3M COMPANY

GENERAL OFFICES • 2501 HUDSON ROAD • ST. PAUL, MINNESOTA 55119 • TEL. 733-1110

1150

Nuclear Products

16 May 1967

U. S. Atomic Energy Commission
Washington, D. C., 20545

Attention: William O. Miller
Isotopes Branch
Division of Materials Licensing

Subject: Kr-85 Source, 3M Model 3E40

Dear Mr. Miller:

The purpose of this correspondence is to place on file information pertinent to our Kr-85 source, 3M Model 3E40.

This source is designed to be used in gauging applications. Kr-85 in the gas form is used in the fabrication of this source with the maximum activity loading of about 500 millicuries of Kr-85.

I have enclosed a copy of our drawing B1921-645 which shows the physical dimensions and construction details of this source.

The following information is engraved on the base of the housing:

3M Company
XXX mc Kr-85
Model 3E40
Serial XXX
Date

The following tests are performed on each source during and after fabrication and prior to shipment. Failure of any test rejects the source, of course.

1. Pressure test capsule to a minimum of 3 times the filling pressure.
2. Failure of this test will be determined by the presence of bubbles from the window of the source immersed in water during application of the pressure.

DRAWING NOT Duplicated for compliance. 5/19/67 JC

2. After filling with Kr-85, monitor the radiation output of the source at time of filling and 24 hours later. Significant reduction in radiation level indicates leakage.

3. Place the completed source in a closed container for at least 24 hours and monitor the air in the container for the presence of Kr-85 using a "sniffer-type" instrument. Presence of any significant quantity of Kr-85 indicates failure of the source.

Prototype sources have been fabricated and tested using the above quality control tests and have been found to be satisfactory. This source is essentially identical in design to many which we have previously registered with you. We refer to your files on our Model 3E4A, 3E4B, 3E4E, 3E4F, 3E4G and 3E4H.

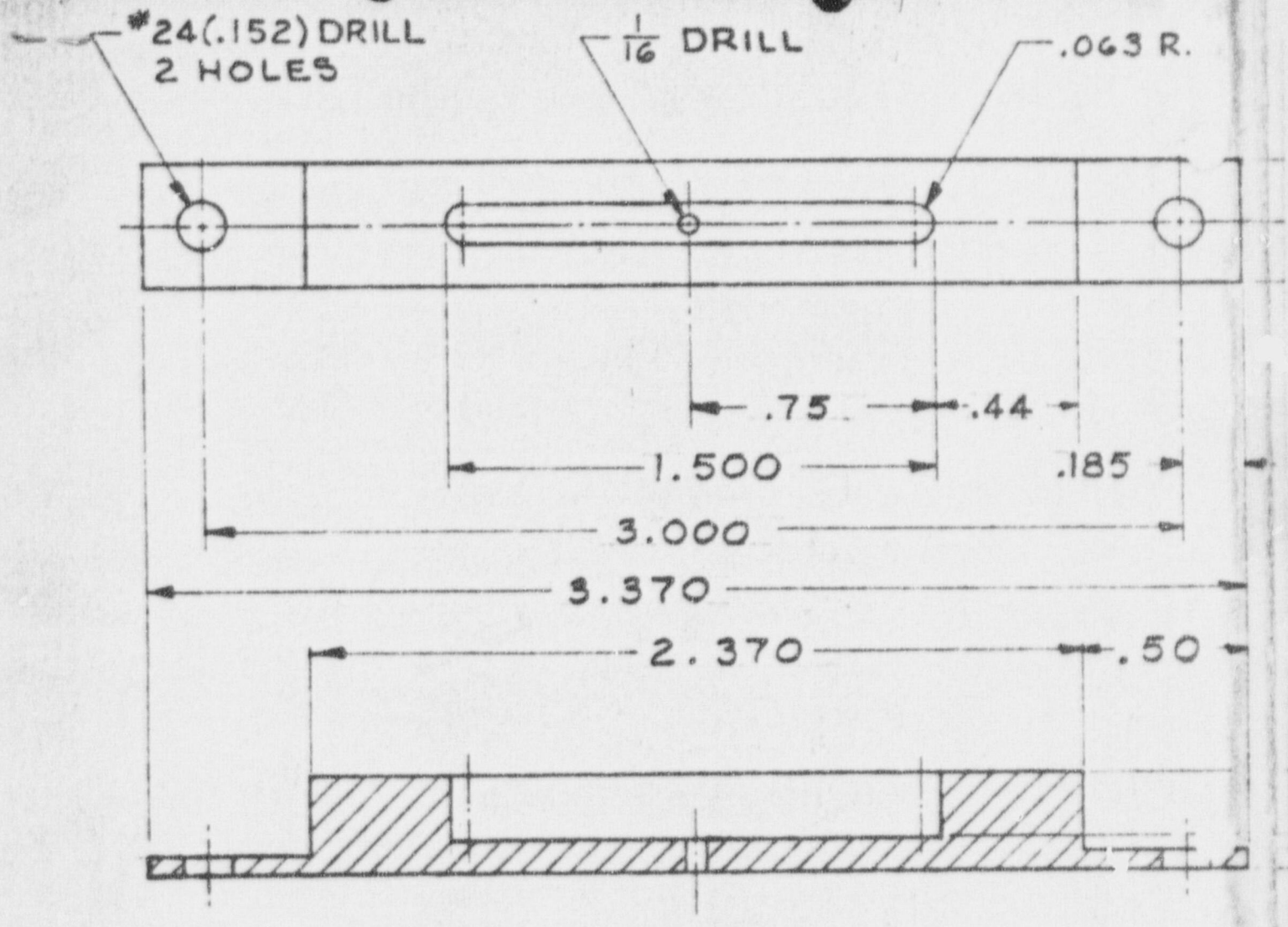
If you have any questions concerning this, please feel free to contact me personally at any time.

