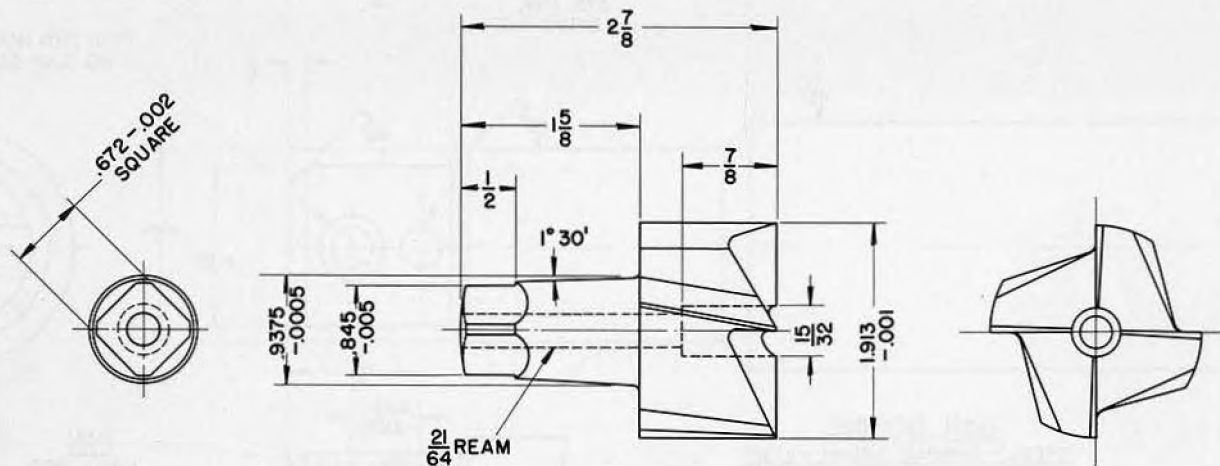
BLADE, BORING
H.S. STEEL
HARDEN
§9 ALL CUTTING SURFACES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI		
	BODY		
	OPERATION:-FINISH NOSE END		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TRACER
CAPT. [Signature]	ORD. DEPT. U. S. A.	CHECKER	
APPROVED	ORD. DEPT. U. S. A.	CHECKER	
FBI7945			

STATION NO. 2

STAMP:-FB17946



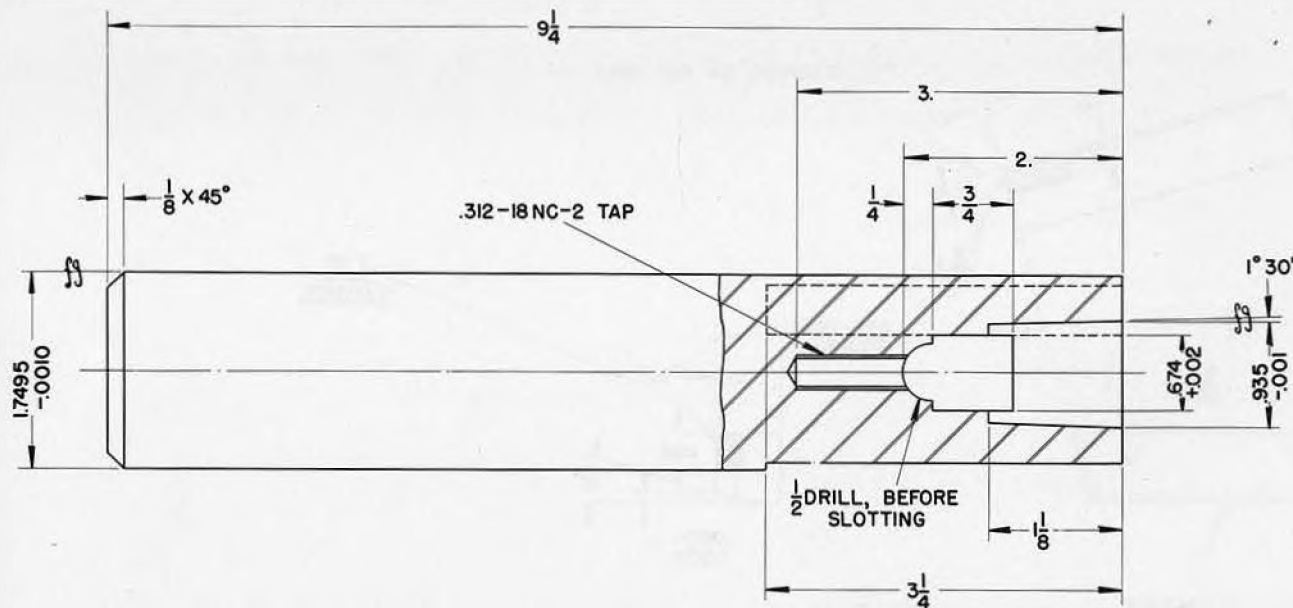
REAMER
H.S. STEEL
§ ALL CUTTING SURFACES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H. E., 105 MM., M1			
	BODY			
	OPERATION:- FINISH NOSE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED BY <i>[Signature]</i>			
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER	BY <i>[Signature]</i>
APPROVED				ORD. DEPT., U. S. A.
				FB17946

STATION NO. 3

STAMP:- FBI7947



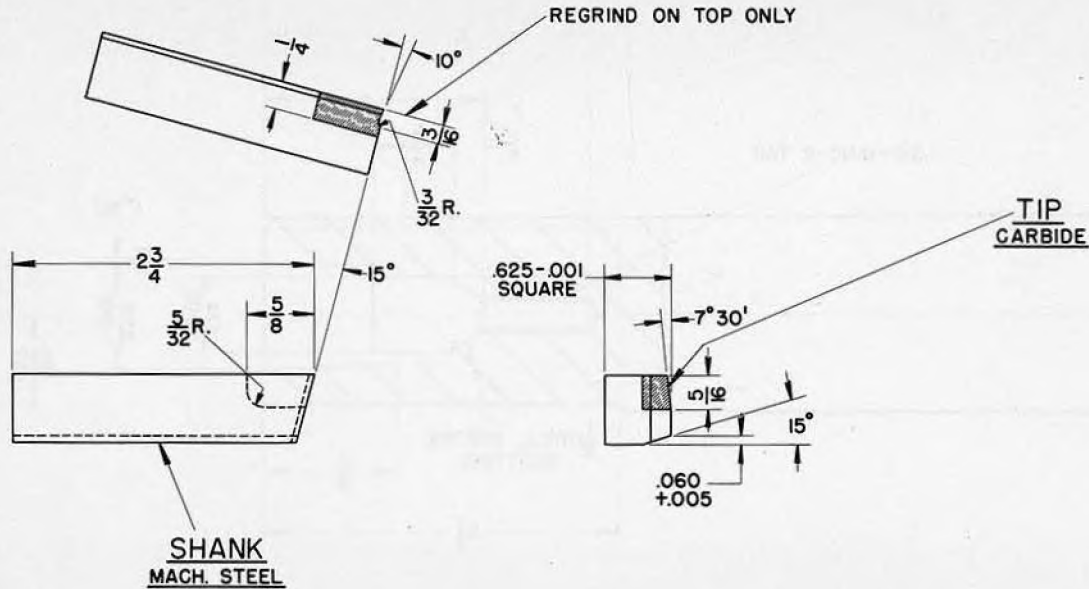
HOLDER
STEEL - CHROME NICKEL-5-317
 HARDEN
 SCREW, HOLLOW HD. CAP, .312-18 NC-2 X 3. LONG

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H. E., 105 MM., M1	
		BODY	
		OPERATION:- FINISH NOSE END	
		FRANKFORD ARSENAL AUG. 30, 1940	
SUBMITTED	DRAFTSMAN	TRACER	FOR BY CH
CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHECKER
ORD. DEPT., U. S. A.		ORD. DEPT., U. S. A.	
APPROVED		FBI7947	
		ORD. DEPT., U. S. A.	

STATION NO. 3

STAMP:-FB17948



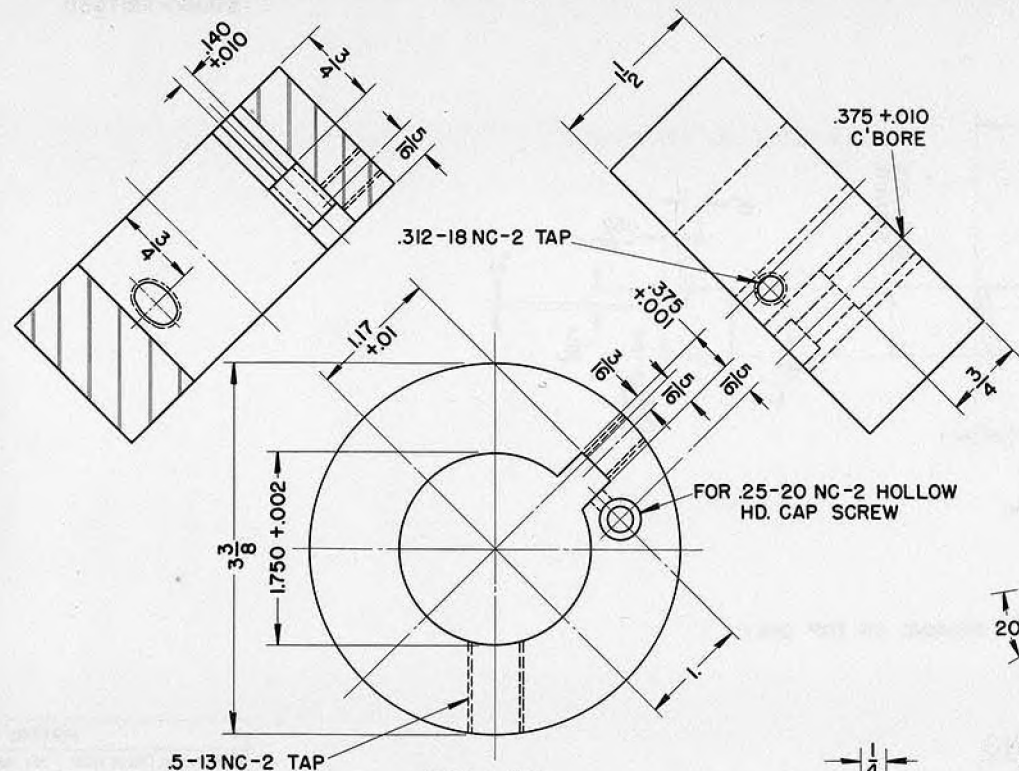
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105 MM., M1 BODY OPERATION:- FINISH NOSE END			
		FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	<i>[Signature]</i>	DRAFTSMAN	TRACER	INSP. BY	
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CH. FOR SHAW	
APPROVED					
		ORD. DEPT., U. S. A.			

STATION NO. 2

FB17948

STAMP:-FBI7949

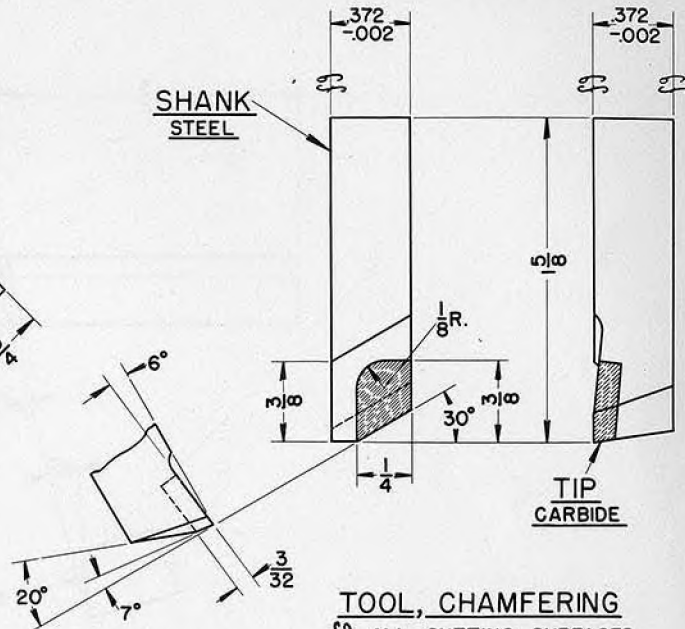


.5-13 NC-2 TAP

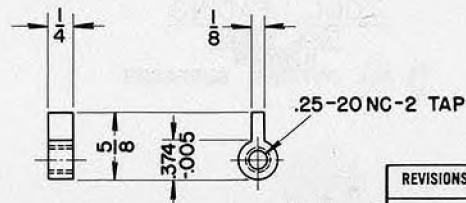
COLLAR
STEEL - SAE - 1010

SCREW, HOLLOW HD. CAP, .25-20 NC-2 X 1.25 LONG
SCREW, HOLLOW HD. SET, .312-18 NC-2 X .5 LONG
SCREW, HOLLOW HD. SET, .5-13 NC-2 X .812 LONG

SHANK
STEEL



TIP
CARBIDE



NUT
STEEL - SAE - 1010

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105 MM, M1
BODY

OPERATION:- FINISH NOSE END

FRANKFORD ARSENAL

AUG. 30, 1940

SUBMITTED

DRAFTSMAN

TRACER

CHK'D BY

CAPT. [Signature]

CHECKER

CHECKER

CHK'D BY

APPROVED

ORD. DEPT., U. S. A.

CHECKER

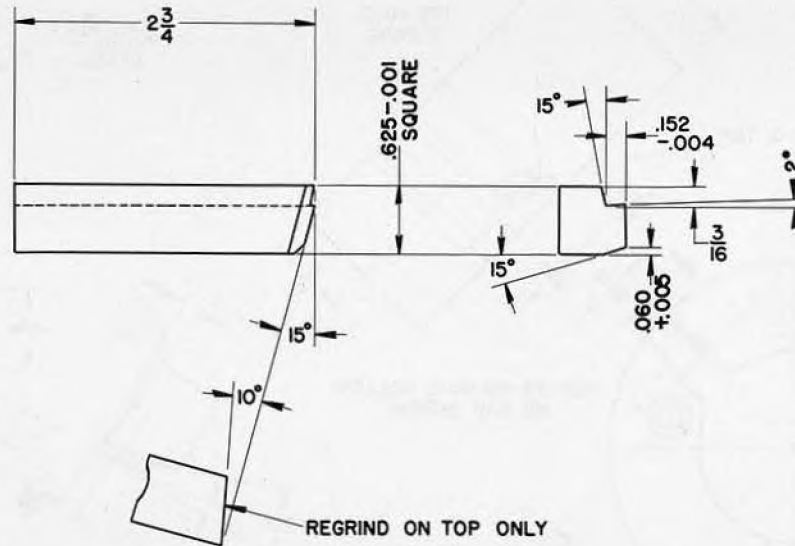
CHK'D BY

ORD. DEPT., U. S. A.

FBI7949

STATION NO. 3

STAMP:- FB17950



TOOL, FACING
TOOL STEEL
HARDEN
§ ALL CUTTING SURFACES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1																		
	BODY																		
	OPERATION:- FINISH NOSE END																		
	FRANKFORD ARSENAL		AUG. 30, 1940																
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SUBMITTED	DRAFTSMAN	TRACER	CHK'D BY																
CAPT. <i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>																
APPROVED	CHECKER	CHECKER	CHK'D BY																
ORD. DEPT., U. S. A.		FB17950																	
ORD. DEPT., U. S. A.																			

STATION NO. 4

STAMP:-FBI7951

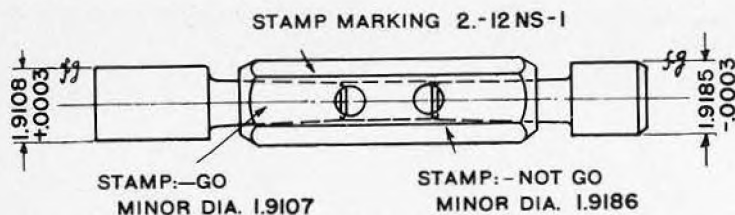
SET OF 4 CHASERS, HIGH SPEED, REGULAR 12° CHAMFER,
20° LIP HOOK, GROUND THREAD FORM, FOR 1.5" CLASS "S"
GEOMETRIC COLLAPSING TAP, TO CUT THE FOLLOWING
THREADS IN STEEL:-

2.-12NS-1
MAJOR = 2. MIN.
PITCH = 1.9459 +.0106
MINOR = 1.9098 +.0090

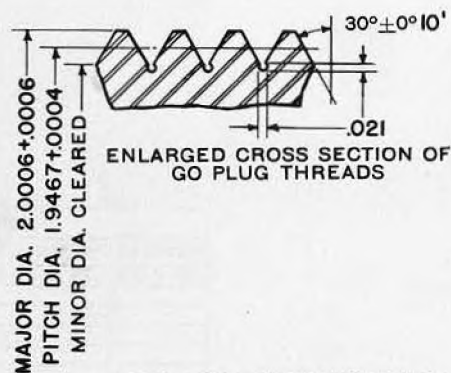
CHASERS FOR TAP

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75 A	8-1-40

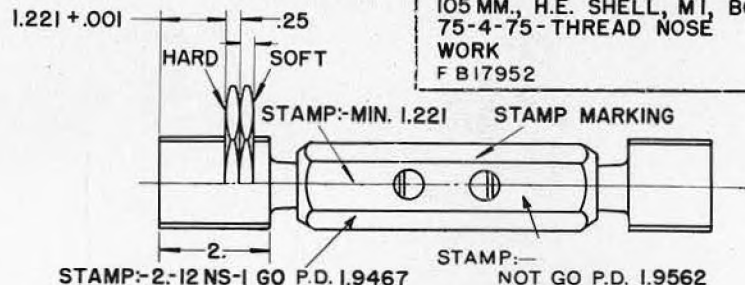
REVISIONS	SHELL, H. E., 105 MM., M1			
	BODY			
	OPERATION:- FINISH NOSE END			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED <i>[Signature]</i>			
CAPT. <i>[Signature]</i>	ORD. DEPT., U. S. A.	CHECKER	CHECKER	W. R. S.
APPROVED	FBI7951			
ORD. DEPT., U. S. A.				



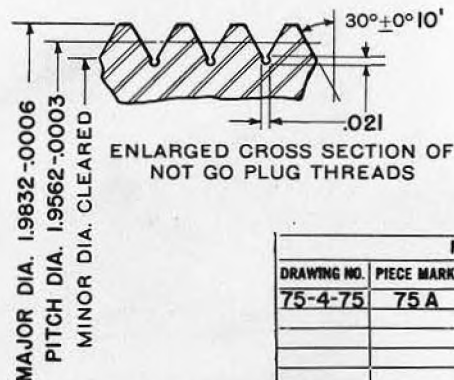
PLAIN PLUG GAGES
AMERICAN GAGE DESIGN STANDARD
HARDEN



FOR LIMIT CHECK GAGES SEE DRG. FB11175 - (3) & (5)
A = 1.9467 LIMIT CHECK FOR GO P.D.
A = 1.9109 LIMIT CHECK FOR GO MINOR DIA.



THREAD PLUG GAGES
AMERICAN GAGE DESIGN STANDARD SPEC. LGTH. GO
HARDEN
2-NUTS, LOCK, 2-12 NS-1 X .25 THICK
MACH. STEEL-1 PK. HARDEN, 1 SOFT.



MARKING:--
105 MM., H.E. SHELL, M1, BODY
75-4-75-THREAD NOSE
WORK
F B17952

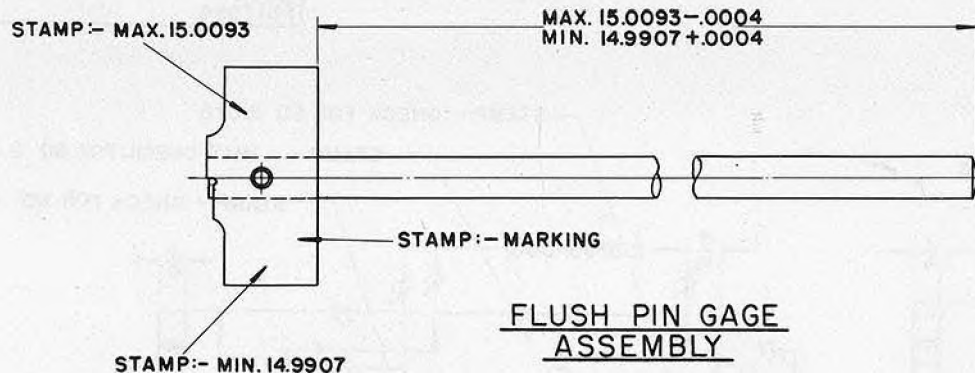
ENLARGED CROSS SECTION OF
NOT GO PLUG THREADS

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

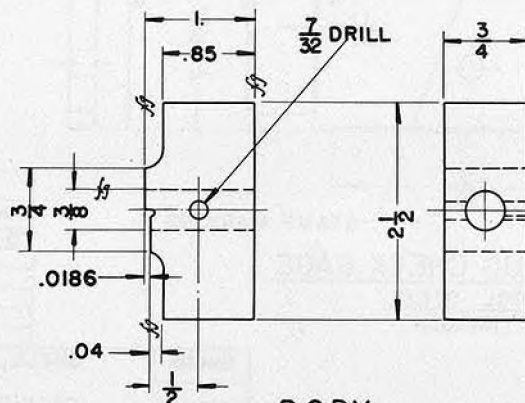
REVISIONS		SHELL, H.E., 105 MM., M1 BODY	
		GAGE FOR 2-12 NS-1 THD.	
		FRANKFORD ARSENAL AUG. 30, 1940	
		SUBMITTED	DRAFTSMAN
		CAPT. ORD. DEPT. U. S. A.	CHECKER
		APPROVED	CHECKER
		ORD. DEPT. U. S. A.	CITY OF BIRMINGHAM

FBI7952

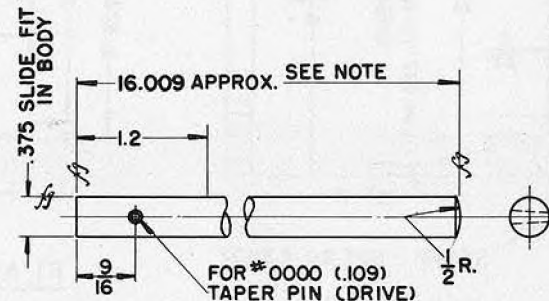
MARKING:-
105 MM. H.E. SHELL, M1
75-4-75- DEPTH OF CAVITY
WORK
FBI7953



NOTE:-
PIN TO BE FLUSH WITH STEPS
FOR MAX. & MIN. POSITIONS.



BODY
TOOL STEEL
HARDEN
PIN, STEEL TAPER #0000 (.109) X .5 LONG



PIN
TOOL STEEL
HARDEN

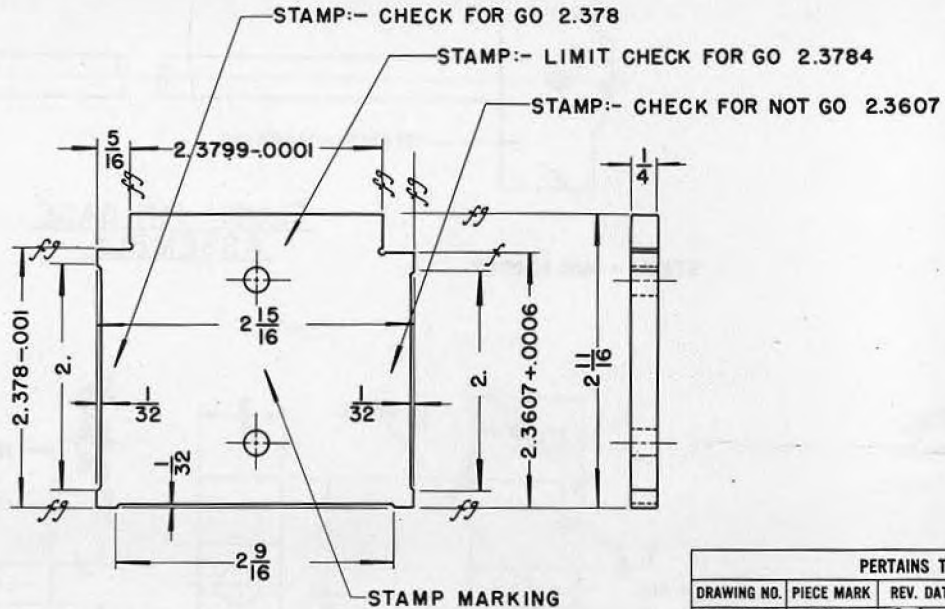
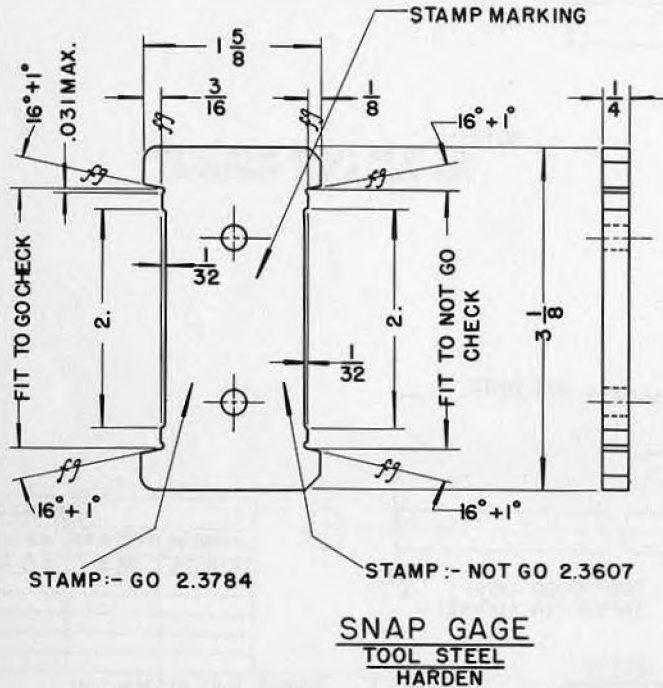
LAP $\frac{1}{2}$ SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75 A	8-1-40

REVISIONS		SHELL, H.E. 105 MM., M1 BODY GAGE FOR FINISHED DEPTH OF CAVITY		
		FRANKFORD ARSENAL AUG. 30, 1940		
		SUBMITTED	DRAFTSMAN	TRACER
		CAPT. <i>[Signature]</i>	CD	CD
		CHECKER	CHECKER	CHECKER
		ORD. DEPT., U. S. A.		
		APPROVED		
		ORD. DEPT., U. S. A.		