Very truly yours,

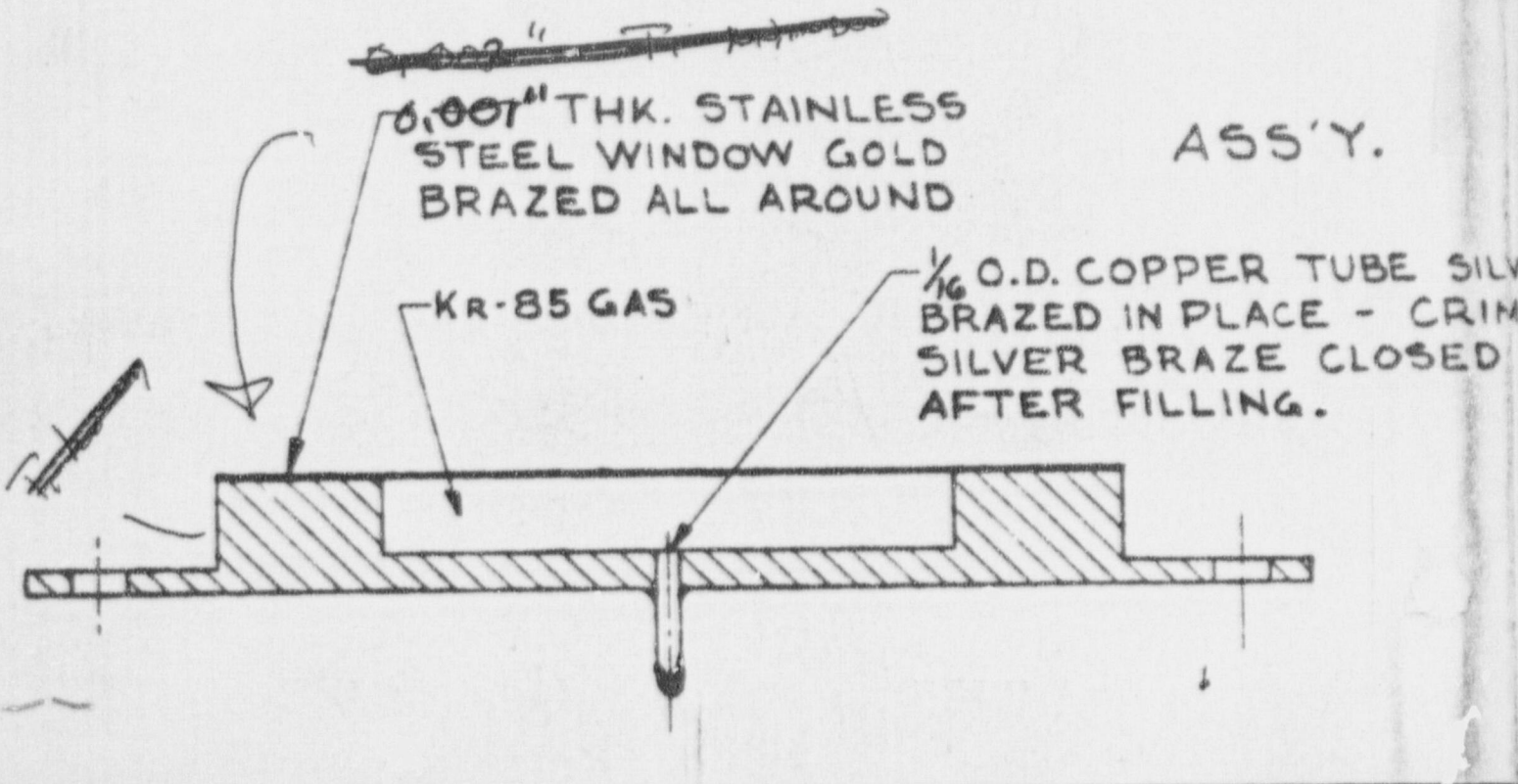
TN Lahr

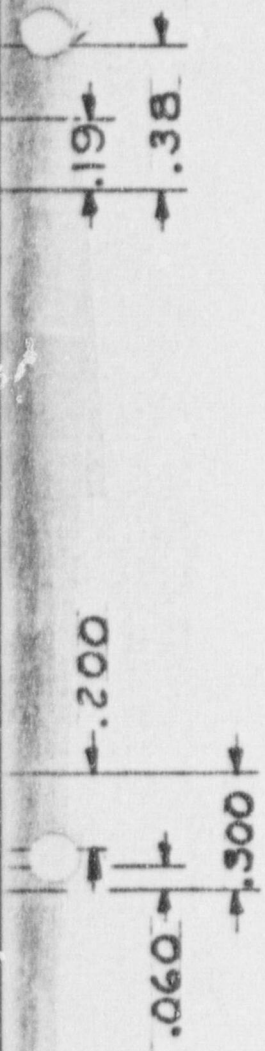
T. N. Lahr
Manager, Pilot Plant

Encl.



304 STAINLESS STEEL





9805280295-01

ER
P

USED ON

ISSUE	ISSUE DATE AND CHANGE RECORD	REV.	CH.
1	MAY 15, 1967		

TOLERANCES EXCEPT AS NOTED	MAXIMUM SURFACE ROUGHNESS EXCEPT AS NOTED 63
MACHINED DIMENSIONS .00 ± .02 .000 ± .005	
ANGULAR DIM. ±	SCALE 2" = 1"
BEND DIM. UNDER 30° ±	DR. J.D. SWENSON
BEND DIM. 30° & OVER ±	CH. U W JOHNSON
±	APP. TN Lahr

DIVISION NUCLEAR PRODS PROJ.

TITLE

KR-85 SOURCE
3M MODEL NO. 3E40

MINNESOTA MINING & MANUFACTURING CO.
ST. PAUL, MINNESOTA

B

1921-645

cc: J.W. Johnson
R. E. Volkmann
N. P. File

16 May 1967

U. S. Atomic Energy Commission
Washington, D. C., 20545

Attention: William O. Miller
Isotopes Branch
Division of Materials Licensing

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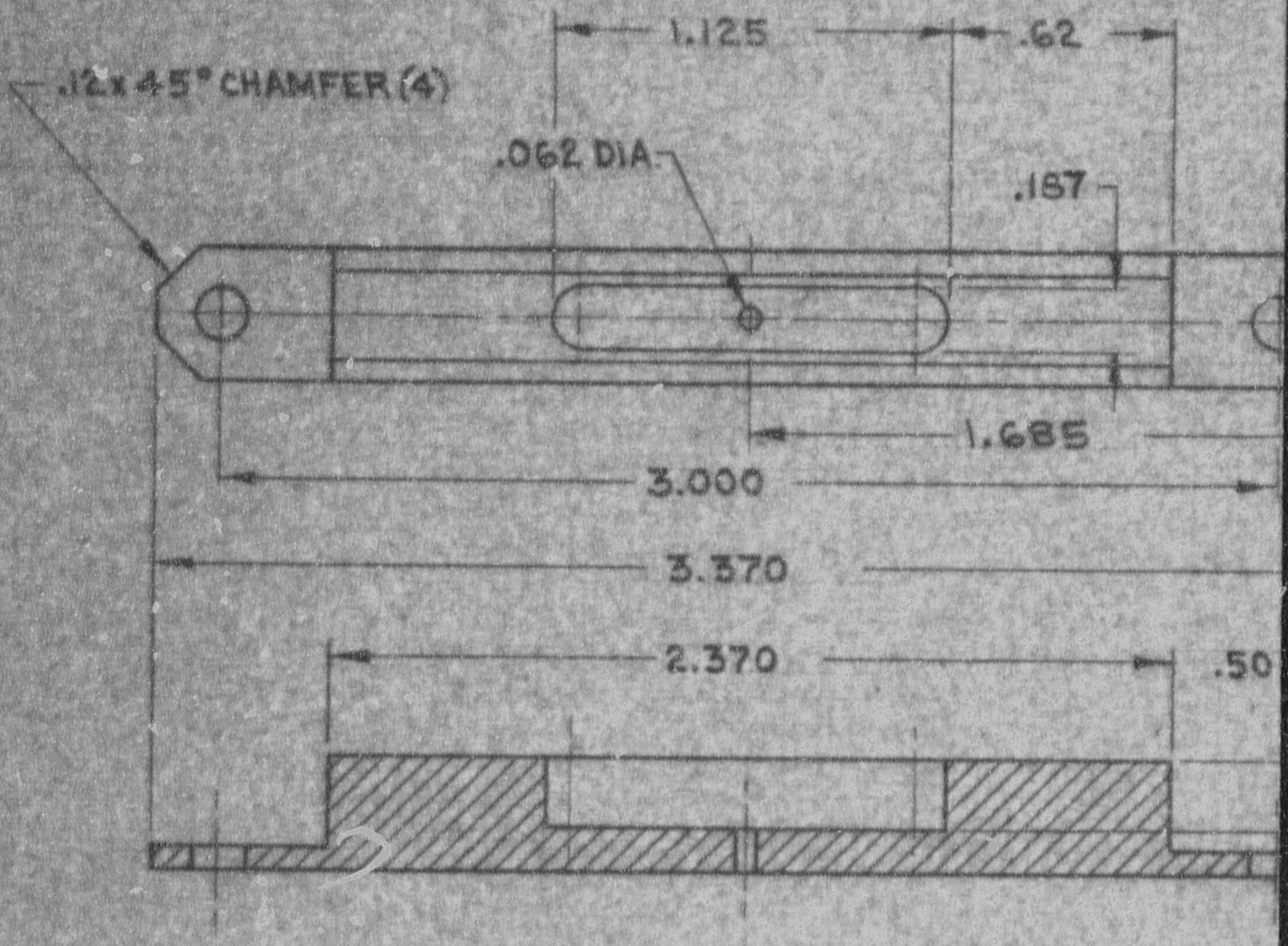
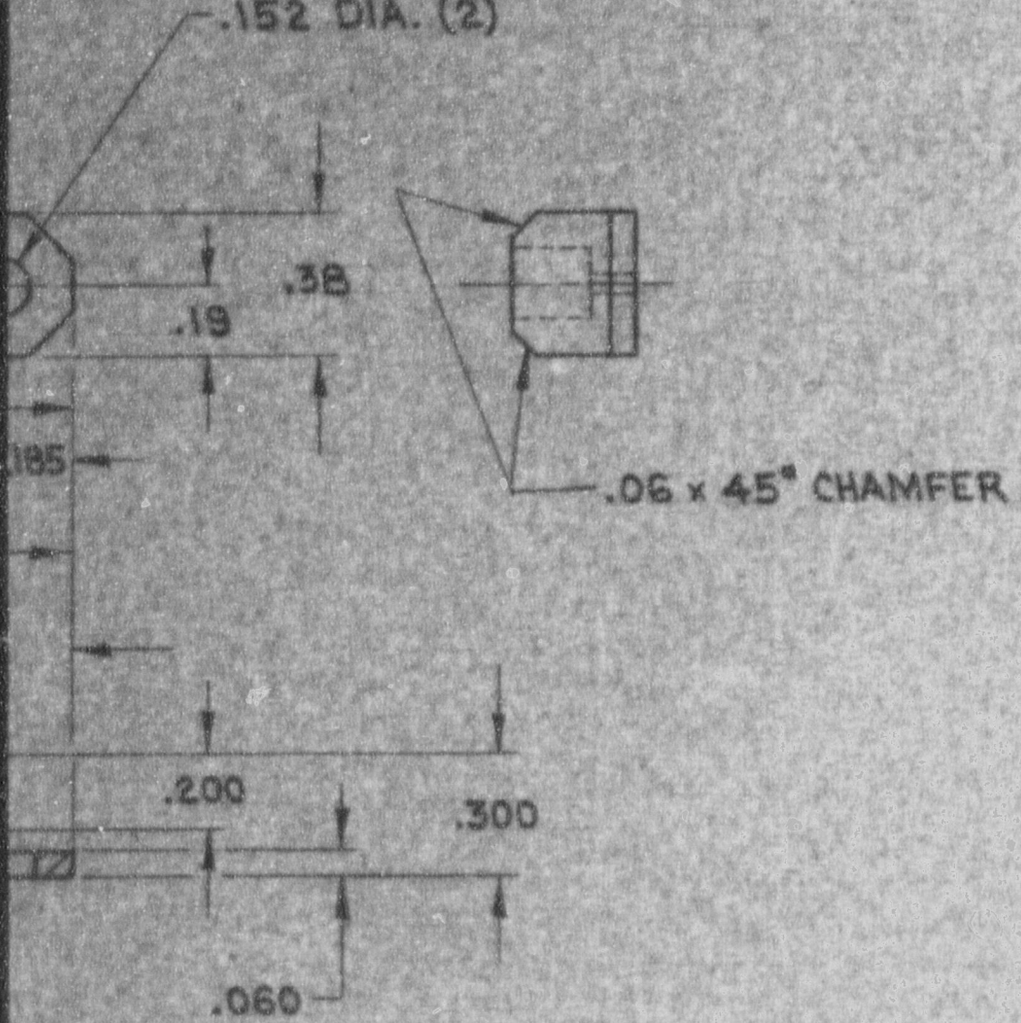
T. N. Lahr
Manager, Pilot Plant

Encl.



MAT'L:
TITANIUM



ANSTEC APERTURE CARD

Also Available on Aperture Card

USED ON 8-12-1921-2762-4

ISSUE	ISSUE DATE AND CHANGE RECORD	REV.	CH.
A	APR. 22, 80		C.Z.