FBI7953

MARKING:-
105MM. H.E. SHELL MI BODY
75-4-75- DIA. AT NOSE
WORK
FBI7954



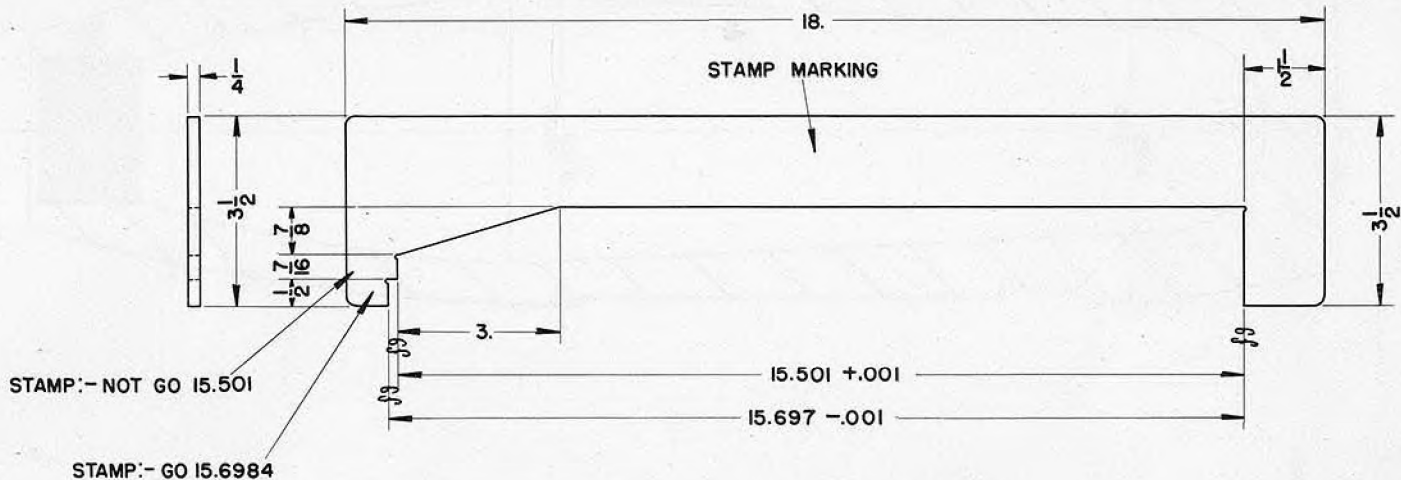
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105 MM., MI BODY GAGE FOR DIA. AT NOSE		
		FRANKFORD ARSENAL AUG. 30, 1940		
		SUBMITTED	DRAFTSMAN	TRACER
		CAPT. <i>[Signature]</i>	H.J.G.	H.J.G.
		ORD. DEPT., U. S. A.	CHECKER	CHECKER
		APPROVED		
		ORD. DEPT., U. S. A.		

FBI7954

LAP *f*g SURFACES
REMOVE ALL SHARP EDGES

MARKING: -
105 MM. H.E. SHELL, MI
75-4-75 - TOTAL LENGTH
WORK
FBI7955

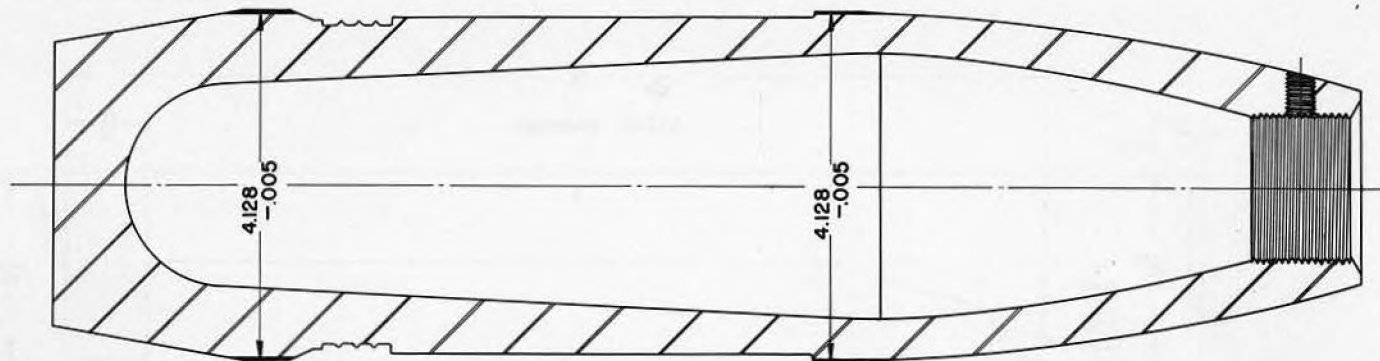


SNAP GAGE
MACHINE STEEL
PACK HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H. E., 105 MM., M1			
	BODY			
	GAGE FOR TOTAL LENGTH			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	IN CHARGE
CAPT. <i>[Signature]</i>	RI	R	N. A. S.	
	CHECKER	CHECKER	CH. FOR SIGN.	
APPROVED	ORD. DEPT., U. S. A.		FBI7955	
	ORD. DEPT., U. S. A.			

LAP SURFACES
REMOVE ALL SHARP EDGES



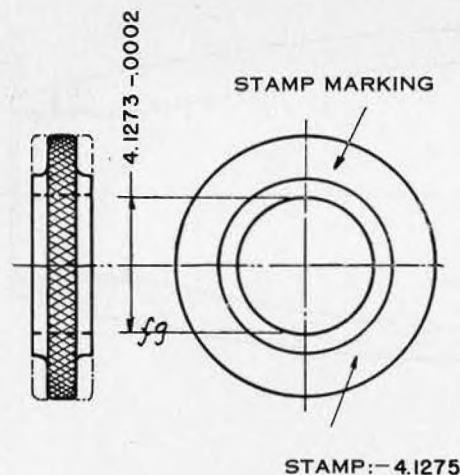
OPERATION NO. 10

This operation is performed very quickly and economically on a Centerless Grinder. This grinding operation is not mandatory but its use permits maximum feed and speed on the finish turning of the shell. Without this grinding operation it will be necessary to produce a much finer finish at the finish turning operation.

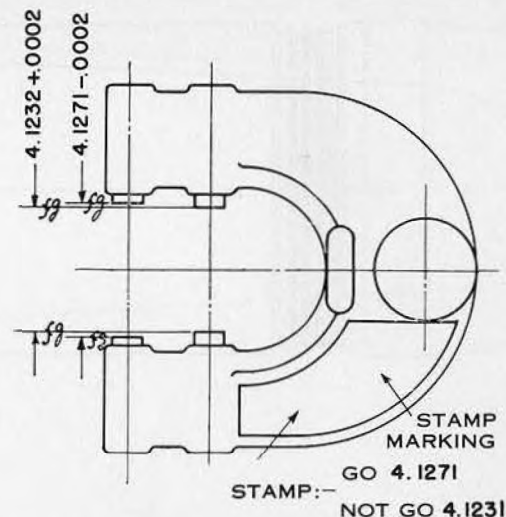
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI														
	BODY														
	OPERATION: GRIND BOURRELET														
	FRANKFORD ARSENAL														
	<table border="1"> <tr> <td>SUBMITTED</td> <td>DRAFTSMAN</td> <td>TRACER</td> <td>INSP. TRACER</td> </tr> <tr> <td>CAPT. <i>[Signature]</i></td> <td>RI</td> <td>RI</td> <td>RI</td> </tr> <tr> <td>ORD. DEPT., U. S. A.</td> <td>CHECKER</td> <td>CHECKER</td> <td>CHECKER</td> </tr> </table>				SUBMITTED	DRAFTSMAN	TRACER	INSP. TRACER	CAPT. <i>[Signature]</i>	RI	RI	RI	ORD. DEPT., U. S. A.	CHECKER	CHECKER
SUBMITTED	DRAFTSMAN	TRACER	INSP. TRACER												
CAPT. <i>[Signature]</i>	RI	RI	RI												
ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER												
APPROVED	ORD. DEPT., U. S. A.			FBI7956											

MARKING:-
105 MM. H.E. SHELL MI, BODY
75-4-75-DIA. BOURRELET
WORK
FB17957



PLAIN RING GAGE
AMERICAN GAGE DESIGN STANDARD
HARDEN



ADJUSTABLE SNAP GAGE
COMMERCIAL

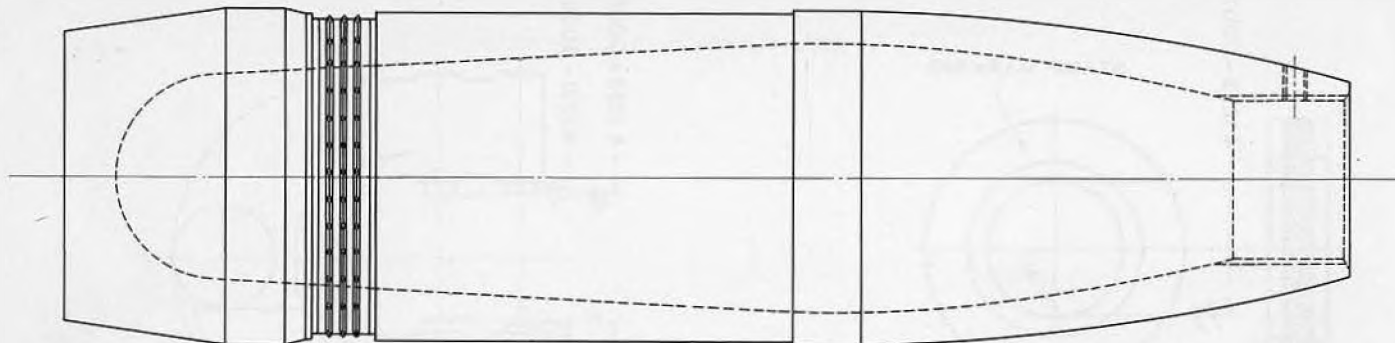
FOR LIMIT CHECK GAGE FOR RING SEE DRG. FB11175- (8)
A= 4.1275 LIMIT CHECK FOR GO

FOR CHECK GAGES FOR ADJ. SNAP SEE DRG. FB11175- (7)
A= 4.1271 CHECK FOR GO
A= 4.1231 CHECK FOR NOT GO

LAP f9 SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75- 4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105MM., MI BODY GAGE FOR O.DIA. BOURRELET			
FRANKFORD ARSENAL		AUG. 30, 1940			
SUBMITTED	<i>[Signature]</i>	DRAFTSMAN	H.J.G.	TRACER	H.J.G.
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER	CHECKER
APPROVED		FB17957			
		ORD. DEPT., U. S. A.			

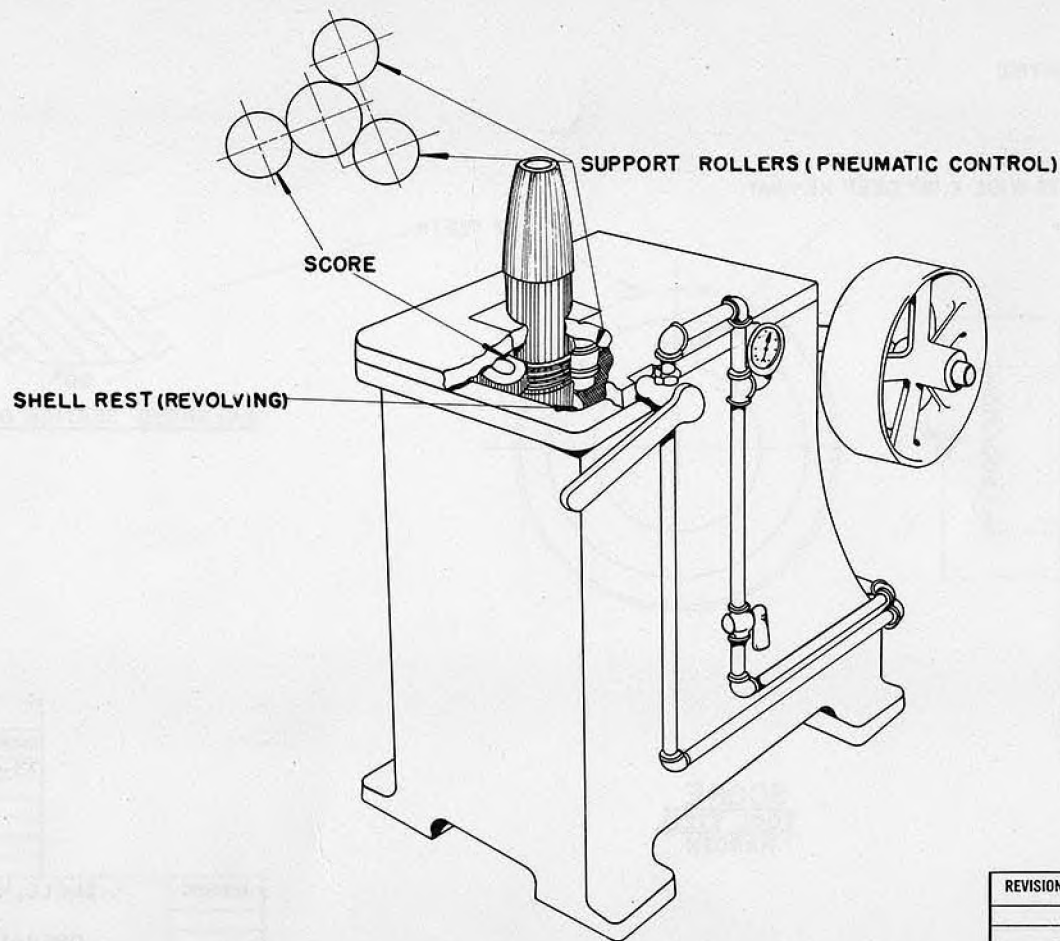


OPERATION NO. II

The band seat form tool used in Operation #8 forms grooves around the circumference of the band seat to facilitate scoring. At this operation a scoring roller is used to form the serrations longitudinally.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY OPERATION:- SCORE		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TESTER
	CAPT. <i>[Signature]</i>	CKS	CKS
	ORD. DEPT., U. S. A.	CHECKER	CHECKER
	APPROVED	CH'Y DE SMAN	
	ORD. DEPT., U. S. A.	FBI7958	

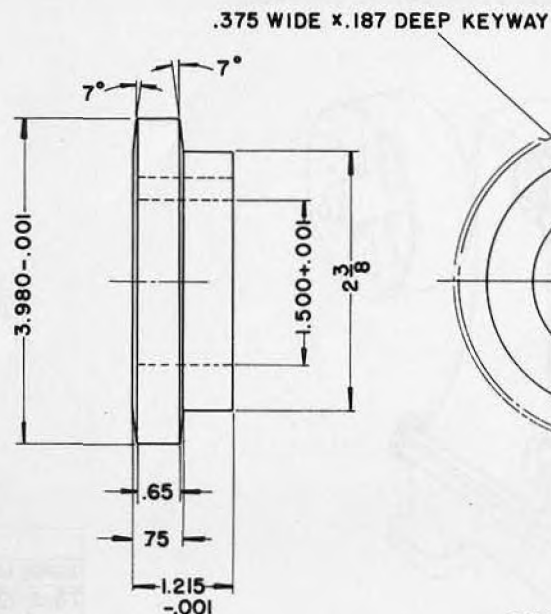


SETUP SKETCH

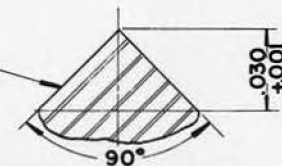
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105MM., M1			
		BODY			
		OPERATION:- SCORE			
		FRANKFORD ARSENAL		AUG. 30, 1940	
SUBMITTED		DRAFTSMAN	TRACER	W/DRS MAN	
CAPT. <i>[Signature]</i>		H.J.G.	H.J.G.	W/DRS MAN	
APPROVED		CHECKER	CHECKER	CHT OR SMAN	
		ORD. DEPT., U. S. A.			
		FB17959			

NOTE:-
DIAMETERS MUST BE CONCENTRIC



37 TEETH

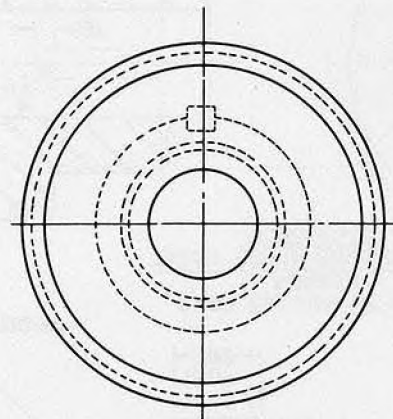
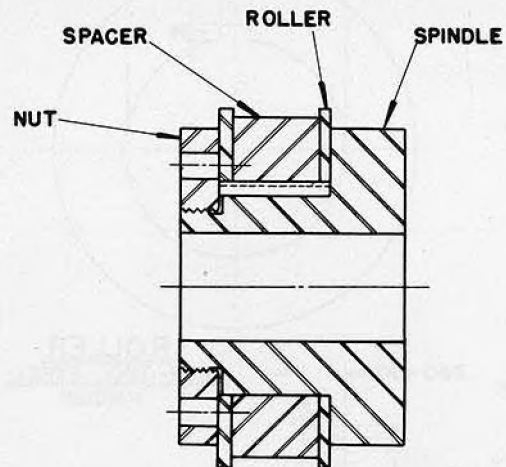


ENLARGED SECTION OF TEETH

SCORE
TOOL STEEL
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BODY OPERATION:- SCORE			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	INSP.
	CAPT <i>[Signature]</i>	W. J. G.	W. J. G.	W. J. G.
	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER
	APPROVED			
	ORD. DEPT., U. S. A.	FBI7960		

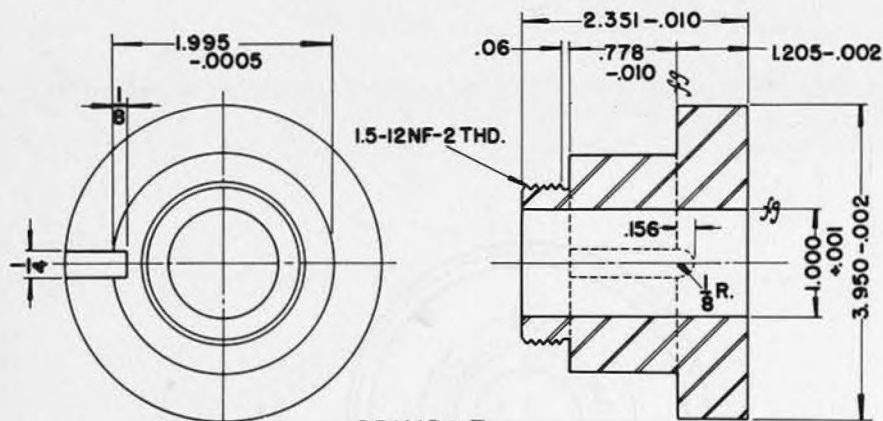


ROLLER ASSEMBLY

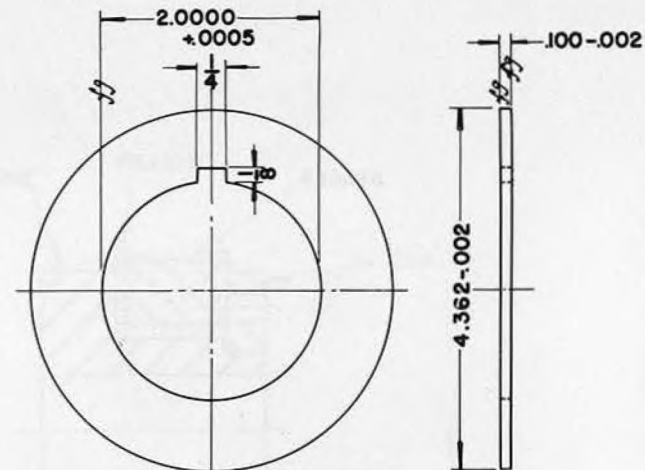
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM, M I				
	BODY				
	SUPPORT ROLLER ASSEMBLY				
	FRANKFORD ARSENAL AUG. 30, 1940				
	SUBMITTED <i>[Signature]</i>				
	CAPT. <i>[Signature]</i>	ORD. DEPT., U. S. A.	DRAFTSMAN H.J.G. CHECKER	TRACER H.J.G. CHECKER	PHOTOGRAPH H.J.G. CHECKER
	APPROVED	ORD. DEPT., U. S. A.	FBI7961		

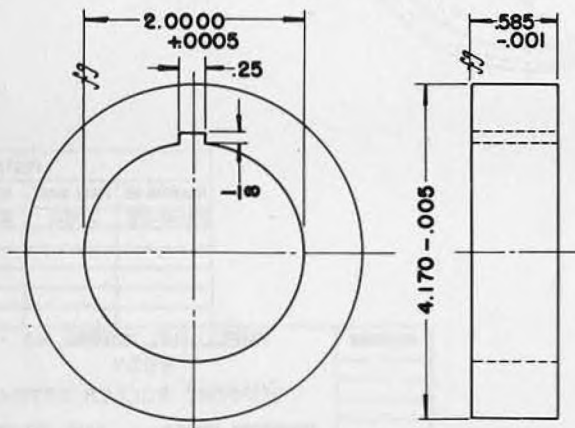
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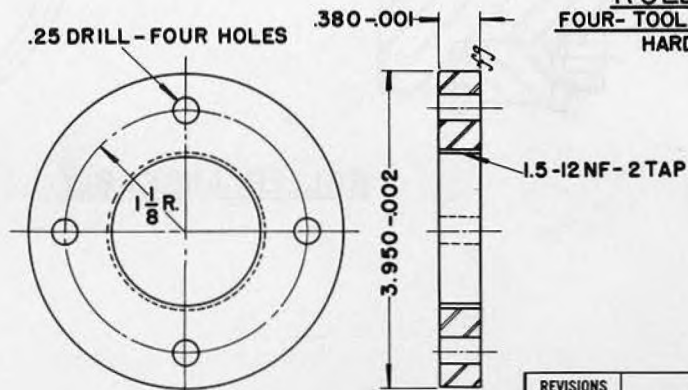
SPINDLE
TWO-CHROME NICKEL STEEL
HARDEN
1-.25 x .25 KEY .768 LONG