TOLERANCE AND SURFACE ROUGHNESS UNLESS NOTED				
OPERATION	PLACES IN DIVISION			MAXIMUM SURFACE ROUGHNESS
	.0	.00	.000	
MACHINING	±.1	±.03	±.005	✓
CUT-OFF (SAW, STRIP, SHEAR)	±.1	±.04		
	±	±	±	
WELDING	±.1	±.05		
ANGULAR DIM.	±			
SCALE	2:1			

3M COMPANY
ENGINEERING DIVISION
St. Paul Minnesota

DR. CHUCK ZENDER
CH. DJ LUNDIN
APP. B. R. CHRISTENSEN

B

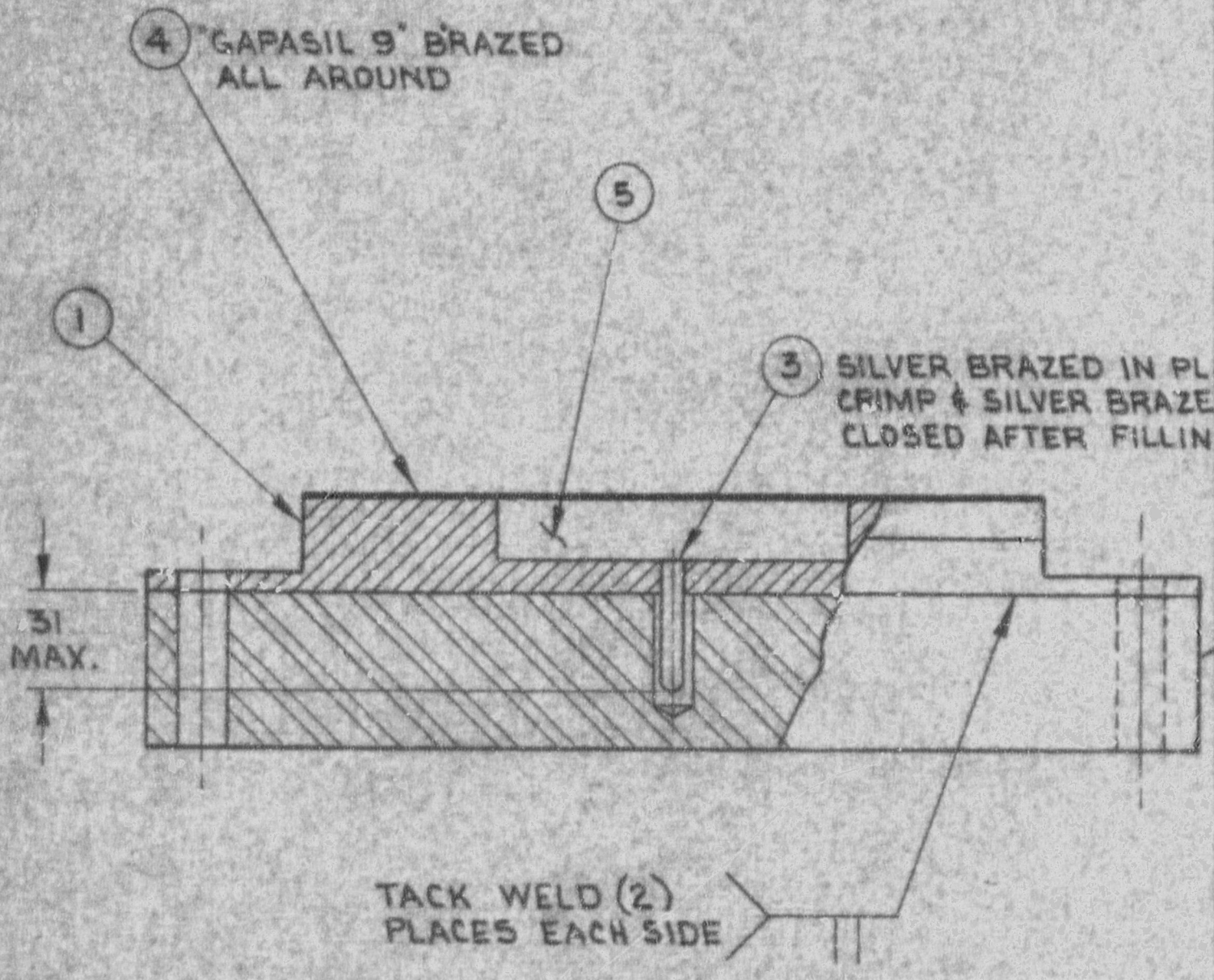
TITLE

SOURCE HOLDER

9805280295 - 02

PART NO.

12-1921-2760-B



ANSI CLASSIFICATION : 32231 (N.S.10, 1968)

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	B-12-1921-2760-8	SOURCE HOLDER
2	1	B-12-1921-2761-6	BACK-UP PLATE
3	1		1/16" O.D. COPPER TUBE
4	AR		.002 THK. TITANIUM WINDOW
5	AR		KR-85 GAS

ANSTEC
APERTURE
CARD

Also Available on
Aperture Card

ACE-
D
G.

(2)

ACC
3M SCS
3

9805280295- 03

USED ON

ISSUE	ISSUE DATE AND CHANGE RECORD	REV.	CH.
A	APR. 22, 80	C.Z.	

TOLERANCE AND SURFACE ROUGHNESS UNLESS NOTED

OPERATION	PLACES IN DIMENSION .0	.00	.000	MAXIMUM SURFACE ROUGHNESS
MACHINING	±.1	±.02	±.005	✓
CUT-OFF (SAW, BURN, SHEAR)	±.1	±.04		
	±	±	±	
WELDING	±.1	±.06		
ANGULAR DIM.	±			
SCALE	2:1			

3M COMPANY
ENGINEERING DIVISION
St. Paul
Minnesota

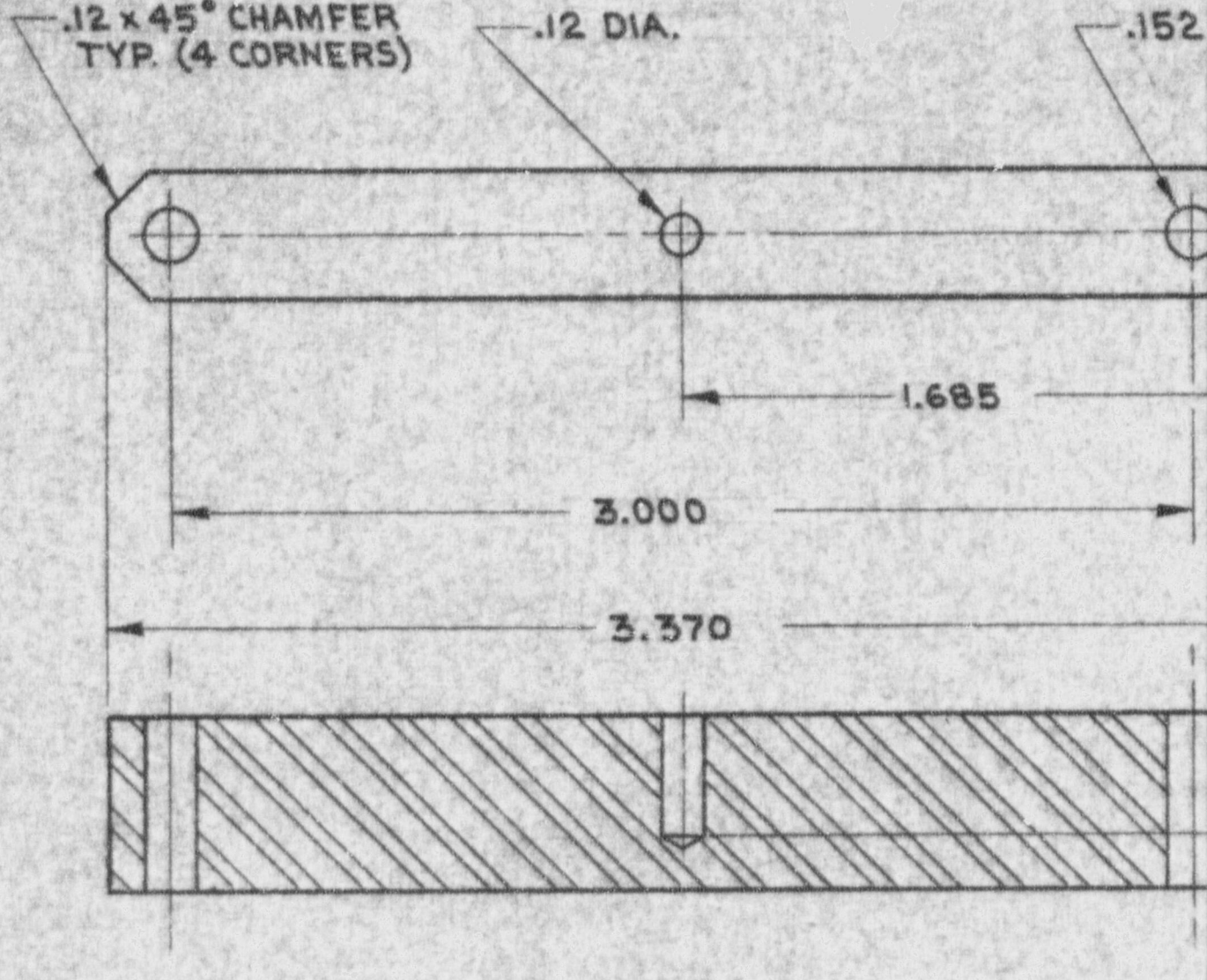
DR. CHUCK ZENDER
CH. D J LUNDIN
APP. E. R. CHARPENTIER