ROLLER
FOUR- TOOL STEEL
HARDEN



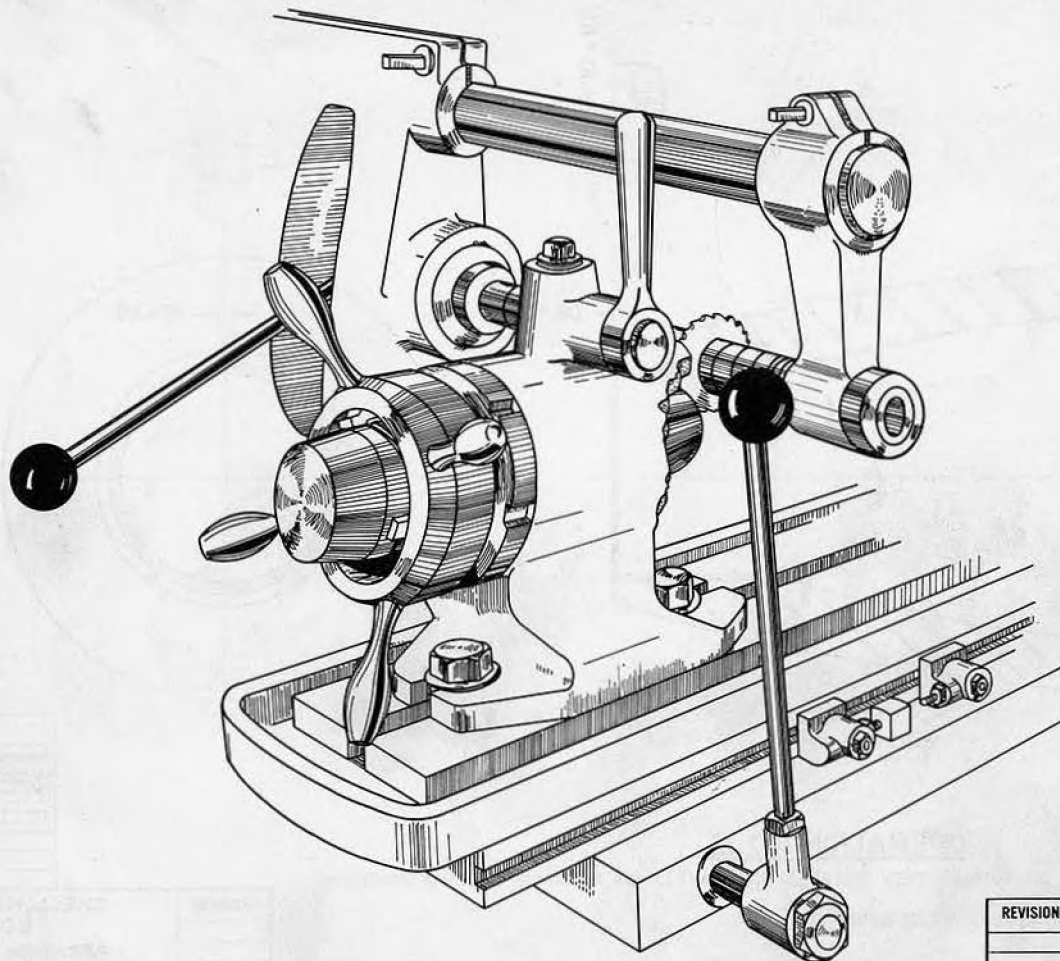
SPACER
TWO-CHROME NICKEL STEEL
HARDEN



NUT
TWO-CHROME NICKEL STEEL
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

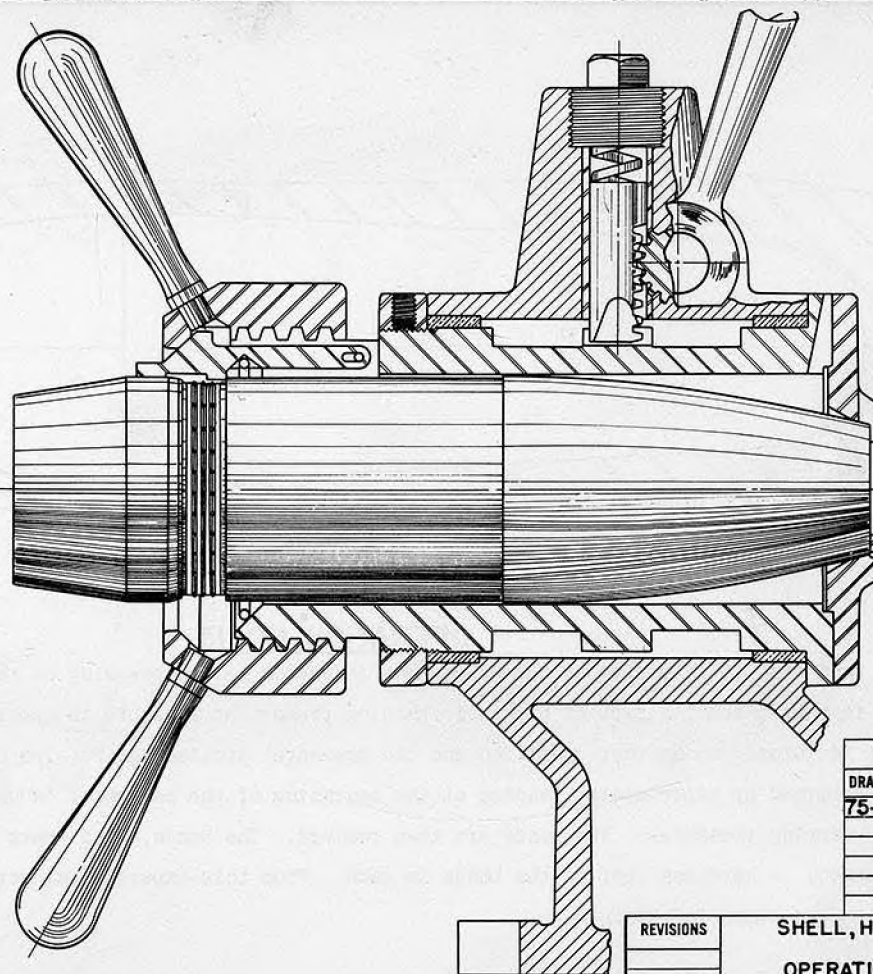
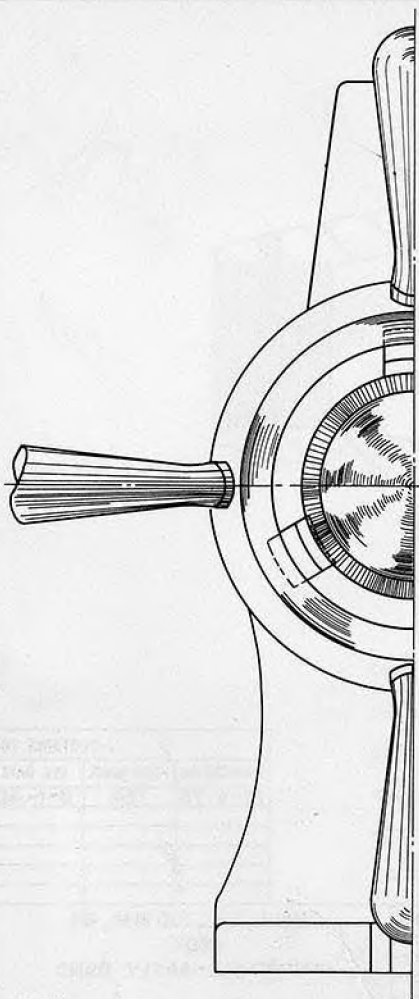
REVISIONS		SHELL, H.E., 105 MM, MI BODY SUPPORT ROLLER - DETAILS			
FRANKFORD ARSENAL					
SUBMITTED	CAPT. <i>[Signature]</i>	DRAFTSMAN	TRACER	VOID BY MAN	
APPROVED	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHK'D BY	
		FB17962			
		ORD. DEPT., U. S. A.			



SETUP SKETCH

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., M1																		
	BODY																		
	OPERATION:- NOTCH																		
	FRANKFORD ARSENAL		AUG. 30, 1940																
	<table border="1"> <tr> <td>SUBMITTED</td> <td>DRAFTSMAN</td> <td>TRACER</td> <td>INSP. BY</td> </tr> <tr> <td><i>[Signature]</i></td> <td>M. J. G.</td> <td></td> <td></td> </tr> <tr> <td>CAPT. APPROVED</td> <td>CHECKER</td> <td>CHECKER</td> <td>CHK'D BY</td> </tr> <tr> <td>ORD. DEPT., U. S. A.</td> <td></td> <td></td> <td></td> </tr> </table>				SUBMITTED	DRAFTSMAN	TRACER	INSP. BY	<i>[Signature]</i>	M. J. G.			CAPT. APPROVED	CHECKER	CHECKER	CHK'D BY	ORD. DEPT., U. S. A.		
SUBMITTED	DRAFTSMAN	TRACER	INSP. BY																
<i>[Signature]</i>	M. J. G.																		
CAPT. APPROVED	CHECKER	CHECKER	CHK'D BY																
ORD. DEPT., U. S. A.																			
	ORD. DEPT., U. S. A.		FBI7964																



ASSEMBLY

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS

SHELL, H.E., 105MM, M1
BODY
OPERATION:- NOTCH

FRANKFORD ARSENAL

AUG. 30, 1940

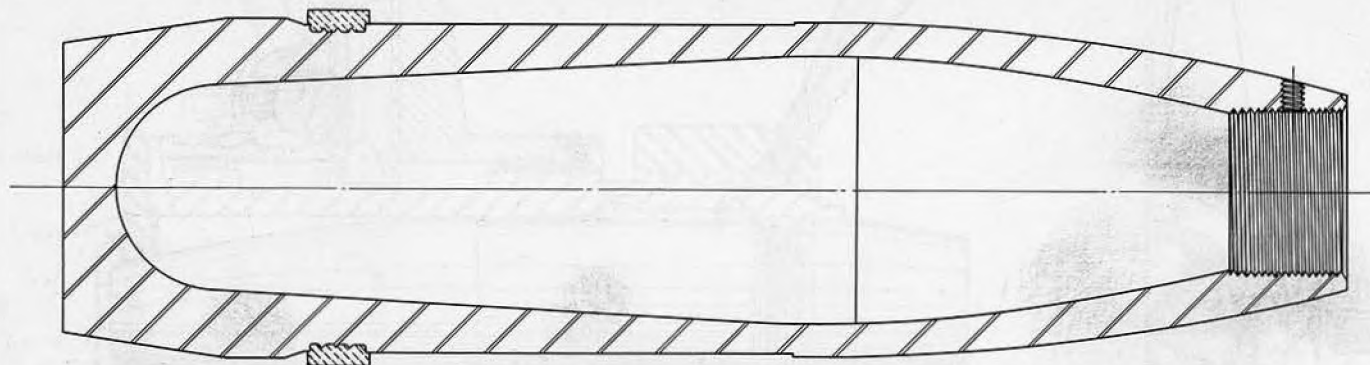
SUBMITTED
CAPT. *W. J. G.*
ORD. DEPT., U. S. A.
APPROVED

DRAFTSMAN	TRACER	BY
CHECKER	CHECKER	DATE

ORD. DEPT., U. S. A.

FBI7965

MADE BY THE PRODUCTO MACHINE CO. BRIDGEPORT CONN.



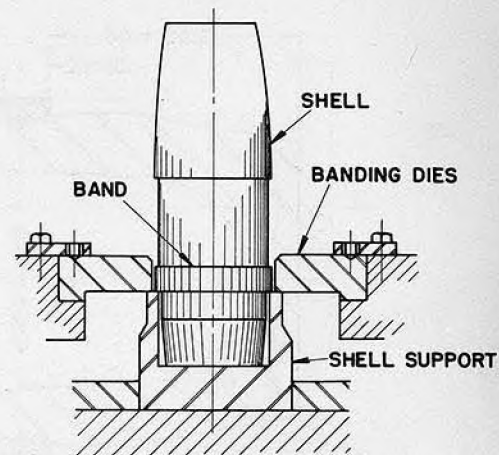
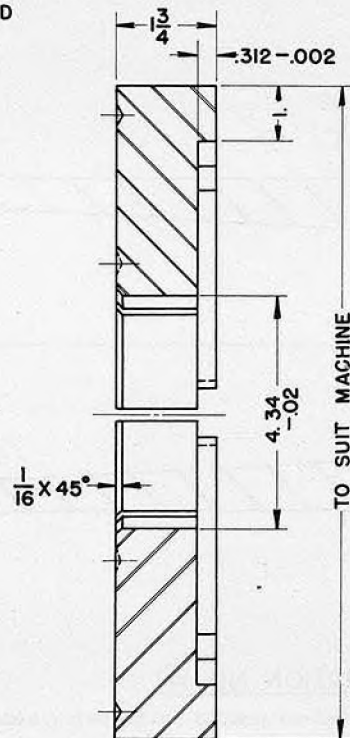
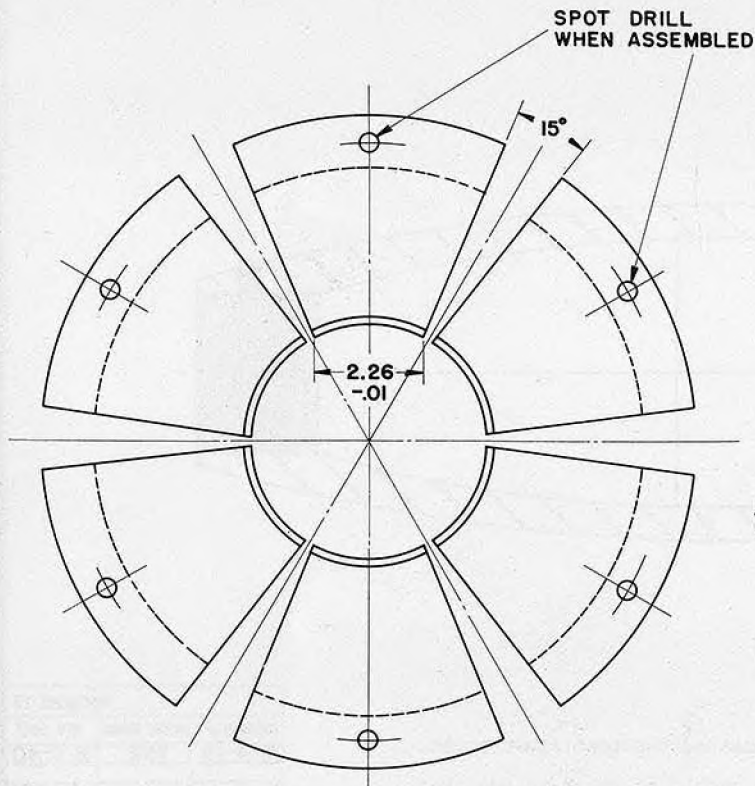
OPERATION NO. 13

The band seat is inspected by the Government inspector before pressing on the band. The band is pressed on in a tire seating type of hydraulic banding press. The pressure is applied, then released and the shell is turned to another position and the pressure applied again. The correct operating pressure is determined by experimental banding at the beginning of the contract. A number of shell are banded, using varying pressures. The bands are then removed. The bands, band seats and walls of the shell are examined. A hardness test of the bands is made. From this experimental work the most satisfactory operating pressure is obtained.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 M.M., M1														
	BODY														
	OPERATION:- APPLY BAND														
	FRANKFORD ARSENAL		AUG. 30, 1940												
	<table border="1"> <tr> <td>SUBMITTER</td> <td>DRAFTSMAN</td> <td>TRACER</td> <td>INSP. FOR WORK</td> </tr> <tr> <td>CAPT. <i>[Signature]</i></td> <td>RI</td> <td>RI</td> <td>RI</td> </tr> <tr> <td>ORD. DEPT., U. S. A.</td> <td>CHECKER</td> <td>CHECKER</td> <td>CH. FOR WORK</td> </tr> </table>				SUBMITTER	DRAFTSMAN	TRACER	INSP. FOR WORK	CAPT. <i>[Signature]</i>	RI	RI	RI	ORD. DEPT., U. S. A.	CHECKER	CHECKER
SUBMITTER	DRAFTSMAN	TRACER	INSP. FOR WORK												
CAPT. <i>[Signature]</i>	RI	RI	RI												
ORD. DEPT., U. S. A.	CHECKER	CHECKER	CH. FOR WORK												
APPROVED	ORD. DEPT., U. S. A.			FBI7966											

STAMP:-FB17967



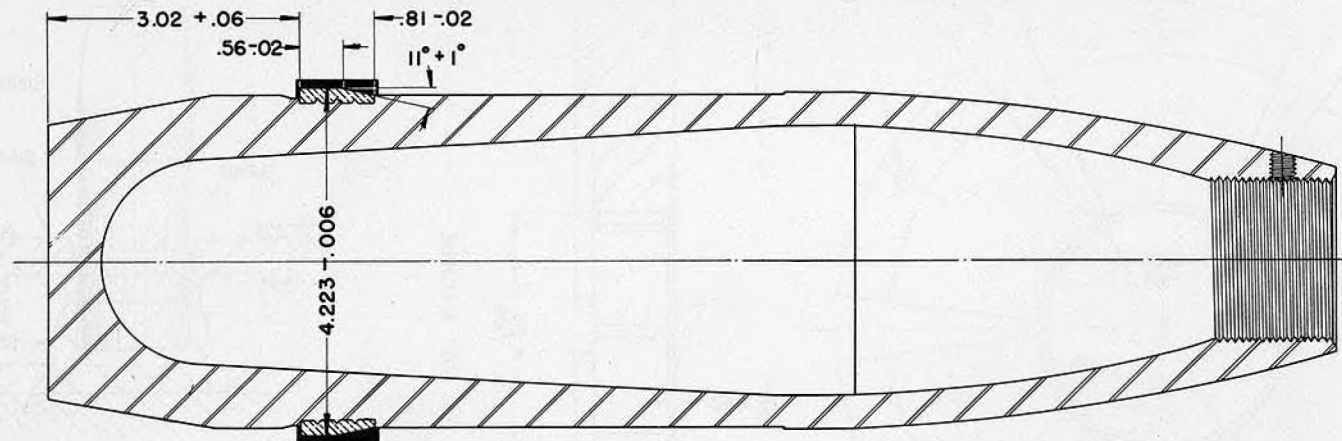
SETUP SKETCH

DIES, BANDING
ONE SET, MACH. STEEL
PACK HARDEN

PERTAINS TO

DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1			
	BAND, ROTATING			
	OPERATION:- APPLY BAND			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	CHECKER	DRAFTSMAN	TRACER
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER	
APPROVED	ORD. DEPT., U. S. A.			FB17967



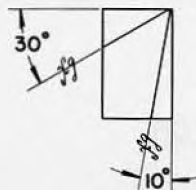
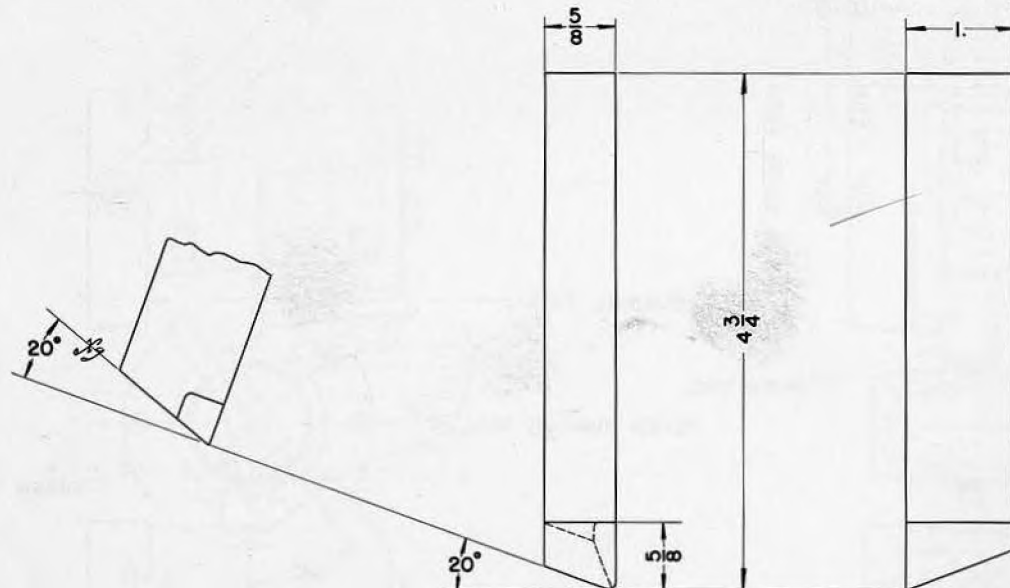
OPERATION NO. 14

This operation is performed on a semi-automatic lathe using cemented carbide tipped tools. Very satisfactory results have been obtained by use of these tools. Care should be taken to see that the machine chucks the shell true.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BAND, ROTATING OPERATION:- TURN BAND			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTERMAN	TRACER	REV. OR. MAN.
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CHK'D BY MAN.
	APPROVED	ORD. DEPT., U. S. A.	CHECKER	CHK'D BY MAN.
ORD. DEPT., U. S. A.		FBI7968		

STAMP:-FB17970



TOOL, ROUGH & FINISH TURNING
TWO-H.S. STEEL
 HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105MM., M I BAND, ROTATING OPERATION:-TURN BAND FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TRACER
	CAPT. <i>[Signature]</i>	CHEKOR	CHEKOR
	ORD. DEPT. U. S. A.	CHEKOR	CHEKOR
	APPROVED		
	ORD. DEPT., U. S. A.		

FB17970

[illegible]

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI			
	BAND, ROTATING			
	OPERATION:- TURN BAND			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED	DRAFTSMAN	TRACER	INTELLIGENCE MAN
	CAPT. <i>W. H. S. S.</i>	CHECKER	CHECKER	CHK' FOR SIGN
		ORD. DEPT., U. S. A.		
	APPROVED	FBI 7971		
	ORD. DEPT., U. S. A.			

The technical drawing shows two views of a mechanical component:

- Front View (Top):** Shows a horizontal profile with a total length of $3\frac{5}{8}$. The left end has a vertical dimension of $\frac{1}{2}$. A central section has a width of $\frac{7}{8}$ and a height of $2\frac{1}{2}$. The right end features a chamfered corner with angles of 35° and 50° , and a small vertical offset of $\frac{1}{8}$.
- Top View (Bottom):** Shows the plan view with a total width of $9.99 \pm .001$. The left side has a vertical dimension of $\frac{1}{2}$. The central rectangular area has a width of $2\frac{5}{64}$. The right end is rounded with a fillet radius of $R.32$ and a chamfer angle of 30° .

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

SHELL, H.E., 105MM., MI
BAND, ROTATING
OPERATION:-TURN BAND

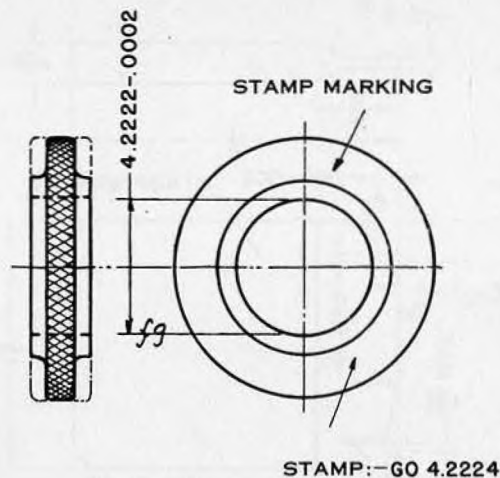
AUG. 30, 1940

DRAFTSMAN RJ	TRACER CKS	LEAD DRAFTSMAN W. R. G.
CHECKER	CHECKER	CHIEF DRAFTSMAN

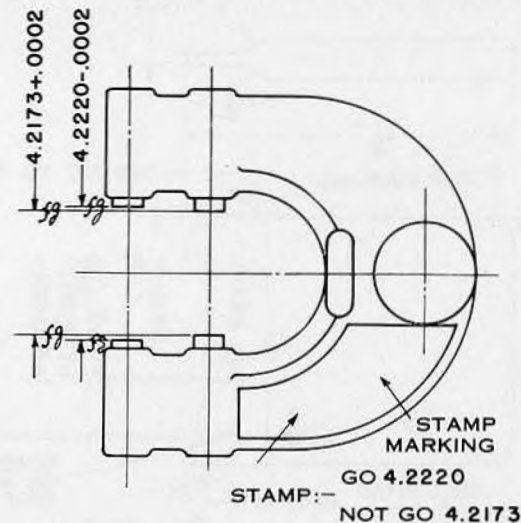
FBI7972

ORD. DEPT., U. S. A.