B

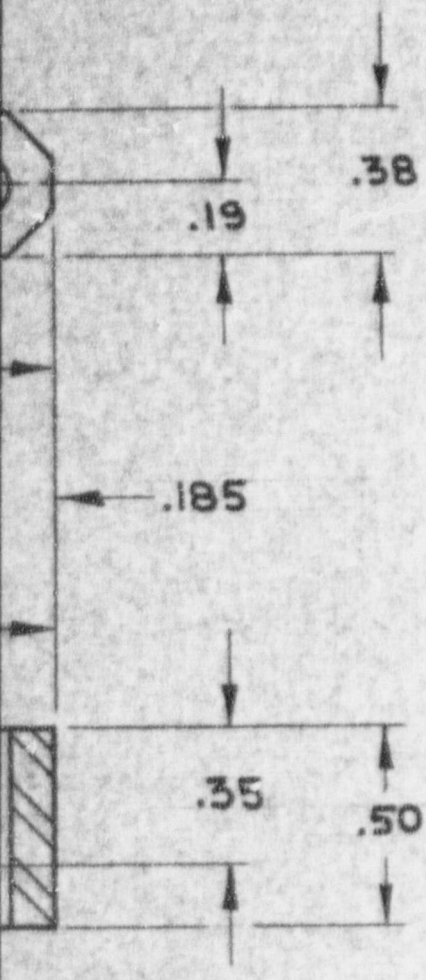
TITLE

ASSEMBLY
SOURCE WITH BACK-UP
PLATE, TITANIUM, 3E40

PART NO.
12-1921-2762-4



MAT'L:
TITANIUM



ACC
3M BCS
3

USED ON B-12-1921-2762-4

ISSUE	ISSUE DATE AND CHANGE RECORD	REV.	CH.
A	APR. 22, 80	C.Z.	

TOLERANCE AND SURFACE ROUGHNESS UNLESS NOTED

OPERATION	PLACES IN DIMENSION .0	.00	.000	MAXIMUM SURFACE ROUGHNESS
MACHINING	±.1	±.02	±.005	✓
CUT-OFF (SAW, TORCH, BREAK)	±.1	±.04		
	±	±	±	
WELDING	±.1	±.06		
ANGULAR DIM.	±			
SCALE	2:1			