MARKING:-
105MM. H.E. SHELL MI, BODY
75-4-75-DIA. BAND
WORK
FBI7973



PLAIN RING GAGE
AMERICAN GAGE DESIGN STANDARD
HARDEN



ADJUSTABLE SNAP GAGE
COMMERCIAL

FOR LIMIT CHECK GAGE FOR RING SEE DRG. FB11175 - ④
A = 4.2224 LIMIT CHECK FOR GO

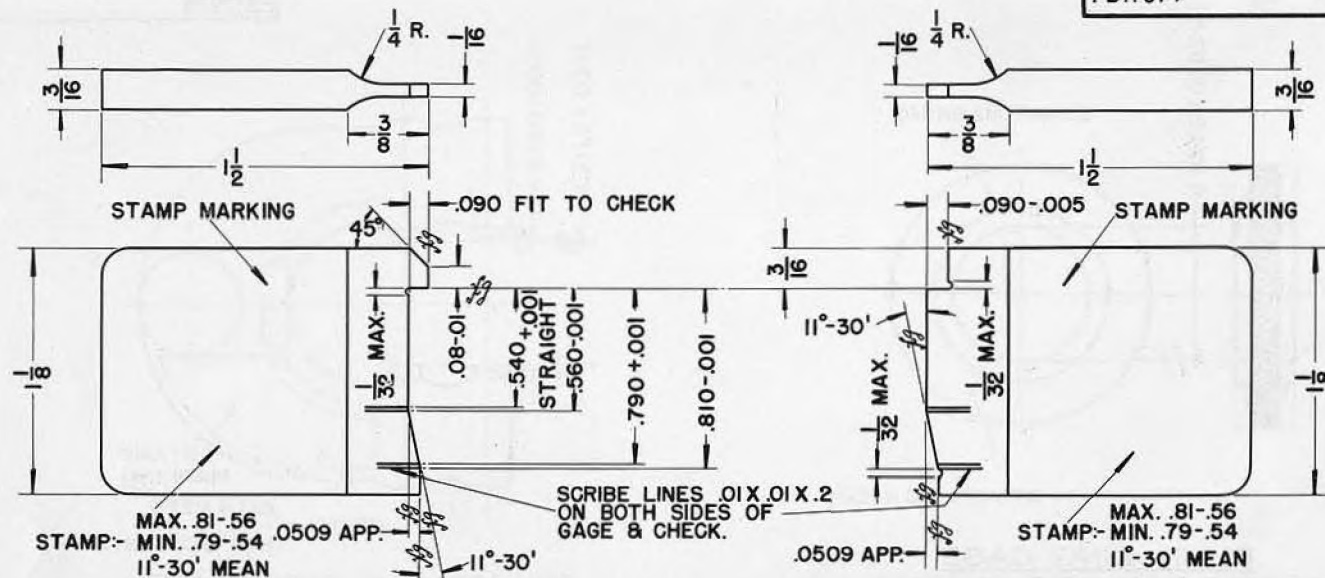
FOR CHECK GAGES FOR ADJ. SNAP SEE DRG. FB11175 - ⑦
A = 4.2220 CHECK FOR GO
A = 4.2173 CHECK FOR NOT GO

LAP *fg* SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS		SHELL, H.E., 105 MM., MI BAND, ROTATING GAGE FOR DIA. BAND		
		FRANKFORD ARSENAL AUG. 30, 1940		
SUBMITTED	CAPT. <i>[Signature]</i>	DRAFTSMAN H.J.G.	TRACER H.J.G.	CHECKER C.H. DR. SMAN
APPROVED	ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER
		FBI7973		
		ORD. DEPT., U. S. A.		

105 MM., H.E., SHELL, BAND, ROTATING
75-4-75-PROFILE BAND
WORK
FBI7974



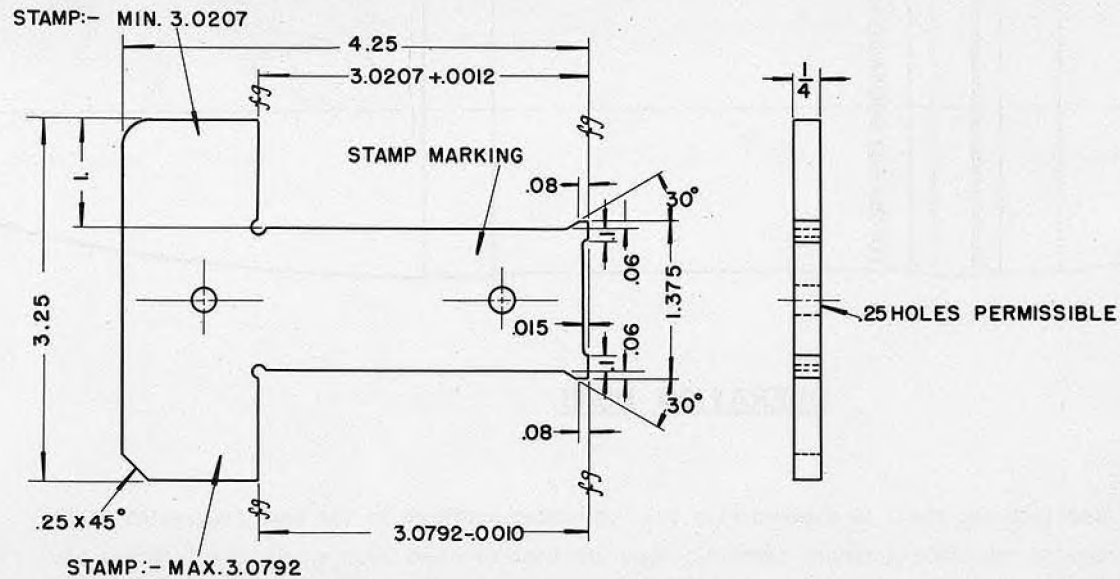
PROFILE GAGE
TOOL STEEL
HARDEN

TEMPLATE CHECK GAGE
TOOL STEEL
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BAND, ROTATING GAGE FOR PROFILE BAND FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTER <i>Wm. J. Hughes</i> CAPT. ORG. DEPT., U. S. A. APPROVED	DRAFTSMAN CKS CHECKER	TRACTOR CKS CHECKER	INSTR. (OPTIONAL) UNCLAS. CH. FOR SIGN.
	ORG. DEPT., U. S. A.	FBI7974		

MARKING:-
105MM.H.E. SHELL MI, BODY
75-4-75 POSITION BAND
WORK
FB 17975

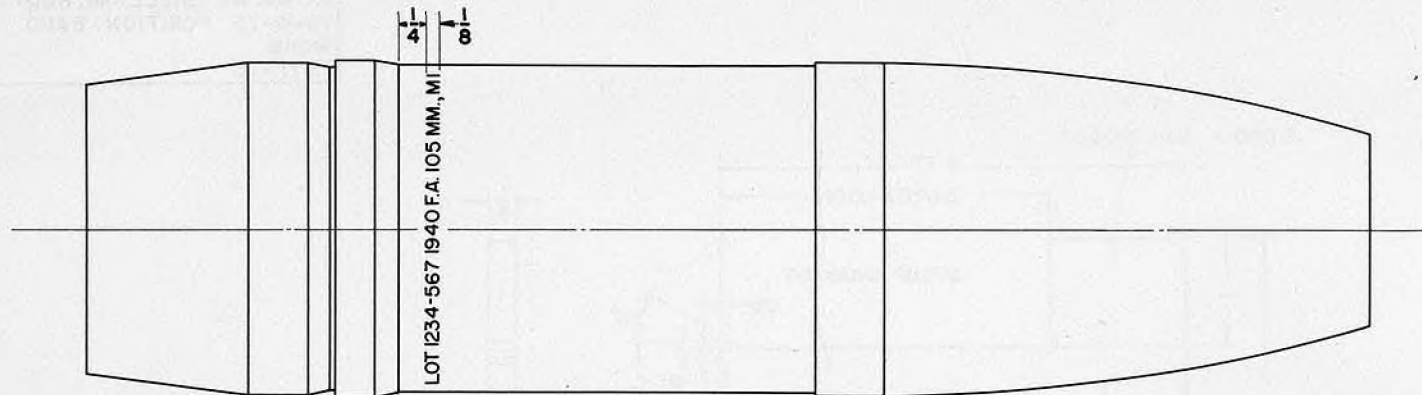


LENGTH GAGE
TOOL STEEL

LAP_{f9} SURFACES
REMOVE ALL SHARP EDGES

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105MM., MI BAND, ROTATING			
	GAGE FOR POSITION BAND			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED <i>[Signature]</i>	DRAFTSMAN H.J.G.	TRACER H.J.G.	INSP. <i>[Signature]</i>
	CAPT.	CHECKER	CHECKER	CH. FOR SMAR
	APPROVED	FBI7975		
	ORD. DEPT., U. S. A.			

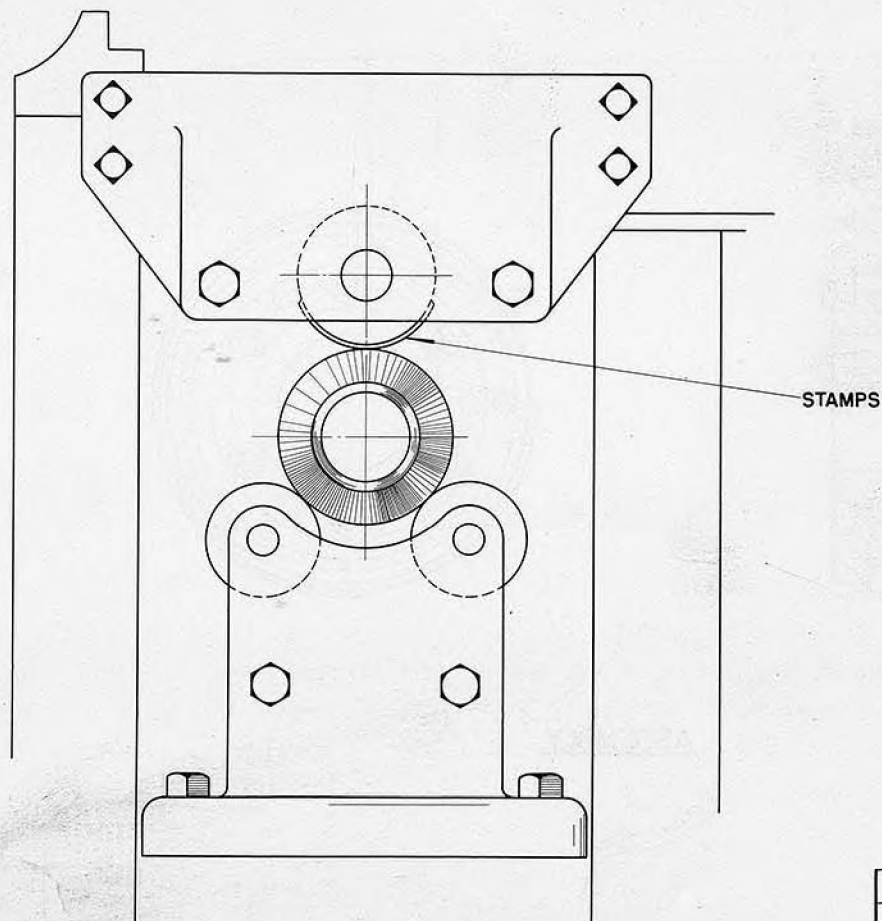


OPERATION NO.15

At this operation the shell is stamped with the lot number assigned to the heat from which it is made. The lot number of the shell depends primarily upon the heat of steel from which the forgings are made. Whenever forgings from a different heat of steel are used, a new lot number is required. If for any reason a decided change in the method of manufacture is made, a new lot number is designated for the balance of shell from that heat of steel.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M1 BODY OPERATION:-STAMP		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TRACER
	CAPT. <i>[Signature]</i>	RI	RI
	ORD. DEPT., U. S. A.	CHECKER	CHECKER
	APPROVED	FBI7976	
	ORD. DEPT., U. S. A.		

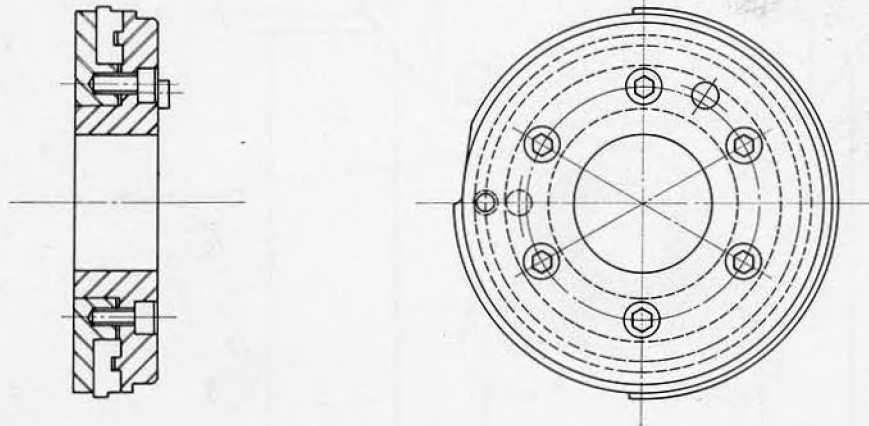


SETUP SKETCH

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 M.M., M1			
	BODY			
	OPERATION: - STAMP			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED <i>[Signature]</i>			
CAPT.	ORD. DEPT., U. S. A.	CHECKER	TRACER	DRAFTSMAN
APPROVED		CHECKER	CHECKER	CH. P. OR. SMAN
		ORD. DEPT., U. S. A.		

FBI7977



ASSEMBLY

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI			
	BODY			
	OPERATION:- STAMP			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED <i>[Signature]</i>			
CAPT.	ORD. DEPT., U. S. A.	CHECKER	DRAFTSMAN HJ	TRACER HJ
APPROVED			CHECKER	CHT OR SMO
	ORD. DEPT., U. S. A.	FBI7978		

[illegible]

BASE
TOOL STEEL
HARDEN

25-28 NF-2

8

SCREW, LOCKING
MODIFY 25 HOLLOW SET SCREW

25-28 NF-2

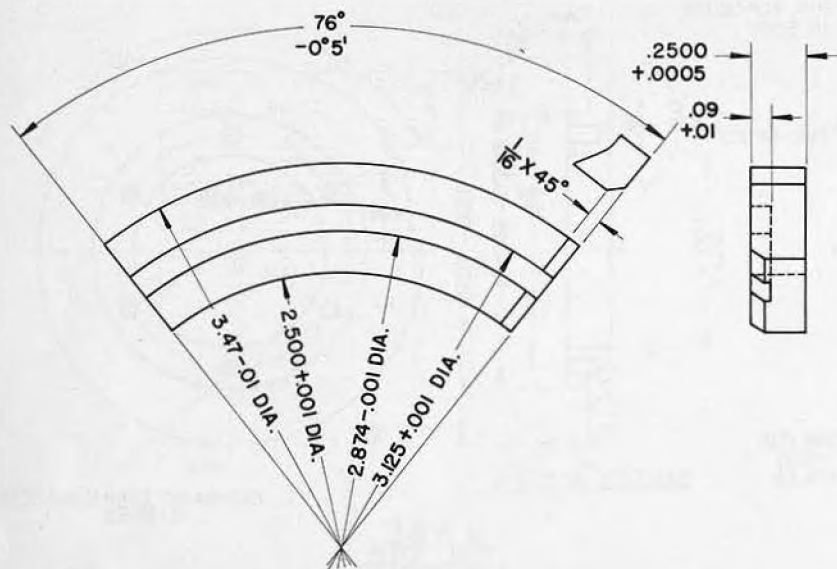
7
32
16
45°

SCREW, SET
MODIFY 25 HOLLOW SET SCREW

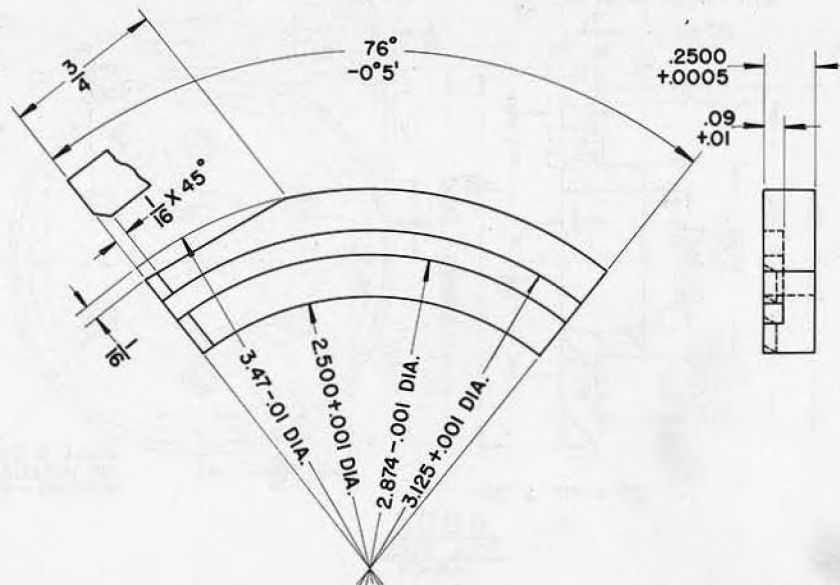
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105MM., M1 BODY STAMP DETAILS			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	TRAFFICMAN	TRACER	CHIEF OF POLICE
	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
	CAPT. DRD. DEPT. U. S. A.	CHECKER	CHECKER	CHIEF OF POLICE
	APPROVED	FBI7979		
	DRD. DEPT., U. S. A.			

STAMP:-FB 17980



SPACER
TOOL STEEL
HARDEN



SPACER
TOOL STEEL
HARDEN

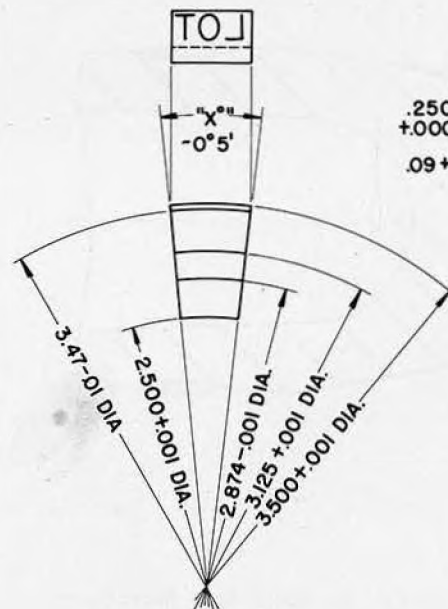
PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS			
SUBMITTED		DRAFTSMAN	TRACER
CAPT. <i>[Signature]</i>		RT	V.K.K.
ORD. DEPT., U. S. A.		CHECKER	CHECKER
APPROVED		CHY DESMAN	
ORD. DEPT., U. S. A.		FB17980	

SHELL, H.E., 105 MM., M1
BODY
OPERATION:-STAMP

FRANKFORD ARSENAL AUG. 30, 1940

STAMP:-FB17981



NOTE:- ALL LETTERS & FIGURES
TO BE .125 HIGH

INSERT NO.	DIM. "X"	TO STAMP	NO. REQ'D.
1	18°	LOT	1
2	4°	(BLANK)	8
3	6°	OTO9 INC.	7 SETS
4	6°	-	1
5	17°	F.A.	1
6	33°	105 MM.	1
7	12°	MI,	1
8	24°	YEAR	1
9	35°	(BLANK)	1
10	6°	(BLANK)	8

INSERT
(SEE TABLE) TOOL STEEL
HARDEN

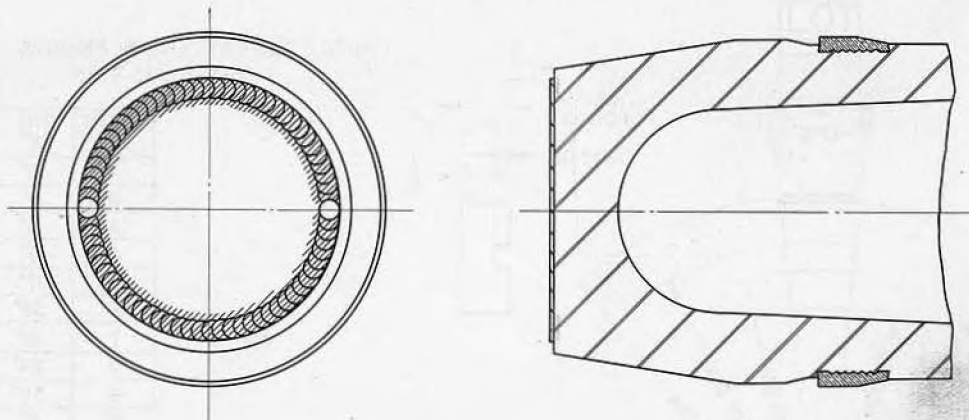
INSERT NO'S.

1 2 3 4 3 2 8 2 5 2 6 2 7
LOT 1 2 3 4 5 6 7 9 4 0 F.A. 105 MM. MI

SAMPLE STAMPING

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI BODY OPERATION:-STAMP		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED	DRAFTSMAN	TRACER
	CAPT. <i>[Signature]</i>	CHECKER	CHECKER
	APPROVED	ORD. DEPT., U. S. A.	CAPT. <i>[Signature]</i>
ORD. DEPT., U. S. A.		FBI7981	

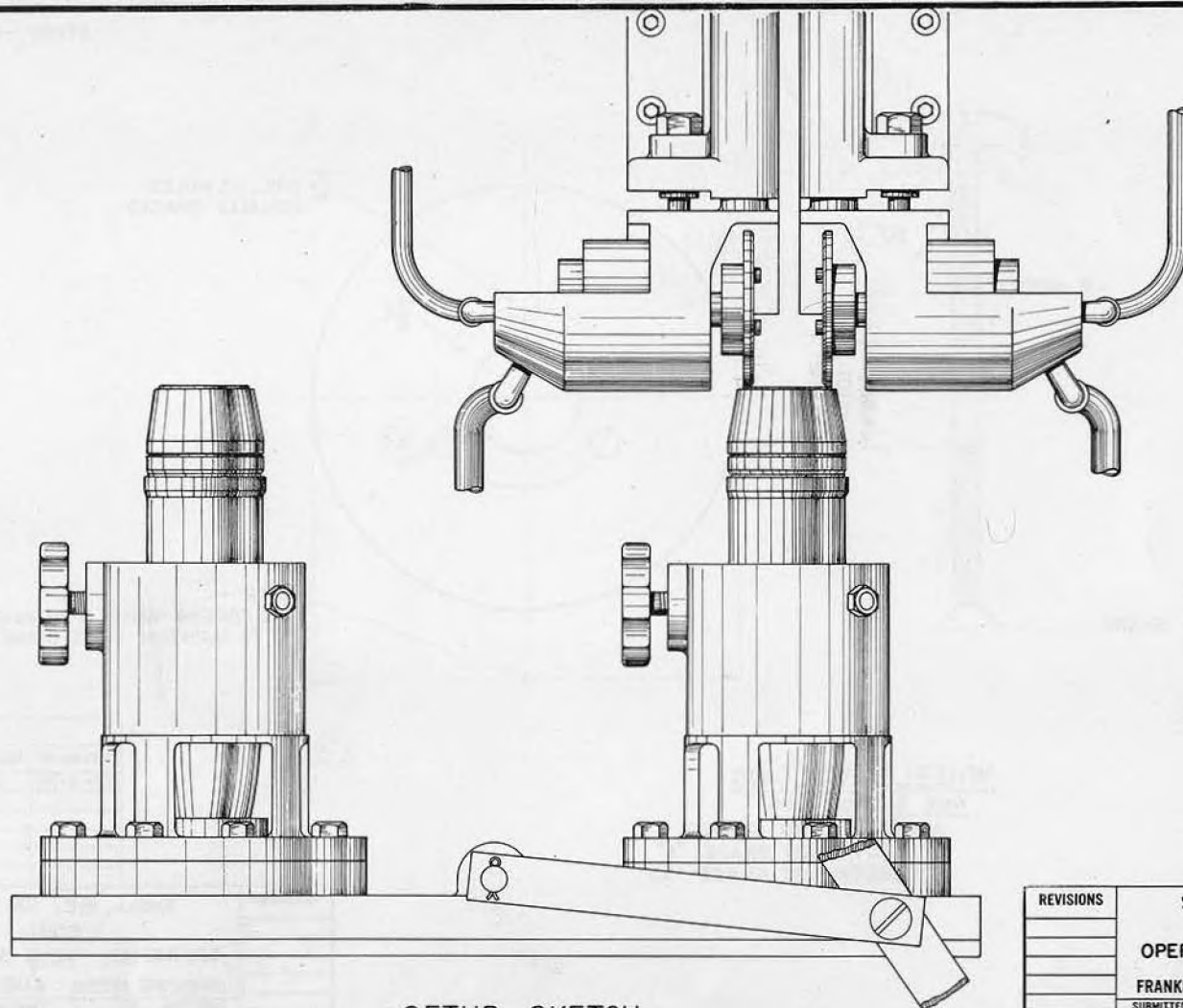


OPERATION NO.16

The base plate is welded to the base of the shell in a seam welder. The shell is rotated in a dual fixture directly beneath two copper welding wheels spaced so as to roll around the circumference of the disc. The shell revolves 180°, each wheel welding one half the circumference. As a plate is being welded in one side of the fixture the operator removes from the other side a finish welded shell and replaces it with another. The fixture is then slid over and the operation as explained above is repeated.

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM., M I BODY OPERATION:-WELD BASE COVER FRANKFORD ARSENAL AUG. 30, 1940			
SUBMITTED	DRAFTSMAN	TRACER	L. H. DODGE	
CAPT. <i>[Signature]</i>	CHECKER	CHECKER	CH'F DRS MAN	
APPROVED	ORD. DEPT., U. S. A.			
	ORD. DEPT., U. S. A.			
	FB17982			



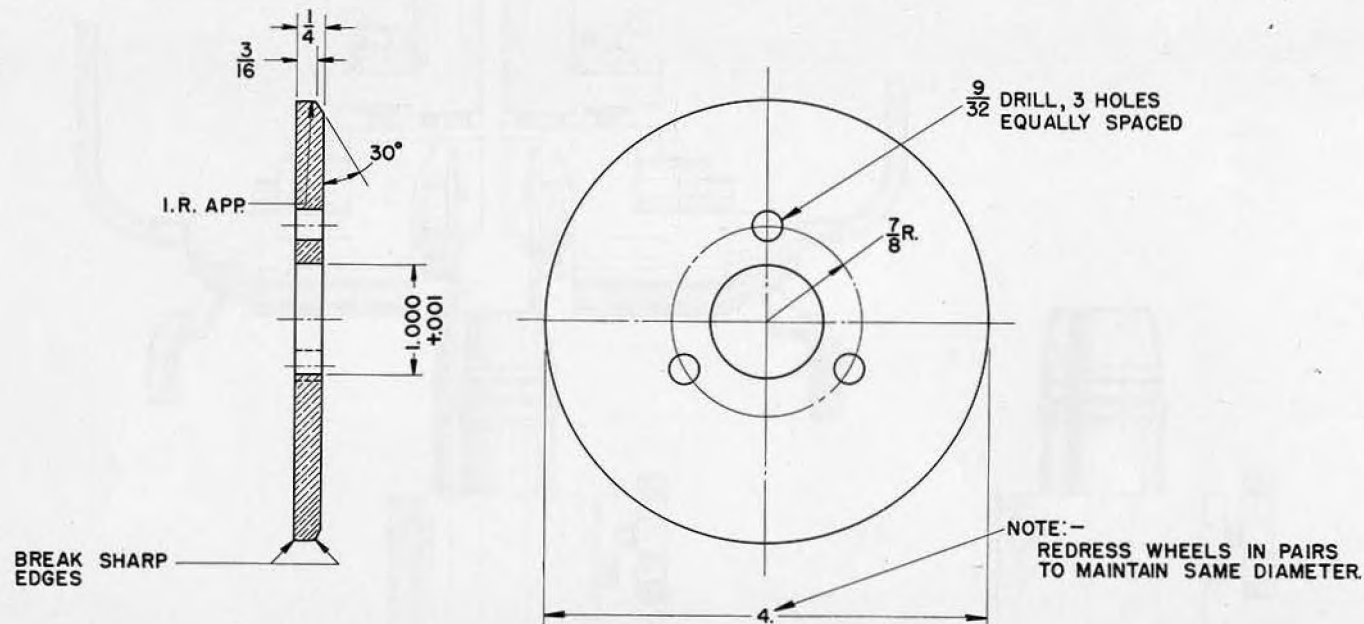
SETUP SKETCH

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS	SHELL, H.E., 105 MM, MI BODY		
	OPERATION:- WELD BASE COVER		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED <i>[Signature]</i> CAPT. APPROVED	C.D. CHECKER	TRACER O.D. CHECKER
	ORD. DEPT., U. S. A.		ORD. DEPT., U. S. A.

FBI7983

STAMP:-FB17984



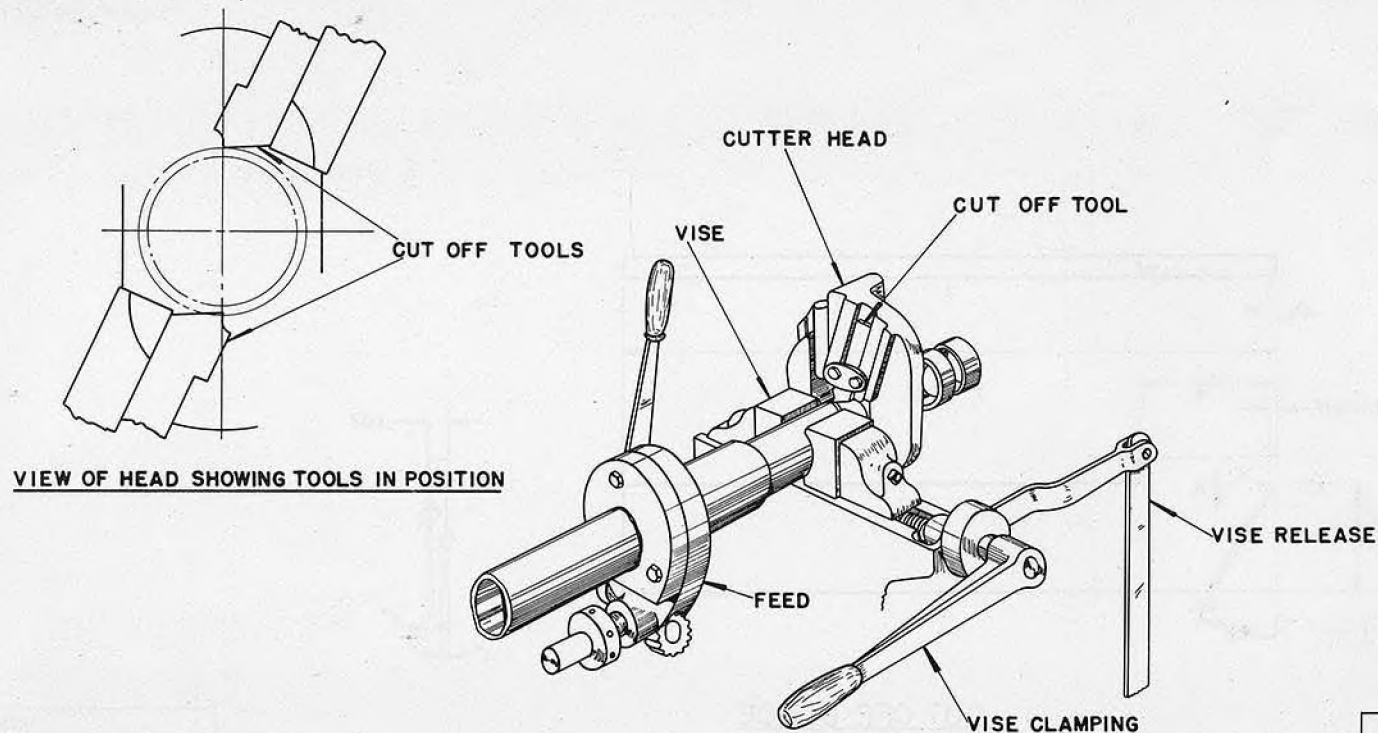
WHEELS, WELDING

ONE SET OF TWO

- A-HARD DRAWN COPPER
- B-ELECTROLOY GRADE "A"
- C-ELECTROLOY GRADE "XX"

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75A	8-1-40

REVISIONS		SHELL, H.E., 105 MM., MI BODY	
		OPERATION:-WELD BASE COVER	
		FRANKFORD ARSENAL AUG. 30, 1940	
SUBMITTED	<i>[Signature]</i>	DRAFTSMAN	<i>[Signature]</i>
ORD. DEPT., U. S. A.	CHECKER	CHECKER	CHECKER
APPROVED		FBI7984	
ORD. DEPT., U. S. A.			



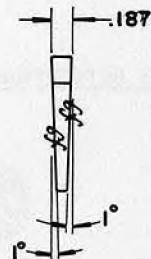
SETUP SKETCH
TAYLOR ROTARY CUTTING-OFF MACHINE

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI. BAND, ROTATING OPERATION:- CUT OFF BAND TO LENGTH FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED <i>[Signature]</i> CAPT. ORG. DEPT., U. S. A.	DRAFTSMAN M. J. G.	TRACER M. J. G.
	CHECKER	CHECKER	CAP. ORG. DEPT.
	APPROVED		
	ORG. DEPT., U. S. A.		

FB17985

STAMP:-FB17986

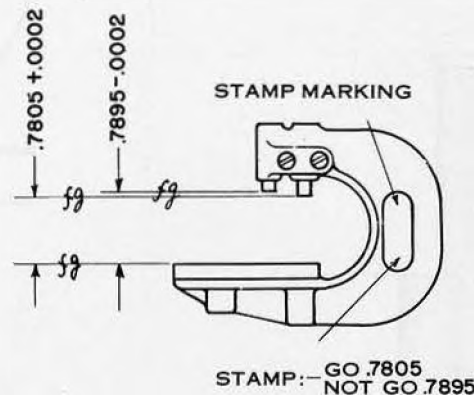


CUT OFF BLADE
H. S. STEEL
HARDEN

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105MM., M1 BAND, ROTATING CUT OFF BAND TO LENGTH			
	FRANKFORD ARSENAL		AUG. 30, 1940	
	SUBMITTED <i>[Signature]</i>	DRAFTSMAN	TRACER W.J.G.	COPIES BY MAN W.C.K.
	CAPT.	CHECKER	CHECKER	CH. FOR SMO.
	APPROVED		FBI7986	
	ORD. DEPT., U. S. A.		ORD. DEPT., U. S. A.	

MARKING:--
 105 MM. H.E. SHELL, MI, ROTATING BAND
 75-4-75 - ROUGH WIDTH
 WORK
 F B 17987

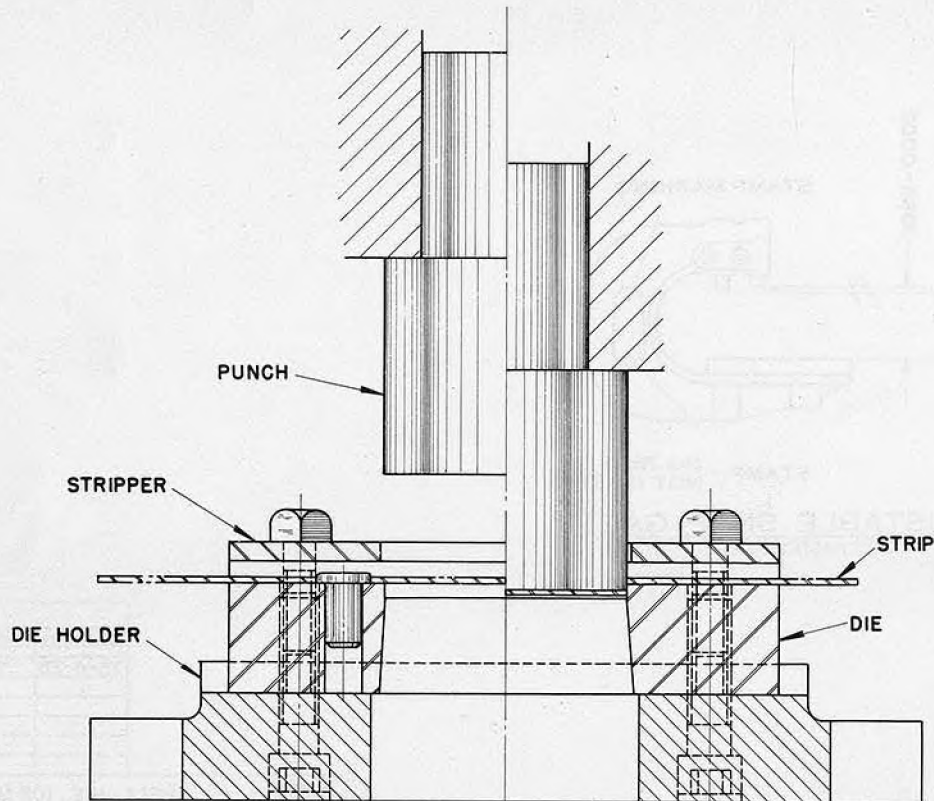


ADJUSTABLE SNAP GAGE
 COMMERCIAL

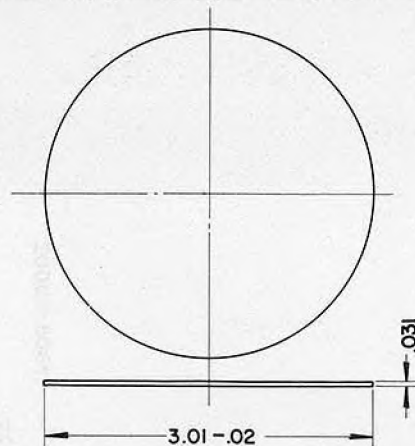
FOR CHECK GAGES SEE DRG. FB11175- (2)
 B= .7895 CHECK FOR GO
 A= .7805 CHECK FOR NOT GO

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75B	8-1-40

REVISIONS	SHELL, H.E., 105 MM., MI BAND, ROTATING GAGE FOR ROUGH WIDTH		
	FRANKFORD ARSENAL AUG. 30, 1940		
	SUBMITTED CAPT. <i>[Signature]</i>	DRAFTSMAN RI	TRACER <i>[Signature]</i>
	ORD. DEPT., U. S. A.	CHECKER	CHECKER
	APPROVED	FBI7987	
	ORD. DEPT., U. S. A.		



SETUP SKETCH

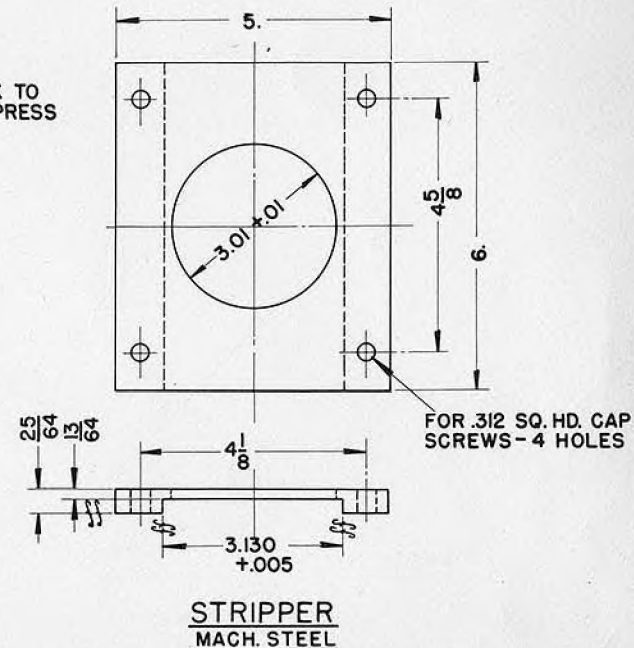
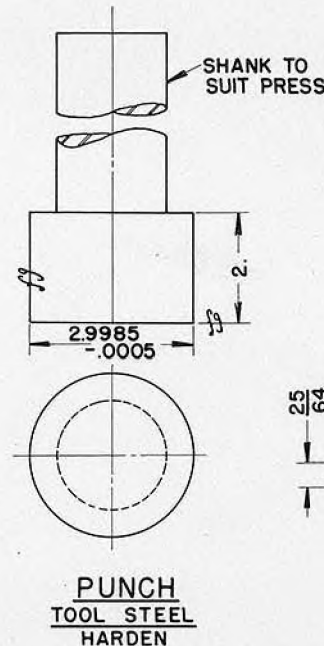
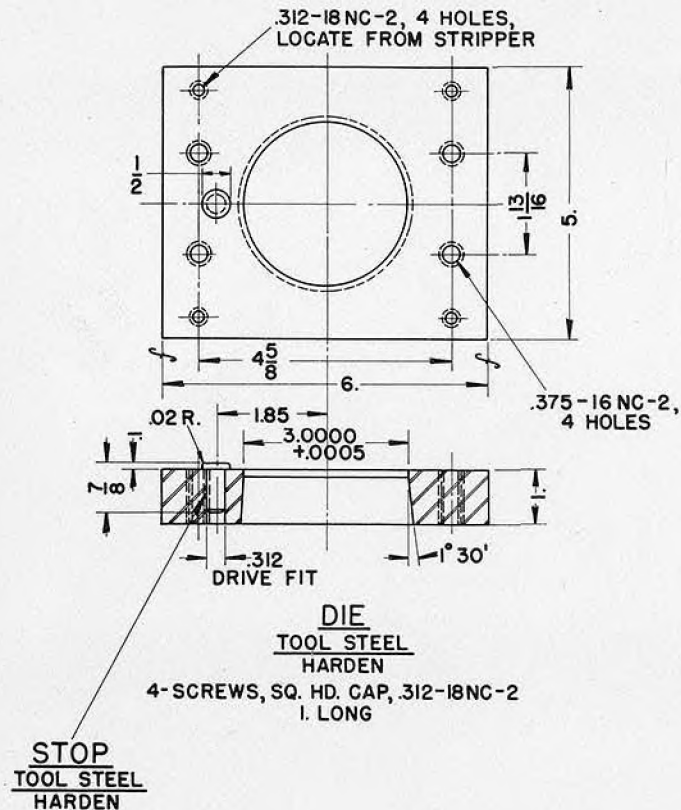


AFTER BLANKING

PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75E	8-1-40

REVISIONS	SHELL, H. E., 105 MM., MI			
	COVER, BASE			
	OPERATION: - BLANK			
	FRANKFORD ARSENAL AUG. 30, 1940			
	SUBMITTED	DRAFTSMAN	TRACER	WORKING MAN
CAPT.	ORD. DEPT., U. S. A.	CHECKER	CHECKER	
APPROVED	ORD. DEPT., U. S. A.	FBI7988		

STAMP:- FB17989



PERTAINS TO		
DRAWING NO.	PIECE MARK	REV. DATE
75-4-75	75E	8-1-40

REVISIONS	SHELL, H.E., 105 MM, MI COVER, BASE OPERATION:-BLANK				
	FRANKFORD ARSENAL AUG. 30, 1940				
	SUBMITTED <i>[Signature]</i> CAPT.	ORD. DEPT., U. S. A.	DRAFTSMAN CHECKER	TRACER BI CHECKER	1200 PPM MAN CHP FOR S&M
	APPROVED	ORD. DEPT., U. S. A.	FBI7989		

FB17989

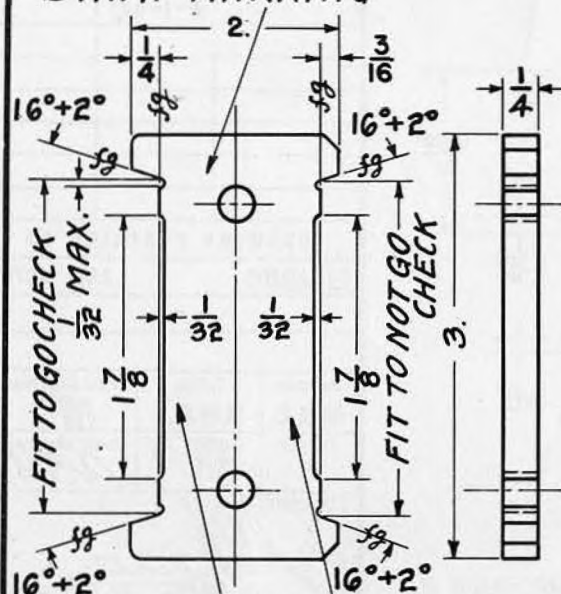
NOTE:-ALL CORNERS SHARP ON CHECK
 $\frac{1}{4}$ HOLES PERMISSIBLE

MARKING:-

105 MM. H.E. SHELL MI, 75-4-75,
 DIA. AT NOSE, INSP.

A-52575 , ORD. DEPT., U. S. A.

STAMP MARKING



STAMP:- GO 2.38

STAMP:- NOT GO 2.36

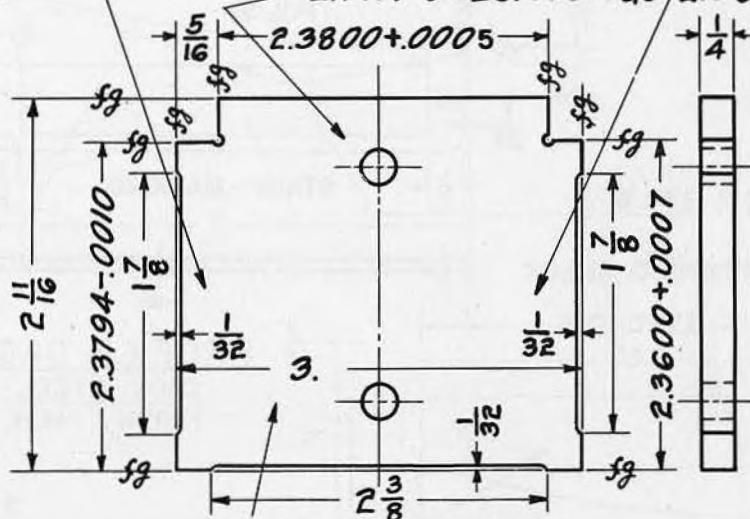
SNAP GAGE
TOOL STEEL
 FINISH f-HARDEN

ROCKWELL HARDNESS C63 TO 66

STAMP:- CHECK FOR GO 2.3794

CHECK FOR NOT GO 2.36

LIMIT CHECK FOR GO 2.38



STAMP MARKING

FLAT PLUG CHECK GAGE
TOOL STEEL
 FINISH f-HARDEN

LAP f_g SURFACES
 REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-10-39	7-10-39
	8-1-40	

SYMBOL

ECG 900

DRAWING PERTAINS TO
 B111886- GAGE LISTS

DRAFTSMAN	TRACER	L'D'S DRAFTSMAN
A.N.	A.N.	C.D.H.
CHECKER	CHECKER	CHIEF DRAFTSMAN
H.C.S.	C.D.H.	A.E.S.

SUBMITTED:-

John J. Bennett

MAJ. ORD. DEPT. U. S. A.

APPROVED:-

L.P. Clark
 LT. COL. ORD. DEPT. U.S.A.
 CHIEF GAGE SECTION, ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52575

MARKING:-105 MM. H.E. SHELL MI,
75-4-75,
PROFILE OGIVE, INSP.
A52576 , ORD, DEPT., U. S. A.

[illegible]

BIII886	GAGE LISTS
---------	------------

DRAFTSMAN M.H.E.	TRACER M.H.E.	L'D'G DRAFTSMAN <i>B.B.</i>
CHECKER	CHECKER <i>CDH</i> <i>oo</i>	CHIEF DRAFTSMAN <i>A.E.S.</i>

SUBMITTED: *Chas*
CAPT. ORD. DEPT. U. S. A.

APPROVED BY ORDER OF THE
CHIEF OF ORDNANCE

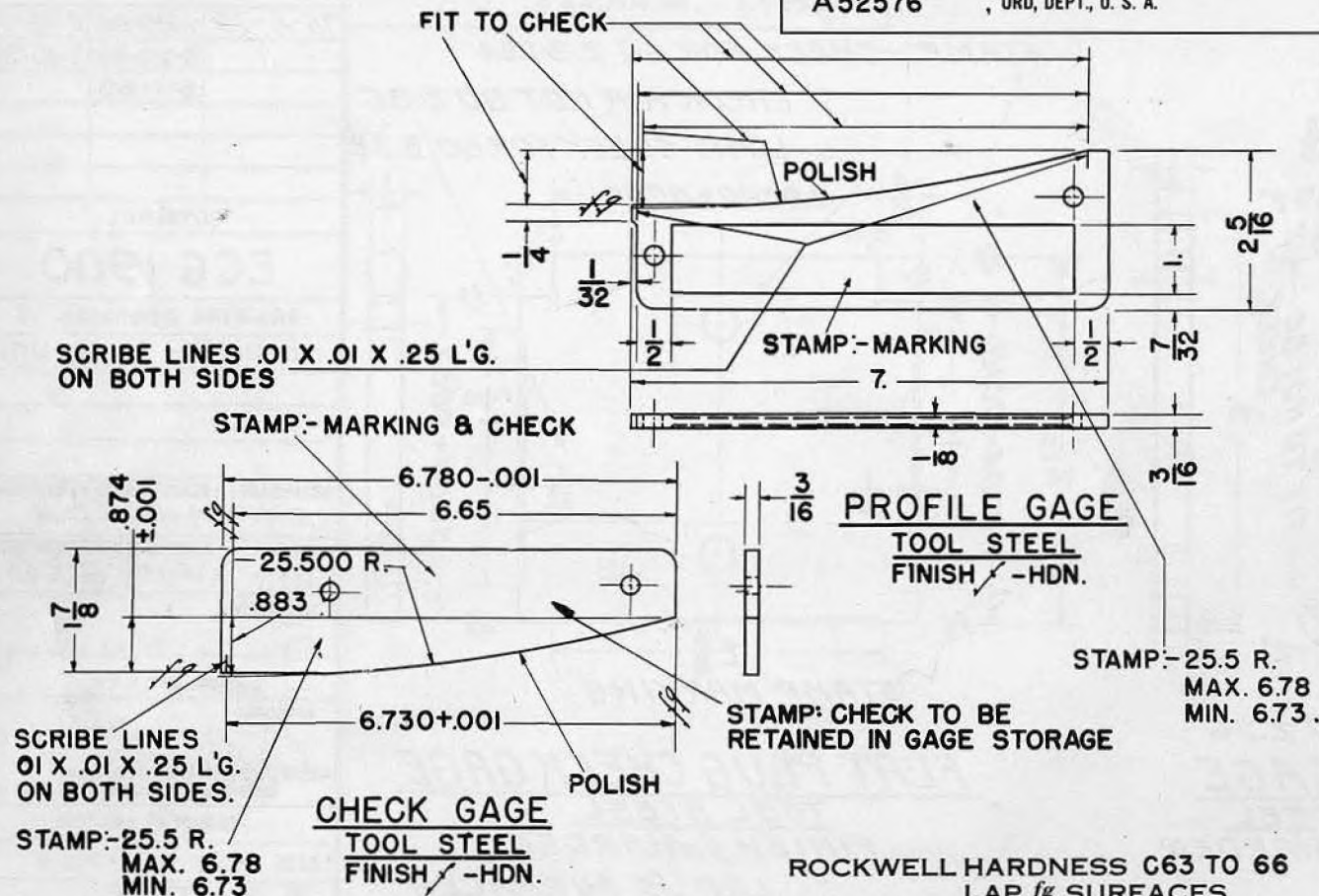
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MAJOR ORD. DEPT. U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A52576

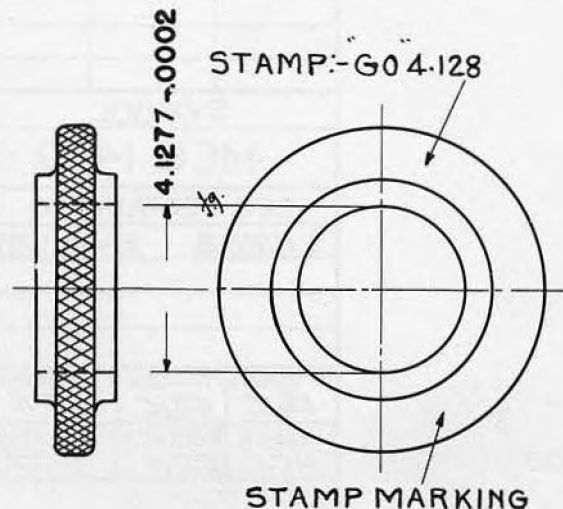


SUPERSEDES DRG. A52576 DATE 7-10-39

ROCKWELL HARDNESS C63 TO 66
LAP *fg* SURFACES
REMOVE ALL SHARP EDGES

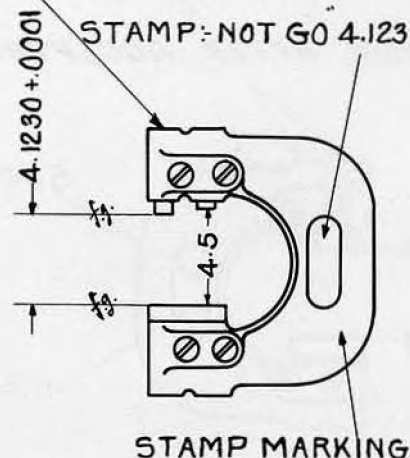
MARKING:-

105 MM. H.E. SHELL M1, 75-4-75,
DIA. BOURRELET & REAR OF BAND, INSP.
A-52577, ORD. DEPT., U. S. A.



PLAIN RING GAGE
AMERICAN GAGE DESIGN STANDARD.
HARDEN.

SEAL AFTER ACCEPTANCE



ADJUSTABLE SNAP GAGE
AMERICAN GAGE DESIGN STANDARD
MODEL "C"

ROCKWELL HARDNESS C63 TO 66
LAP $\frac{1}{8}$ SURFACES
REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

SYMBOL

ICG 1596

DRAWING PERTAINS TO
B-111886 GAGE LISTS

DRAFTSMAN	TRACER	L'D'G DRAFTSMAN
L.A.Y.	L.A.Y.	C.D.H.
CHECKER	CHECKER	CHIEF DRAFTSMAN
H.C.S.	C.D.H.	A.E.S.

SUBMITTED:-

John J. Bennett

MAL. ORD. DEPT., U. S. A.

APPROVED:-

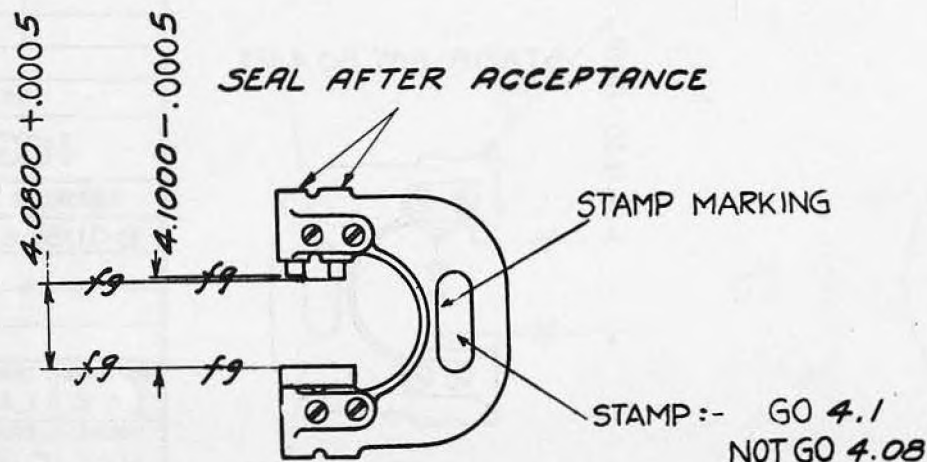
W. J. Clark
LT. COL. ORD. DEPT., U. S. A.
CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52577

MARKING:-
 105 MM. HE. SHELL M1, 75-4-75,
 DIA. BODY INSP.
 A52578, ORD. DEPT. U.S.A.



ADJUSTABLE SNAP GAGE
 AMERICAN GAGE DESIGN STANDARD, MODEL "C"

ROCKWELL HARDNESS C63 TO 66
 LAP SURFACES
 REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRG. NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

SYMBOL

MCG 1419

DRG. PERTAINS TO

B 111886 GAGE LISTS

DFTSMAN E.K.	TRACER C.K.	LDG. DFTSMAN C.P.H.
CHECKER H.C.S.	CHECKER C.P.H.	CHIEF DFTSMAN A.E.S.

SUBMITTED:-

Fred J. Diment
 MAJOR ORD. DEPT. U.S.A.

APPROVED:-

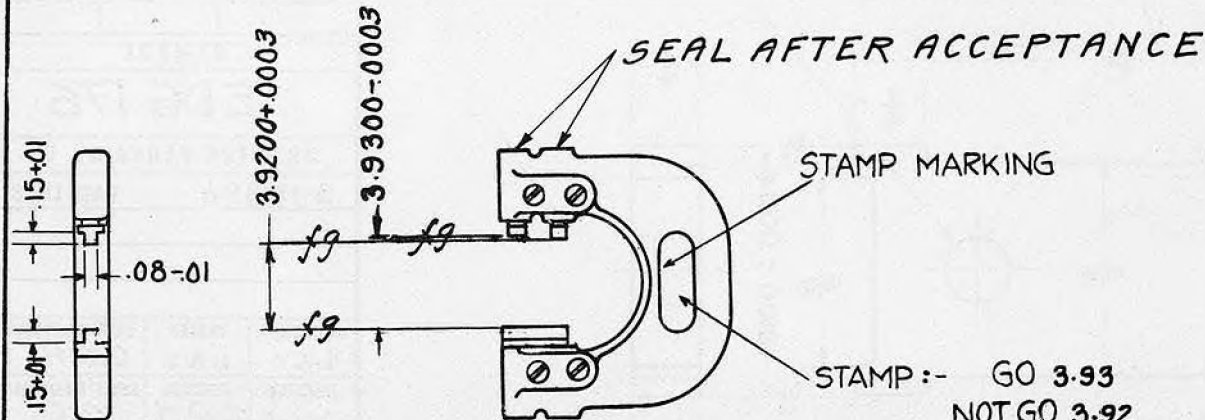
W. L. Clark
 LT. COL. CHIEF GAGE SEC. ORD. DEPT. U.S.A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A52578

MARKING:-
105 MM.H.E SHELL M1, 75-4-75,
DIA BAND SEAT, INSP
A-52579, ORD. DEPT. U.S.A.



ADJUSTABLE SNAP GAGE
AMERICAN GAGE DESIGN STANDARD
MODEL C

ROCKWELL HARDNESS C63 TO 66
LAP $\frac{1}{8}$ SURFACES
REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRG. NO.	DATE	DATE
B-17910	12-13-27	2-26-35
75-4-75	3-20-39	7-10-39
	8-1-40	9-9-40

SYMBOL

MCG 1420

DRG. PERTAINS TO

B-111886 GAGE LISTS

DRGSMAN L.A.Y.	TRACER L.A.Y.	LDG. DRGSMAN C.D.H.
CHECKER H.C.S.	CHECKER C.D.H.	CHIEF DRGSMAN A.S.

SUBMITTED:-

Frank J. Siment
MAJ. ORD. DEPT. U.S.A.

APPROVED:-

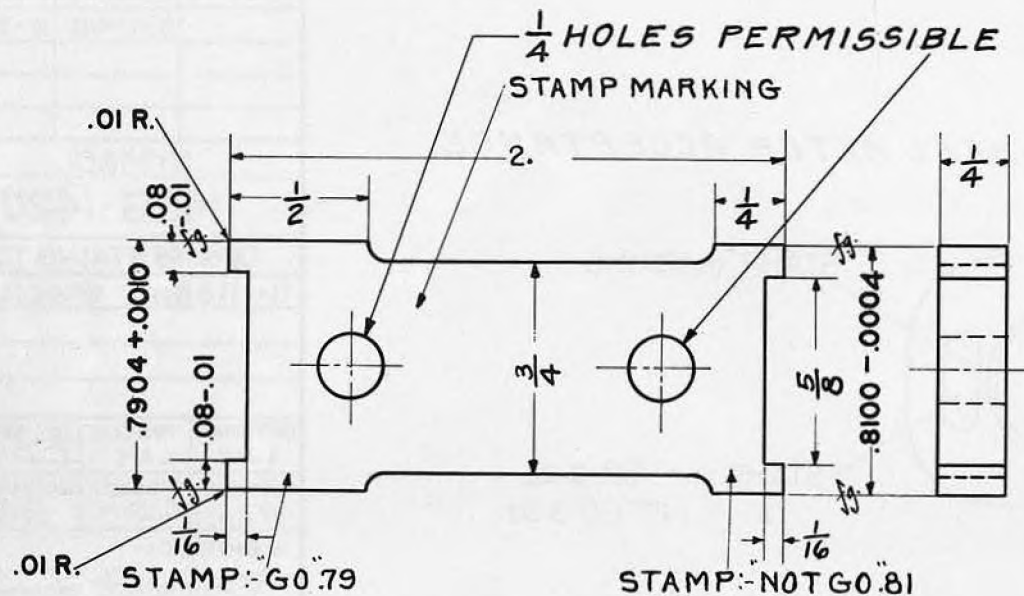
Frank J. Siment
LT. COL. ORD. DEPT. U.S.A.
CHIEF GAGE SEC. ORD. DEPT. U.S.A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52579

MARKING:-
105MM.H.E.SHELL MI, 75-4-75,
WIDTH BAND SEAT, INSP.
A 52580 , ORD. DEPT., U. S. A.



FLAT PLUG GAGE
TOOL STEEL
FIN: f-HDN.

ROCKWELL HARDNESS C63 TO 66
LAP SURFACES
SCALE: 2=1
REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
B17910	12-13-27	2-26-35
75-4-75	3-20-39	7-10-39
	8-1-40	

SYMBOL

EDG 176

DRAWING PERTAINS TO
B-111886 GAGE LISTS

DRAFTSMAN	TRACER	L'D'G DRAFTSMAN
L.A.Y.	L.A.Y.	C.D.H.
CHECKER	CHECKER	CHIEF DRAFTSMAN
H.C.S.	C.D.H.	A.S.S.

SUBMITTED:-

John J. Quinn

MAJ. ORD. DEPT., U. S. A.

APPROVED:-

LTCOL. ORD. DEPT., U.S.A.
CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

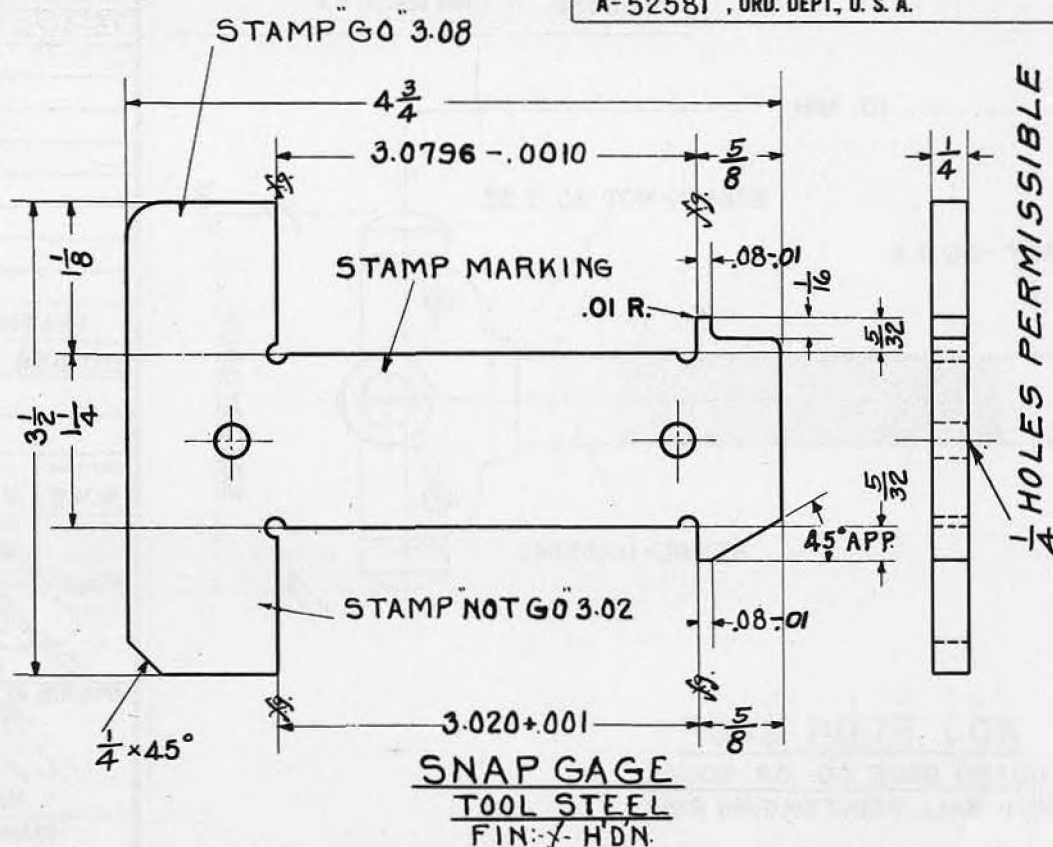
FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52580

MARKING:-

105MM. H.E. SHELL M1, 75-4-75,
POSITION BAND SEAT, INSP.
A-52581, ORD. DEPT, U. S. A.



REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

SYMBOL

ECG 901

DRAWING PERTAINS TO

B-111886 GAGE LISTS

DRAFTSMAN	TRACER	L'D'G DRAFTSMAN
L.A.Y.	L.A.Y.	C.D.H.
CHECKER	CHECKER	CHIEF DRAFTSMAN
H.C.S.	APP	A.E.S.

SUBMITTED:-

Frank J. Simon

MAJ. ORD. DEPT., U. S. A.

APPROVED:-

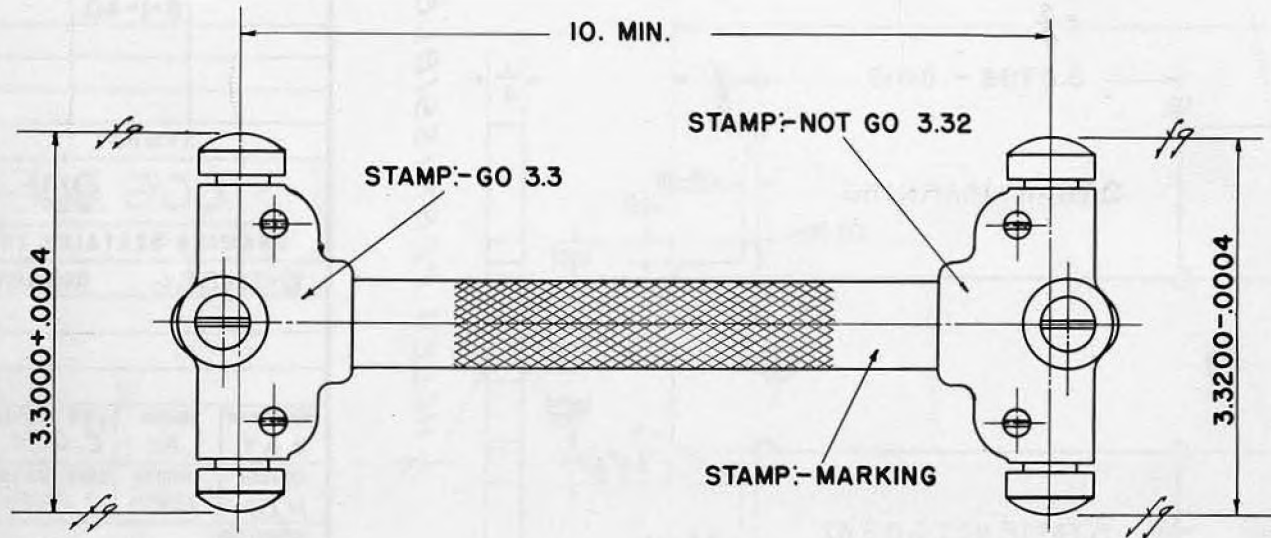
Frank J. Simon
LT. COL. ORD. DEPT. U.S.A.
CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52581

MARKING:-105 MM. H.E. SHELL MI,
75-4-75,
INSIDE DIA. BEFORE NOSING, INSP.
A52582 , ORD, DEPT., U. S. A.



ADJ. PLUG GAGE
STANDARD GAGE CO. OR EQUAL
WITH BALL POINT GAGING PINS

ROCKWELL HARDNESS C63 TO 66
LAP *fg* SURFACES
REMOVE ALL SHARP EDGES

SUPERSEDES DRG. A52582 DATE 7-10-39

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	3-20-39	7-10-39
	8-1-40	

DRAWING PERTAINS TO
BIII886 GAGE LISTS

DRAFTSMAN M.H.E.	TRACER M.H.E.	L'D'G DRAFTSMAN <i>AB</i>
CHECKER <i>C.H.W.</i>	CHECKER <i>oo</i>	CHIEF DRAFTSMAN <i>A.E.S.</i>

SUBMITTED
[Signature]
CAPT. ORD. DEPT., U. S. A.

APPROVED BY ORDER OF THE
CHIEF OF ORDNANCE
[Signature]
MAJOR ORD. DEPT., U. S. A.

FRANKFORD ARSENAL
DATE FEB. 26, 1935

A52582

105MM. H.E. SHELL M1,75-4-75,
LENGTH GROOVE AT REAR OF BAND,
A52583 , ORD. DEPT, U. S. A. INSP

COMPONENT

GAGE

DRAWING NO.

DATE _____

DATE _____

75-4-75

1-23-35

2-26-35

3-20-39

7-10-39

8-1-40

SYMBOL

KCG 395

DRAWING PERTAINS TO

B-111886

GAGE LISTS

DRAFTSMAN

TRACER

L'D'G DRAFTSMAN

L.A.Y.

L.A. Y.

C. D. H.

CHECKER**CHECKER**

CHIEF DRAFTSMAN

HCS

C.D.H

A.R.S

SUBMITTED:-

Fred I Girment

MAJ. ORD. DEPT., U. S. A.

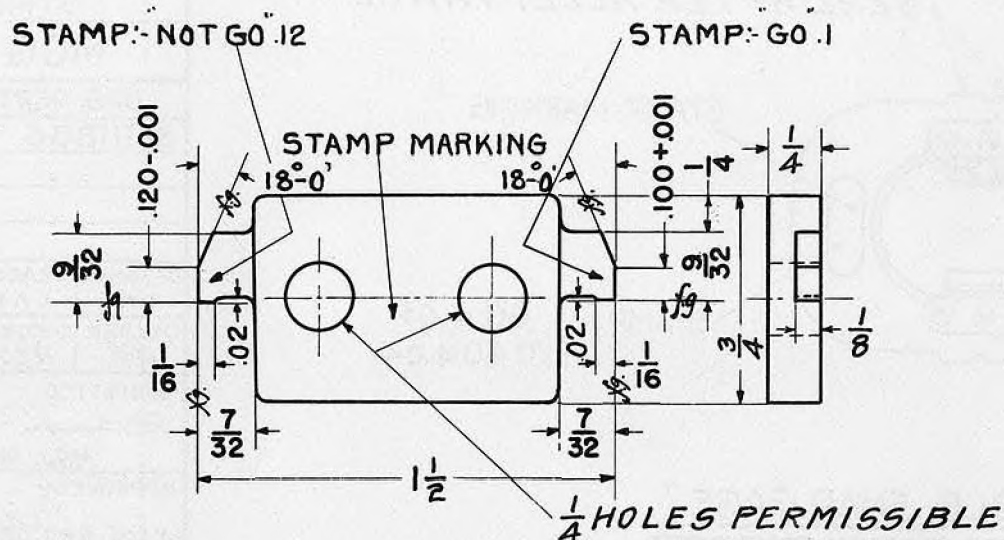
APPROVED:-

LT. COL. ORD. DEPT. U.S.A.
CHIEF, GAGE SEC., DRD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26. 1935

A-52583



TEMPLATE GAGE

TOOL STEEL

FIN:-X-HDN.

ROCKWELL HARDNESS C63 TO 66
LAP^g SURFACES

SCALE:- 2=1.

REMOVE ALL SHARP EDGES

MARKING:-
105 MM. H.E. SHELL M1, 75-4-75,
DIA. GROOVE AT REAR OF BAND, INSP
A-52584, ORD. DEPT. U.S.A.

REVISIONS

COMPONENT		GAGE
DRG. NO.	DATE	DATE
75-4-75	1-29-35	2-26-35
	3-20-39	7-10-39
	8-1-40	9-9-40

SYMBOL

MCG 1421

DRG. PERTAINS TO

B-111886 GAGE LISTS

DFTSMAN L.A.Y.	TRACER L.A.Y.	LDG. DFTSMAN C.D.H.
CHECKER H.P.	CHECKER H.C.S.	CHIEF DFTSMAN A.E.S.

SUBMITTED:-

John J. Ginn
MAJ. ORD. DEPT. U.S.A.

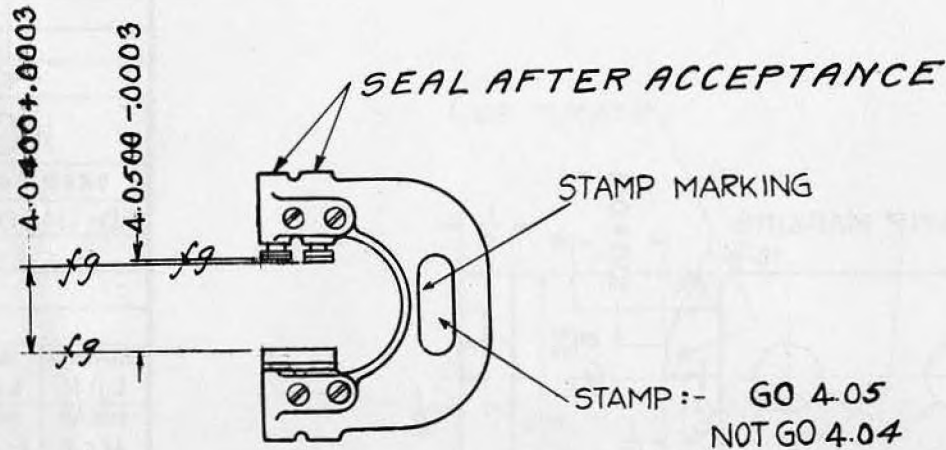
APPROVED:-

W. H. Smith
LT. COL. ORD. DEPT. U.S.A.
CHIEF GAGE SEC. ORD. DEPT. U.S.A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52584



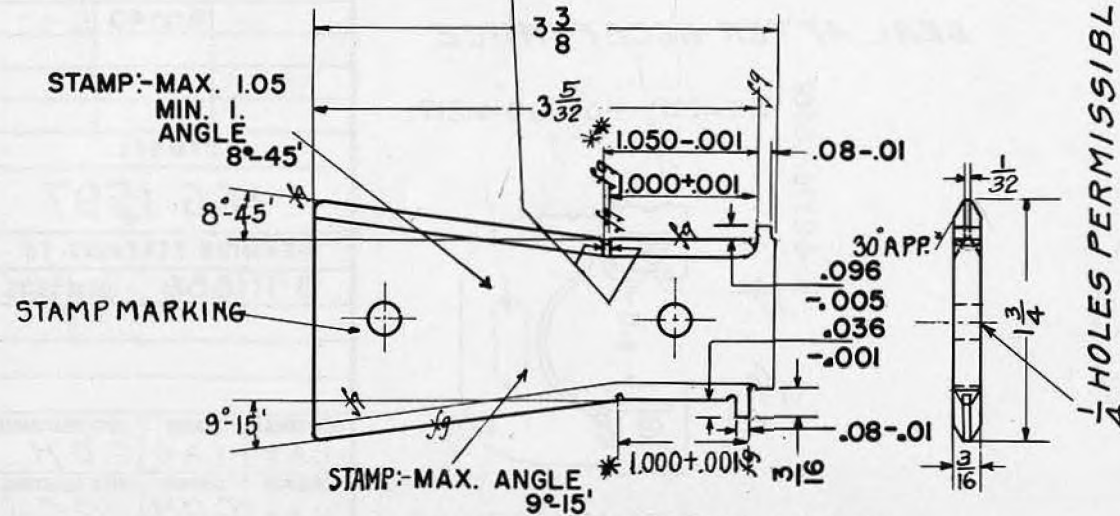
ADJUSTABLE SNAP GAGE
AMERICAN GAGE DESIGN STANDARD
MODEL G

ROCKWELL HARDNESS C63 TO 66
LAP SURFACES
REMOVE ALL SHARP EDGES

MARKING-- 105 MM H.E SHELL M1,75-475
 PROFILE & POSITION BOAT-TAIL FROM
 BAND SEAT, INSP.

A52585 , ORD. DEPT., U. S. A.

SCRIBE LINES
 .01 WIDE X .008 DEEP
 BOTH SIDES OF GAGE



* DIMENSIONS TO INTERSECTION
 OF ANGLE AND STRAIGHT LINE

PROFILE GAGE
 TOOL STEEL
 FINISH: X-HDN.

ROCKWELL HARDNESS C63 TO 66
 LAP SURFACES
 REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	9-9-40

SYMBOL

KCG 396

DRAWING PERTAINS TO
 B-111886 GAGE LISTS

DRAFTSMAN L.A.Y.	TRACER L.A.Y.	L'D'G DRAFTSMAN C.D.H.
CHECKER R.P.	CHECKER H.C.S.	CHIEF DRAFTSMAN W.E.S.

SUBMITTED:-

David D. Smith

MAJ. ORD. DEPT. U. S. A.,

APPROVED:-

LT. COL. ORD. DEPT. U.S.A.
 CHIEF GAGE SECTION, ORD. DEPT., U. S. A.

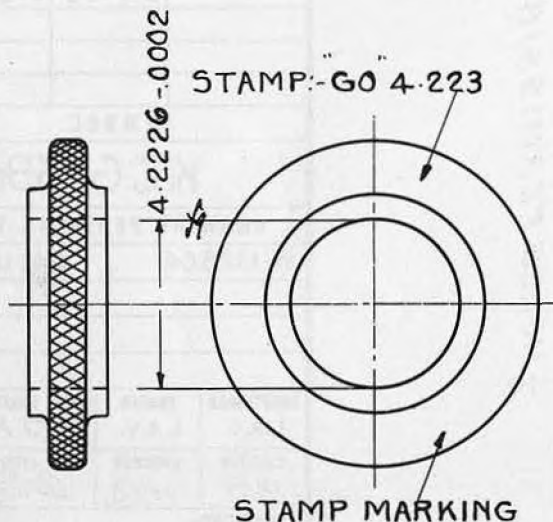
FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52585

MARKING:-

105MM H.E SHELL MI, 75-4-75,
DIA BAND, INSP
A 52586 , ORD. DEPT, U. S. A.

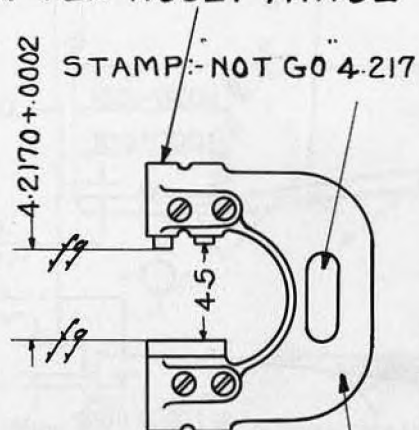


STAMP MARKING

PLAIN RING GAGE

HARDEN
AMERICAN GAGE DESIGN STANDARD

SEAL AFTER ACCEPTANCE



STAMP MARKING

ADJUSTABLE SNAP GAGE
AMERICAN GAGE DESIGN STANDARD,
MODEL "C"

ROCKWELL HARDNESS C63 TO 66
LAP $\frac{1}{8}$ SURFACES
REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

SYMBOL

1CG 1597

DRAWING PERTAINS TO
B-111886 GAGE LISTS

DRAFTSMAN	TRACER	L'D'G DRAFTSMAN
L.A.Y.	L.A.Y.	C.D.H.
CHECKER	CHECKER	CHIEF DRAFTSMAN
H.C.S.	C.D.H.	A.S.
SUBMITTED:-		

Fred J. Bennett

MAJ. ORD. DEPT., U. S. A.

APPROVED:-

W. J. Clark
LT. COL. ORD. DEPT., U. S. A.
CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52586

The diagram shows a horizontal cantilever beam fixed at the right end. A triangular load is applied downwards, starting from zero at the fixed end and increasing linearly to a peak of $\frac{3}{16}$ at the free end. The total length of the beam is $1\frac{1}{2}$. A semi-circular cutout is located on the bottom surface of the beam, with a radius of $\frac{1}{8}$. The cutout is positioned such that its rightmost edge is at the fixed end. The distance from the free end to the rightmost edge of the cutout is $\frac{1}{16}$. The cutout is labeled 'cut'.

105 MM. H.E. SHELL MI, 75-4-75,
PROFILE BAND, INSP.
A-52587. , ORD. DEPT., U. S. A.

TOOL STEEL.
FINISH f-HARDEN.

**STAMP: CHECK TO BE
RETAINED IN GAGE STORAGE**

TOOL STEEL.
FINISH f-HARDEN.

ROCKWELL HARDNESS C63 TO 66
LAP SURFACES
REMOVE ALL SHARP EDGES

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-29-95	2-26-35
	3-20-39	7-10-39
	8-1-40	9-9-40

KCG- 397

B-111886 GAGE LISTS

DRAFTSMAN C.L.C.	TRACER C.L.C.	L'D'O DRAFTSMAN C.D.H.
CHECKER H.C.S.	CHECKER C.D.H.	CHIEF DRAFTSMAN J.C.S.

SUBMITTED:-

MAJ. ORD. DEPT., U. S. A.

APPROVED:-

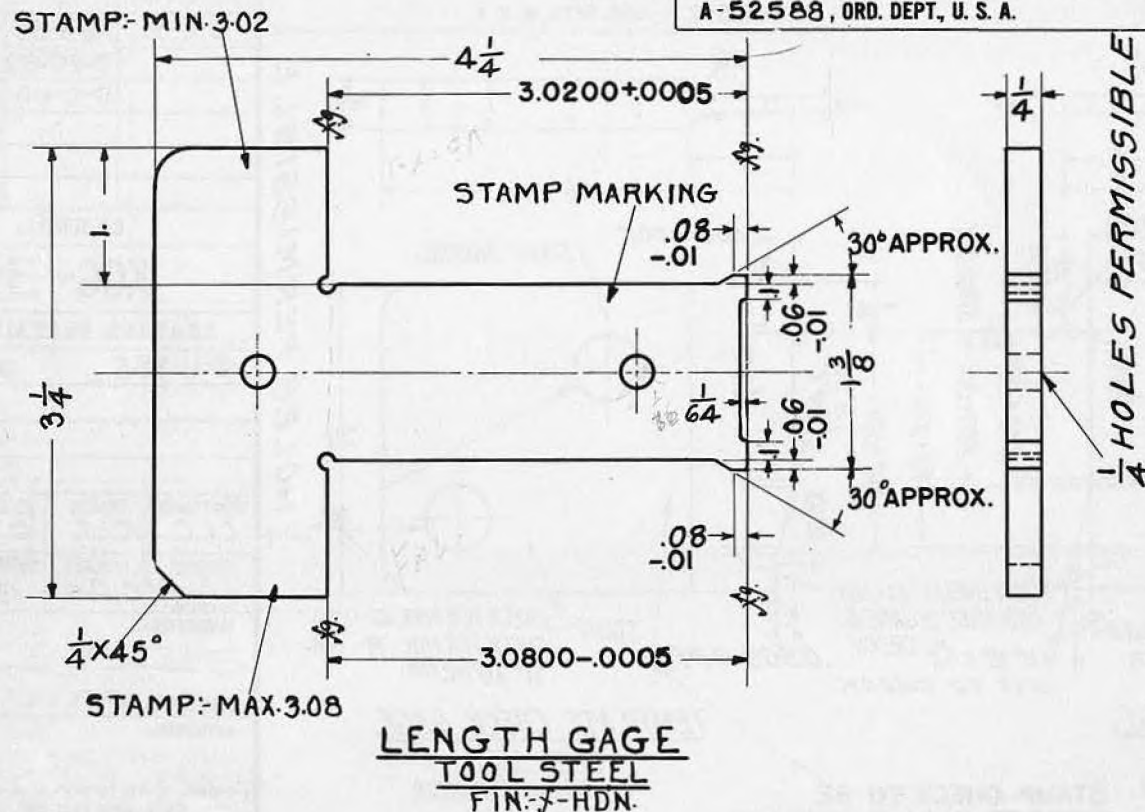
LT. COL. ORD. DEPT., U. S. A.
CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE *FEB. 26, 1935*

A-52587.

105MM. H.E. SHELL MI, 75-4-75,
POSITION BAND, INSP,
A-52588, ORD. DEPT., U. S. A.



ROCKWELL HARDNESS C63 TO 66
LAP *g* SURFACES
REMOVE ALL SHARP EDGES

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

ADG 146

DRAWING PERTAINS TO

B-111886 GAGE LISTS

DRAFTSMAN L.A.Y.	TRACER L.A.Y.	L'D'G DRAFTSMAN C.D.H.
CHECKER [Signature]	CHECKER H.C.S.	CHIEF DRAFTSMAN [Signature]

SUBMITTED:-

Frank J. Pierce

MAJ. ORD. DEPT., U. S. A.

APPROVED:-

LT. COL. ORD. DEPT., U. S. A.
CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE *FEB. 26, 1935*

A-52588

MARKING:-

105 MM. H.E. SHELL M1, SET SCREW,
75-4-75, TOTAL LENGTH, INSP.

A-52590, ORD. DEPT. U.S.A.

REVISIONS

COMPONENT		GAGE
DRG. NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

SYMBOL

MCG 1422

DRG PERTAINS TO

B111886 GAGE LISTS

B112805-2

B112787-2

DFTSMAN A.N.	TRACER A.N.	LDG. DFTSMAN C.D.H.
CHECKER H.C.S.	CHECKER C.D.H.	CHIEF DFTSMAN A.E.S.

SUBMITTED:-

Frank J. Gierant

MAJ. ORD. DEPT. U.S.A.

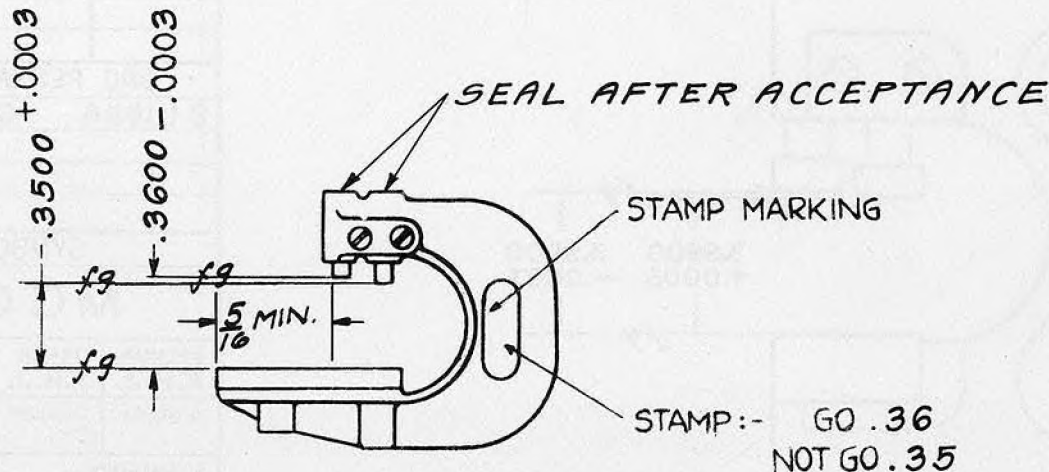
APPROVED:-

W.D. Clark
LT. COL. ORD. DEPT. U.S.A.
CHIEF GAGE SEC. ORD. DEPT. U.S.A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

A-52590



ADJUSTABLE SNAP GAGE

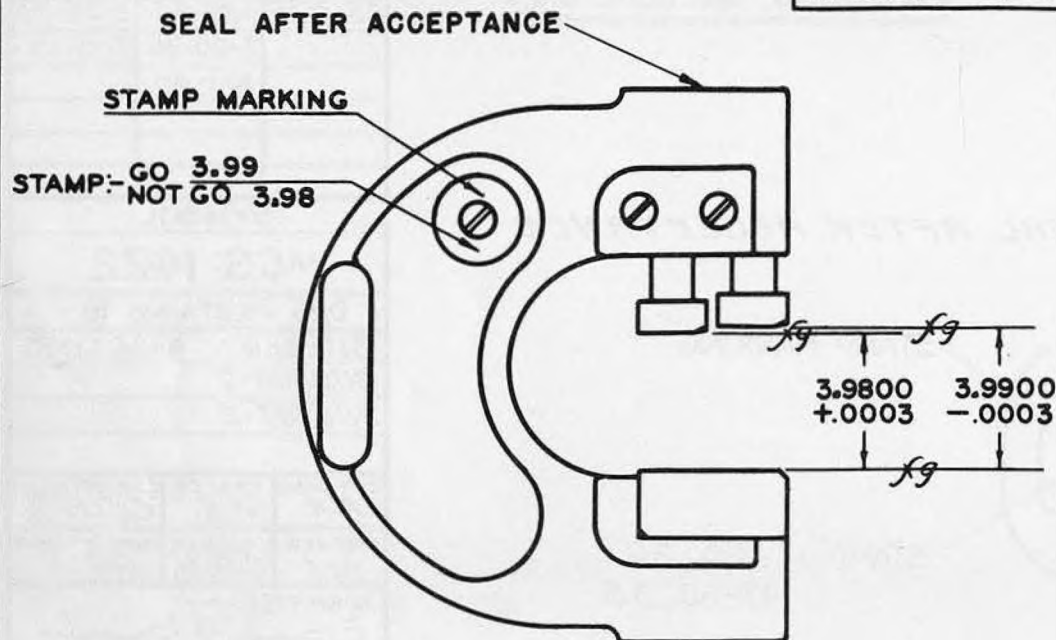
AMERICAN GAGE DESIGN STANDARD
MODEL "MC" WITH SPECIAL EXTENDED
LOWER ANVIL OR G.T.D. #1516

ROCKWELL HARDNESS C63 TO 66

LAP f_9 SURFACES

REMOVE ALL SHARP EDGES

MARKING:— 105 MM. H.E. SHELL M1
 BODY, 75-4-75
 DIA. OVER RIBS, INSP
 A 52592 , ORD. DEPT. U.S.A.



ADJUSTABLE SNAP GAGE.
 AMERICAN GAGE DESIGN STANDARD
 MODEL A, B, OR C

ROCKWELL HDN. C 63 TO 66
 LAP *fg* SURFACES
 REMOVE ALL SHARP EDGES

REVISIONS

COMPONENT		GAGE
DRG. NO.	DATE	DATE
75-4-75	8-1-40	9-9-40

DRG. PERTAINS TO
 B III 886 GAGE LISTS

SYMBOL

M C G

D'FTSMAN A.H.J.	TRACER A.H.J.	L'D'G. D'FTSMAN <i>off</i>
CHECKER	CHECKER <i>off</i>	CHIEF D'FTSMAN

SUBMITTED:—

MAJ. ORD. DEPT. U.S.A.

APPROVED:—BY ORDER OF THE
 CHIEF OF ORD.

MAJ. ORD. DEPT. U.S.A.

FRANKFORD ARSENAL

DATE SEPT. 9, 1940

A 52592

MARKING:-

$\frac{5}{16}$ -18NC-2 MAJOR DIA.

A165752, ORD. DEPT. U.S.A. INSP.

REVISIONS

COMPONENT		GAGE
DRG. NO.	DATE	DATE

SYMBOL

MCG1169

DRG. PERTAINS TO
ORDNANCE STANDARD

DFTSMAN <i>EVB</i>	TRACER <i>EVB</i>	L'DG DFTSMAN <i>M.B.W.</i>
CHECKER <i>R.D.</i>	CHECKER <i>M.S.H.</i>	CHIEF DFTSMAN <i>M.S.H.</i>

SUBMITTED BY

A. J. Murphy
COL. ORD. DEPT. U.S.A. COMD'G.

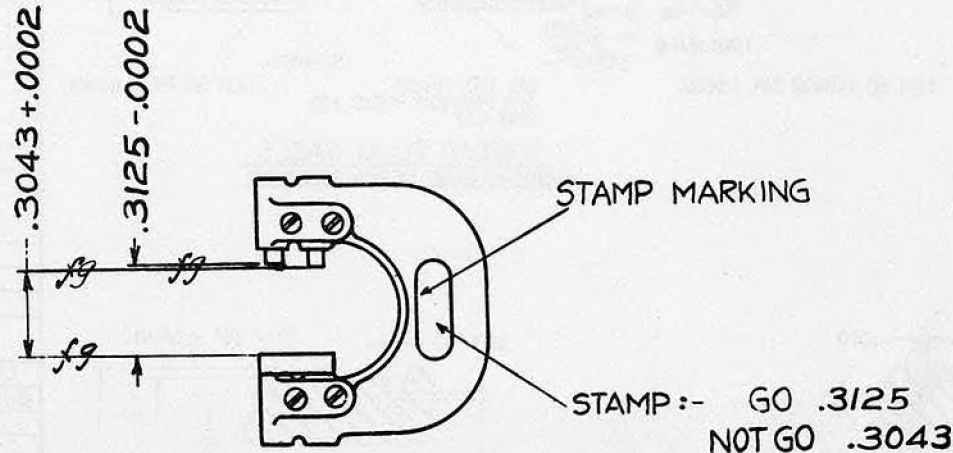
APPROVED:-

LT. COL. ORD. DEPT.
CHIEF GAGE SEC., ORD. DEPT. U.S.A.

ROCK ISLAND ARSENAL

DATE APRIL 15, 1936

A165752



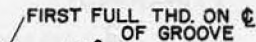
ADJUSTABLE SNAP GAGE
AMERICAN GAGE DESIGN STANDARD
MODEL C

ROCKWELL C 63 T066
LAP *f9* SURFACES
REMOVE ALL SHARP EDGES



Technical drawing of a bolt and nut assembly. The bolt is labeled "HARDEN Ø" and "STAMP MARKING". The nut is labeled "STAMP:-" and "GO MINOR DIA. 1.9098".

NOT GO MINOR DIA. 1.9188



GRIND $\frac{1}{16}$ DEEP

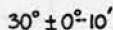
STAMP:-

GO P.D. 1.9459
MIN. PERFECT THDS. 1.22
MAX. 1.37

B 21850 , ORD. DEPT. U.S.A.

THREAD PLUG GAGES

AMERICAN GAGE DESIGN STANDARD



ENLARGED CROSS SECTION
OF "GO" PLUG THREADS.

VARIATION IN LEAD BETWEEN
ANY TWO THDS. ± 0.0003

FLATTEN FIRST HALF TURN OF END THDS. TO AVOID FEATHER EDGE



ENLARGED CROSS SECTION
OF "NOT GO" PLUG THREADS.

VARIATION IN LEAD BETWEEN
ANY TWO THDS. $\pm .0003$

Ø ROCKWELL C60 TO 63
 Ø ROCKWELL C63 TO 66
 LAP FLANKS OF THDS.
 AND *f*₉ SURFACES.

REMOVE ALL SHARP EDGES.

REVISIONS

[illegible]

SYMBOL

DRG. PERTAINS TO	
B111886	GAGE LISTS

DFTSMAN H.J.B.	TRACER H.J.B.	LOG DFTSMAN <i>[Signature]</i>
CHECKER	CHECKER <i>[Signature]</i>	CHIEF DFTSMAN <i>[Signature]</i>

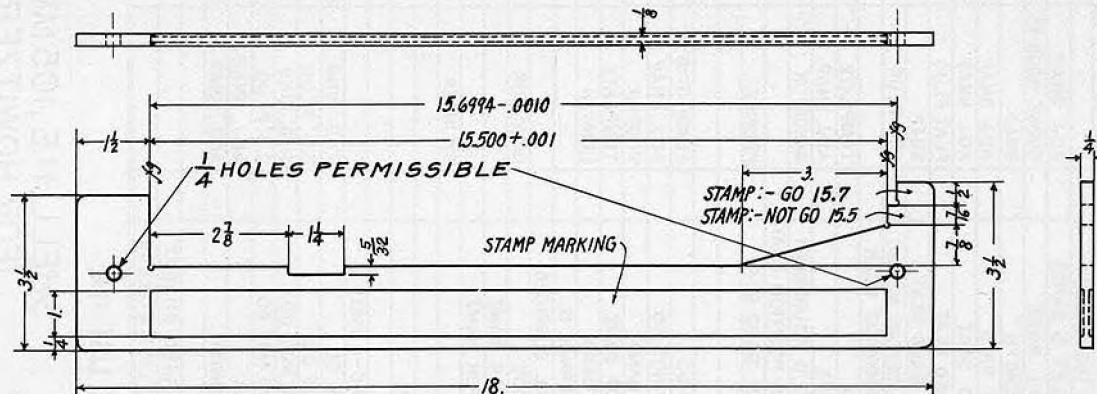
SUBMITTED:-

CAPT. ORD. DEPT. U. S. A.
APPROVED: - BY ORDER OF THE
CHIEF OF ORDNANCE

FRANKFORD ARSENAL

DATE FEB. 26, 1935

B 21850



Snap Gage.
TOOL STEEL.
FINISH *f*-HARDEN.

MARKING:-

105MM. H.E. SHELL M1, 75-4-75,
TOTAL LENGTH, INS' P.
B-21851. , ORD. DEPT., U. S. A.

REVISIONS

COMPONENT		GAGE
DRAWING NO.	DATE	DATE
75-4-75	1-23-35	2-26-35
	3-20-39	7-10-39
	8-1-40	

SYMBOL

ECG-902

DRAWING PERTAINS TO

B-111886

GAGE LISTS

DRAFTSMAN	TRACER	L'D'G DRAFTSMAN
C.L.C.	C.L.C.	C.D.H.
CHECKER	CHECKER	CHIEF DRAFTSMAN
H.C.S.	C.D.H.	<i>over</i>

SUBMITTED:-

John J. Smith

M.A. ORD. DEPT., U. S. A.

APPROVED:-

ORD. DEPT., U. S. A.
LT. COL. CHIEF, GAGE SEC., ORD. DEPT., U. S. A.

FRANKFORD ARSENAL

DATE FEB. 26, 1935

B-21851.

ROCKWELL HARDNESS C 63 TO 66
LAP *fg* SURFACES.
REMOVE ALL SHARP EDGES

SUPERSEDES DRG. B111886 DATE 7-10-39

COMPONENT		GAGE			
DRAWING	NAME	FUNCTION	OPER. NO.	TYPE	DRAWING
75-4-75	BODY, SHELL (75A)	2-12-NS-1 THD.			
		PITCH DIA. GO & MIN. DEPTH		THD. PLUG	B21850
		PITCH DIA. NOT GO		THD. PLUG	B21850
		MINOR DIA.		PROG. PLUG	B21850
		.3125-18-NC-2 THD.			
		PITCH DIA.		D.E. THD. PLUG	B149863
		MINOR DIA.		D.E. PL. PLUG	B149863
		DIA. AT NOSE		SNAP	A52575
		CHECK FOR SAME		FLAT PLUG	A52575
		PROFILE OGIVE		PROFILE	A52576
		CHECK FOR SAME		TEMPLATE	A52576
		DIA. BOURRELET &			
		REAR OF BAND GO		PLAIN RING	A52577
		DIA. BOURRELET &			
		REAR OF BAND NOT GO		ADJ. SNAP	A52577
		DIA. BODY (BETWEEN			
		BOURRELET & BAND)		ADJ. SNAP	A52578
		THICKNESS BASE		GOOSE NECK F.P.	C10635
		TOTAL LENGTH		SNAP	B21851
		DIA. OVER RIBS		ADJ. SNAP	A52592
		DIA. BAND SEAT		ADJ. SNAP	A52579
		WIDTH BAND SEAT		FLAT PLUG	A52580
		POSITION BAND SEAT		SNAP	A52581
		INSIDE DIA. BEFORE NOSING		ADJ. PLUG	A52582
		LENGTH GROOVE AT REAR			
		OF BAND		TEMPLATE	A52583
		DIA. GROOVE		ADJ. SNAP	A52584
		CONC. THD. & BOURRELET		INDICATOR	C10634
		PROFILE & POSITION BOAT-			
		TAIL FROM BAND SEAT		PROFILE	A52585
	AFTER BANDING (75B)	DIA. BAND GO		PLAIN RING	A52586
		DIA. BAND NOT GO		ADJ. SNAP	A52586
		PROFILE BAND		PROFILE	A52587
		CHECK FOR SAME		TEMPLATE	A52587
		POSITION BAND		LENGTH	A52588
		CONC. INTERNAL &			
		EXTERNAL SURFACES			
		WITH BODY		INDICATOR	D10141-1
		DETAILS FOR SAME			D10142
		DETAILS FOR SAME			D10146
		CHECK		CYLINDER	D10141-2
75-4-75	COVER, BASE (75E)	NO GAGES			
75-4-75	SCREW, SET (75F)	.3125-18-NC-2 THD.			
		PITCH DIA. GO		THD. RING	B149862
		CHECK FOR GO		D.E. PLUG	B149862
		PITCH DIA. NOT GO		THD. RING	B149862
		CHECK FOR NOT GO		D.E. PLUG	B149862
		MAJOR DIA.		ADJ. SNAP	A165752
		TOTAL LENGTH		ADJ. SNAP	A52590
75-14-41	BLANK, ROTATING BAND	SEE GAGE LIST B112857			
75-20-76	FORGING	SEE GAGE LIST B112939			

7-10-39

9-9-40

REVISIONS

DRYFLIGHTMAN

M.H.E.

TRACER

L.O.G. DRAFTSMAN

CHECKER

CHECKER

CHIEF DRAFTSMAN

SUBMITTER

CAPT. DOD. DPT. U. S. A.

APPROVED BY ORDER OF THE

CHIEF OF ORDNANCE.

MAJOR

COD. DPT. U. S. A.

DATE FEB. 26, 1935

SHEET NO.

B111886

1 OF 1

GAGE LIST FOR;

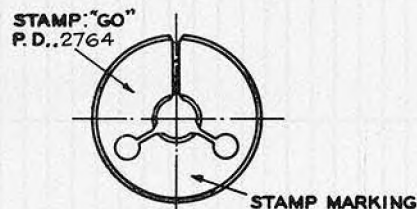
SHELL, H.E., 105 MM. MI

(FOR HOWITZER)

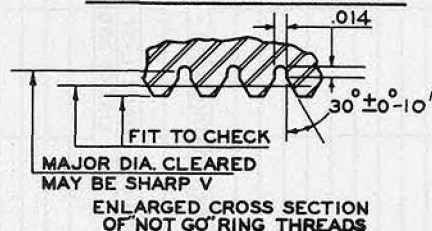
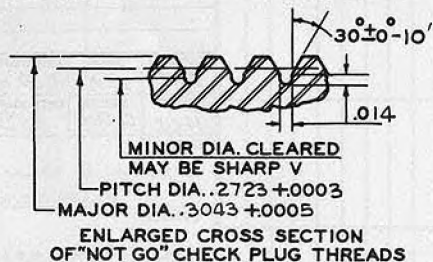
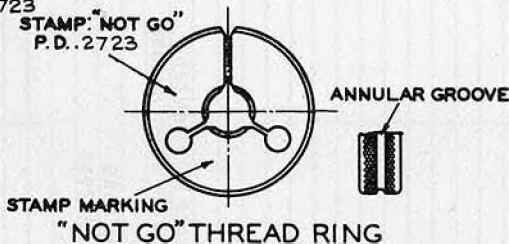
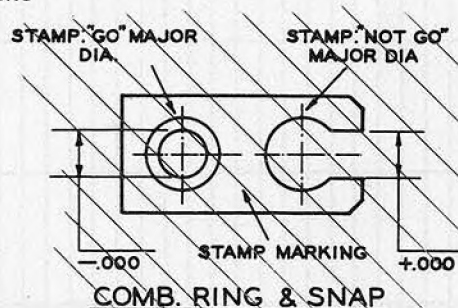
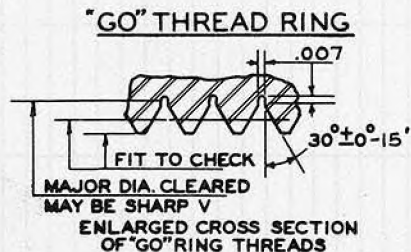
INSPECTION

FRANKFORD

ARSENAL



BI49862, $\frac{5}{16}$ -18NC-2
ORD. DEPT. U.S.A. INSP.

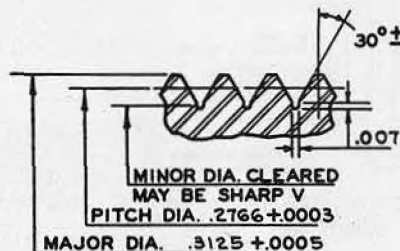
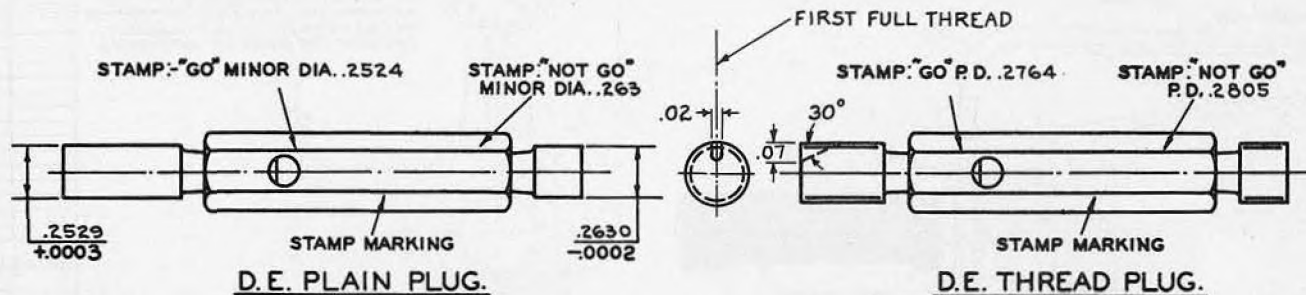
[illegible]

GAGES ARE TO BE OF AMERICAN GAGE
DESIGN STANDARD.
GAGING MEMBERS TO BE HARDENED
GROUND & LAPPED.
FIRST HALF TURN OF END THREADS ARE
TO BE FLATTENED TO AVOID FEATHER
EDGES.
VARIATION IN LEAD BETWEEN ANY TWO
THREADS $\pm .0003$

BI49863, $\frac{5}{16}$ -18 NC-2
ORD. DEPT. U.S.A. INSP.

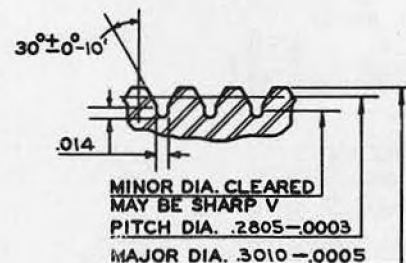
DATE	DATE	DATE
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DATE	DATE	DATE
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ENLARGED CROSS SECTION
OF "GO" PLUG THREADS

GAGES ARE TO BE OF AMERICAN
GAGE DESIGN STANDARD.
GAGING MEMBERS TO BE HARDENED
GROUND & LAPPED.
FIRST HALF TURN OF END THREADS
ARE TO BE FLATTENED TO AVOID
FEATHER EDGES.
VARIATION IN LEAD BETWEEN ANY
TWO THREADS $\pm .0003$



ENLARGED CROSS SECTION
OF "NOT GO" PLUG THREADS

DRG. PERTAINS TO
ORDNANCE STANDARD

SYMBOL

DCG 706

OFFTSMAN R.G.	TRACER R.G.	LOG OFFTSMAN W.B.W.
CHECKER L.S.	CHECKER J.H.H.	CHEF OFFTSMAN J.H.H.

SUBMITTED BY
J. T. Fickel
COL. ORD. DEPT. U.S.A. COMDG.

APPROVED:
LT. COL. ORD. DEPT.
CHIEF GAGE SEC. ORD. DEPT. U.S.A.

ROCK ISLAND ARSENAL

DATE JAN. 2. 1936

B149863

STAMP MAX. .65
MIN. .55

1 2 4 5

II

6

STAMP MARKING

10

2. MAX.

3 8

9 7

MAX. .650 - .001
MIN. .550 + .001

4.128 DIA.
-.005

GOOSE NECK FLUSH PIN CASE

[illegible]

190-32NF-2

L

SEE ASSEM.

$\frac{10}{16}$

$\frac{1}{8}$

$\frac{5}{8}$

$\frac{13}{16}$

$\frac{9}{16}$

$2\frac{13}{16} + \frac{L}{32}$

SLIDE FIT FOR (4)

DRIVE FIT FOR (8)

FOR $\frac{1}{8}$ " PIN AT ASSEMBLY-DRIVE

15×45

Technical drawing of a shaft assembly. The shaft has a diameter of 1 inch and a length of 9/16 inches. A callout indicates a "FOR 1/8 DOWEL - LOCATE FROM" with a dimension of 1/4 inch. The shaft is shown with a "1/8 X 45° CHAMFER" at the end. A cross-section view shows the shaft with a central hole and a diameter of 1/8 inch.

FOR $\frac{3}{16}$ DOWEL-DRIVE-LOCATE FROM (6)

$\frac{3}{16}$ R. SPHERICAL POLISH

7/8

MAX. $\frac{3}{4}$

DRIVE FIT (6)

9/16

3/8

1/8 R.

3/8

SEE ASSEM.

1 3/8 APPROX

FOR 190 FLAT HD. SCREWS

SEND TO SUIT ASSEMBLED DIMENSION 4.128 DIA.

REST PLATE (10)
 2-MACH. STEEL
 FINISH

4-190-32NF-2 X $\frac{1}{2}$ FLAT HD. SCREWS (11)

MARKING--- 105 MM. H.E. SHELL MI,
SHELL BODY, 75-4-75,
THICKNESS BASE, INSP.
C 10635 ORD. DEPT., U. S. A.

DRILL FOR $\frac{3}{16}$ PIN AT ASSEM.-DRIVE

[illegible]

LOCATE SLOT TO GIVE ARM .05 MIN. MOVEMENT ABOVE & BELOW GAGING SURFACES & 90° ROTARY MOVEMENT MIN.

PIN (4)
TOOL STEEL
FINISH $\diagup$ - HARDEN
 $1\frac{3}{16} \times 1\frac{1}{4}$ STEEL DOWEL PIN (5)

[illegible]

DRAWING PERTAINS TO	
B111886	GAGE LISTS

DRAFTSMAN W.F.	TRACER W.F.	LTDG DRAFTSMAN AP
CHECKER	CHECKER	CHIEF DRAFTSMAN J.E.

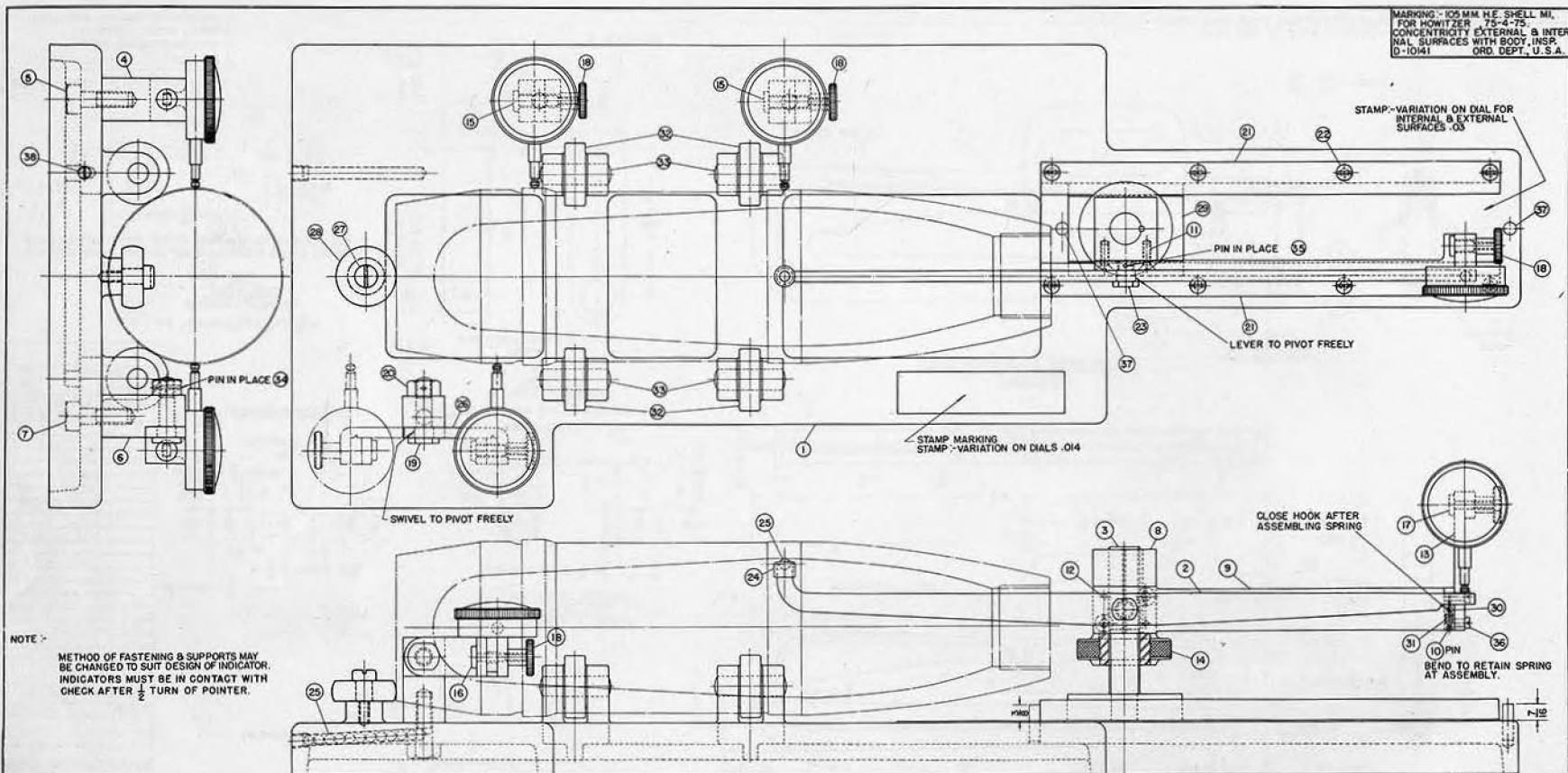
SUBMITTED

[Signature]

CAPT. 1. DMS. DEPT. U. S. A.
APPROVED BY ORDER OF THE
CHIEF OF ORDNANCE
[Signature]

MAJ., ORG. DEPT., U. S. A.
FRANKFORD ARSENAL
DATE FEB. 26, 1935.

C-10635



MARKING - 105 MM H.E. SHELL, M1.
FOR HOWITZER - 75-4-75.
CONCENTRICITY EXTERNAL & INTERNAL SURFACES WITH BODY, INSP.
D-10141 ORD. DEPT., U.S.A.

NOTE -

METHOD OF FASTENING & SUPPORTS MAY BE CHANGED TO SUIT DESIGN OF INDICATOR. INDICATORS MUST BE IN CONTACT WITH CHECK AFTER 1/2 TURN OF POINTER.

CONCENTRICITY GAGE ASSEMBLY

4-INDICATORS, DIAL GRADUATED 0-15-0, WITH BEZEL CLAMP
& JEWELLED BEARINGS. TYPE SHOWN IS AMES NO 55.

FOR DETAILS SEE DRGS. D-10142 & D-10146

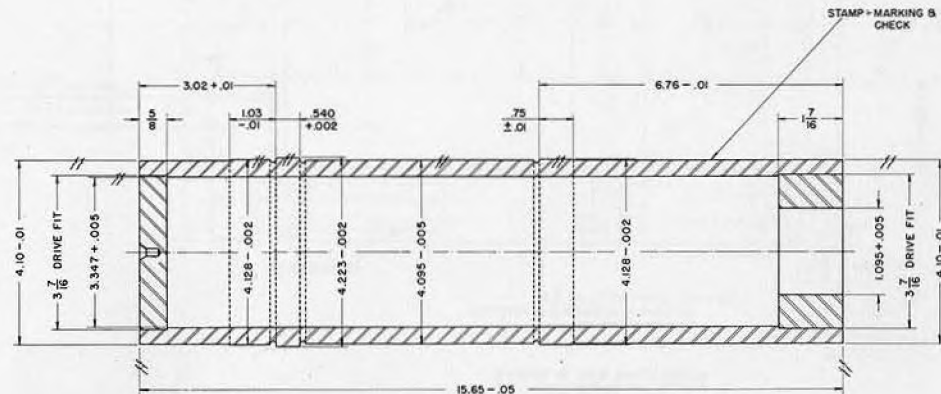
GAGE LIST NO. 8111886-1

SCG 130

DRAWING PREPARED BY		REVISED		105 MM H.E. SHELL, M1 FOR HOWITZER GAGE FOR CONCENTRICITY OF EXTERNAL & INTERNAL SURFACES WITH BODY- ASSEMBLY	
75	4-75	1-2-35	1-2-35	4-26-35	7-26-35
FRANKFORD ARSENAL, U.S.A.		FEB. 26, 1935.		FRANKFORD ARSENAL, U.S.A.	
A.N. ELL		E.D.M. K.C.		A.N. ELL	
CLASS		DIVISION		DRAWING	
SHEET 1 OF 2		D-10141		FILE	

SCALE - FULL SIZE

MARKING: 105 MM. M. E. SHELL NI,
FOR HOWITZER, 75-4-75,
CONCENTRICITY EXTERNAL &
INTERNAL SURFACES WITH BODY,
D 10141 GAG. SEPT. 11, 1944. INSP.



CHECK GAGE
MACH STEEL OR TUBING
FINISH ✓

REVIEWS			
COMPONENT	DATE		SHEET
DRAWING NO.	DATE	BY	NO.
75-4-75	3-20-80	7-10-80	
	8-1-80		
SYMBOL			
CIRC. PERTAINS TO			
D 10886		BACK (10-7)	
DESIGNED	TRACED	CHK'D	DATE
W.F.	W.F.	W.F.	8-2-80
CHECKED			
APPROVED			
CAPT. [Signature]		DATE 8-2-80	
UNCLASSIFIED SERVICE OF THE DEPT. OF COMMERCE			
[Signature]			
[Signature]			
FRANKFORD ARSENAL			
DATE JULY 10, 1959.			
D 1041		SHEET 2 OF 2	

LAP 1/2 SURFACES
REMOVE ALL SHARP EDGES

D 10141	SHEET 2 OF 2
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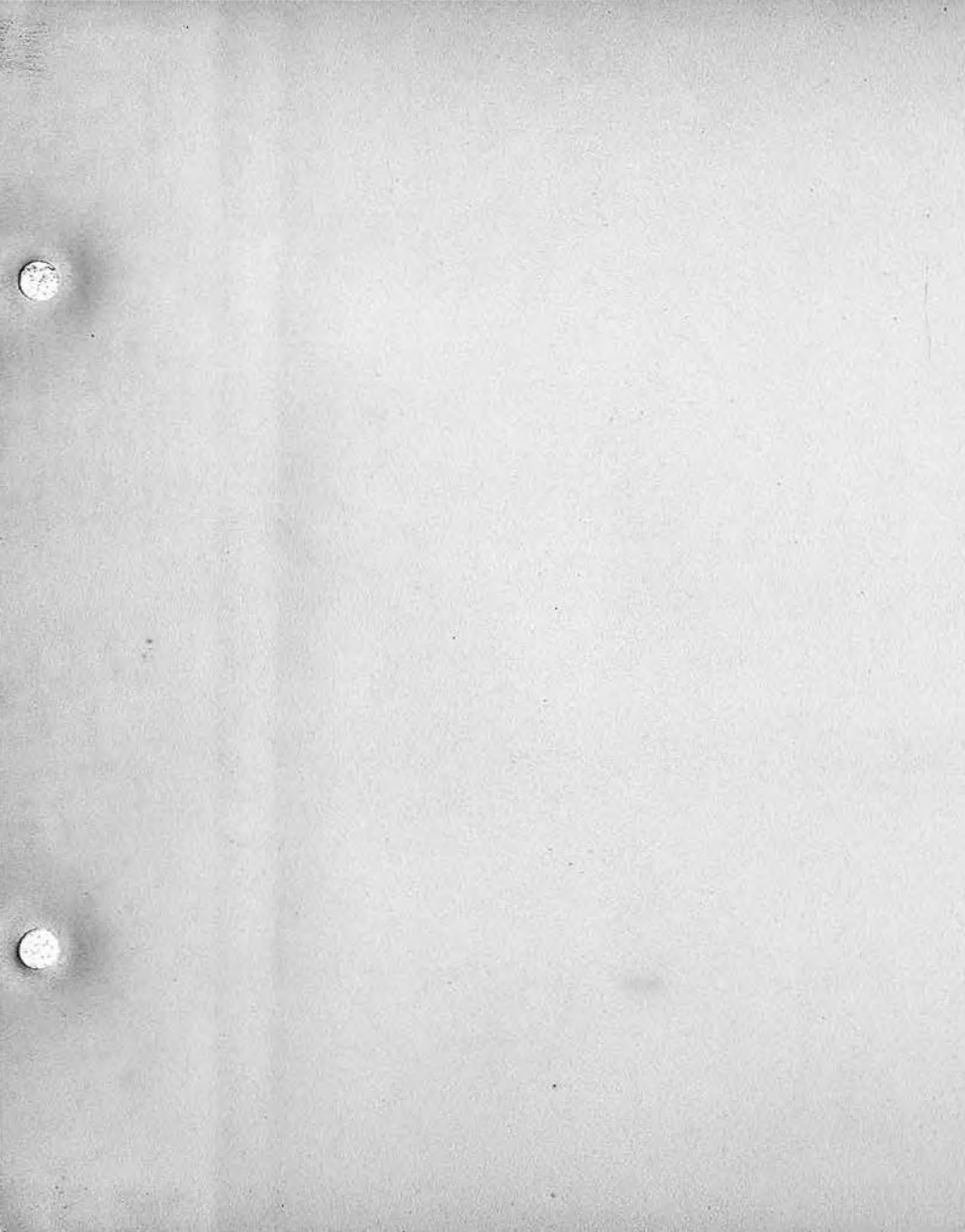


PHOTO - LITHOGRAPHED
AT
FRANKFORD ARSENAL
PHILADELPHIA, PA.