3M COMPANY
ENGINEERING DIVISION
St. Paul
Minnesota

DR. CHUCK ZENDER
CH. D J LUNDIN
APP. E R CHAPPENTIER

B

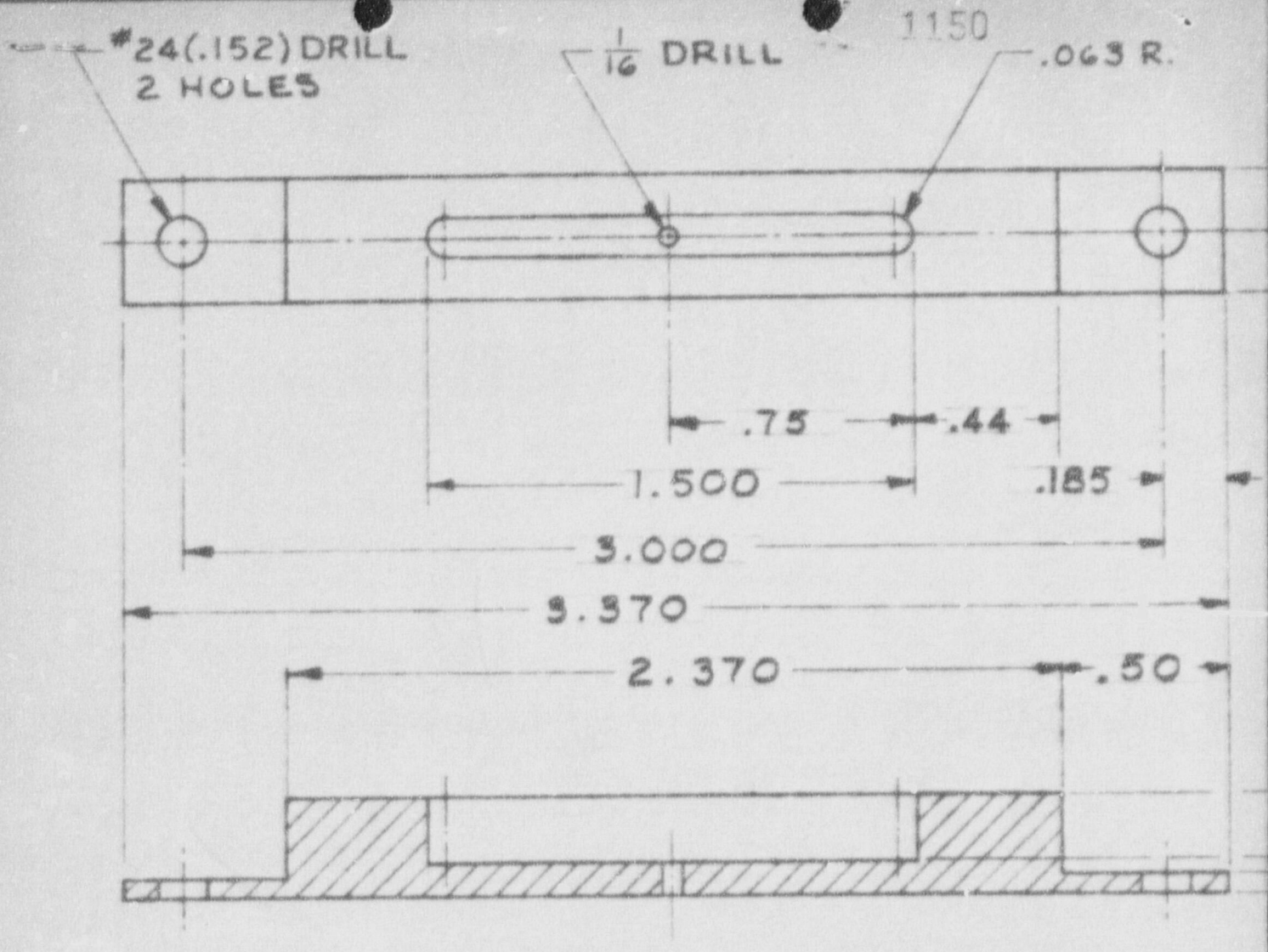
TITLE

BACK-UP PLATE

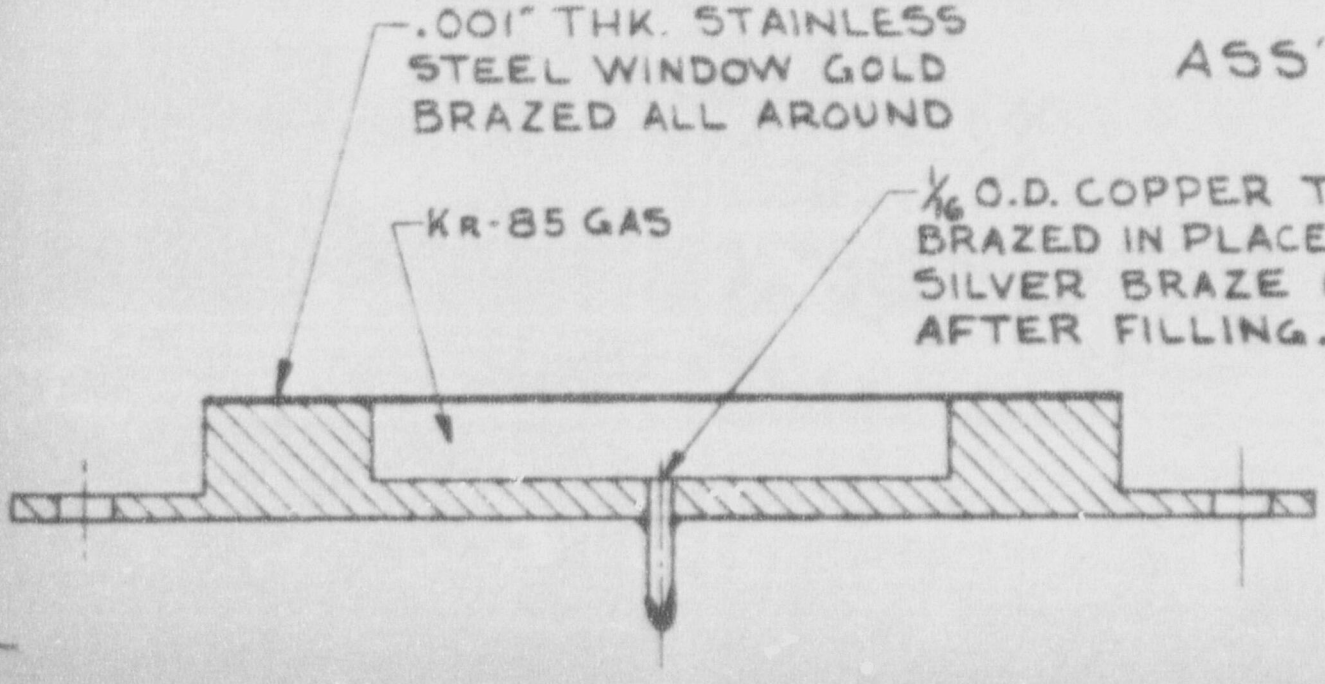
9805280295-04

PART NO.
12-1921-2761-6

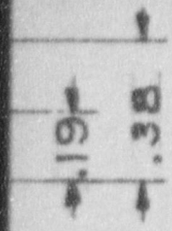
1150

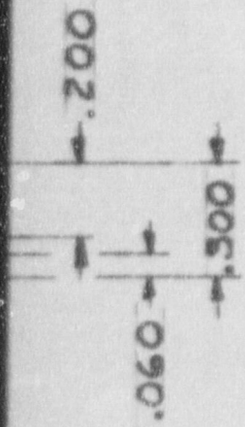


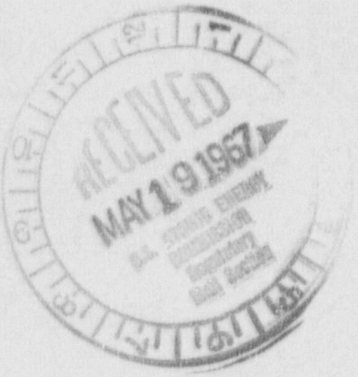
304 STAINLESS STEEL



ASS'Y.



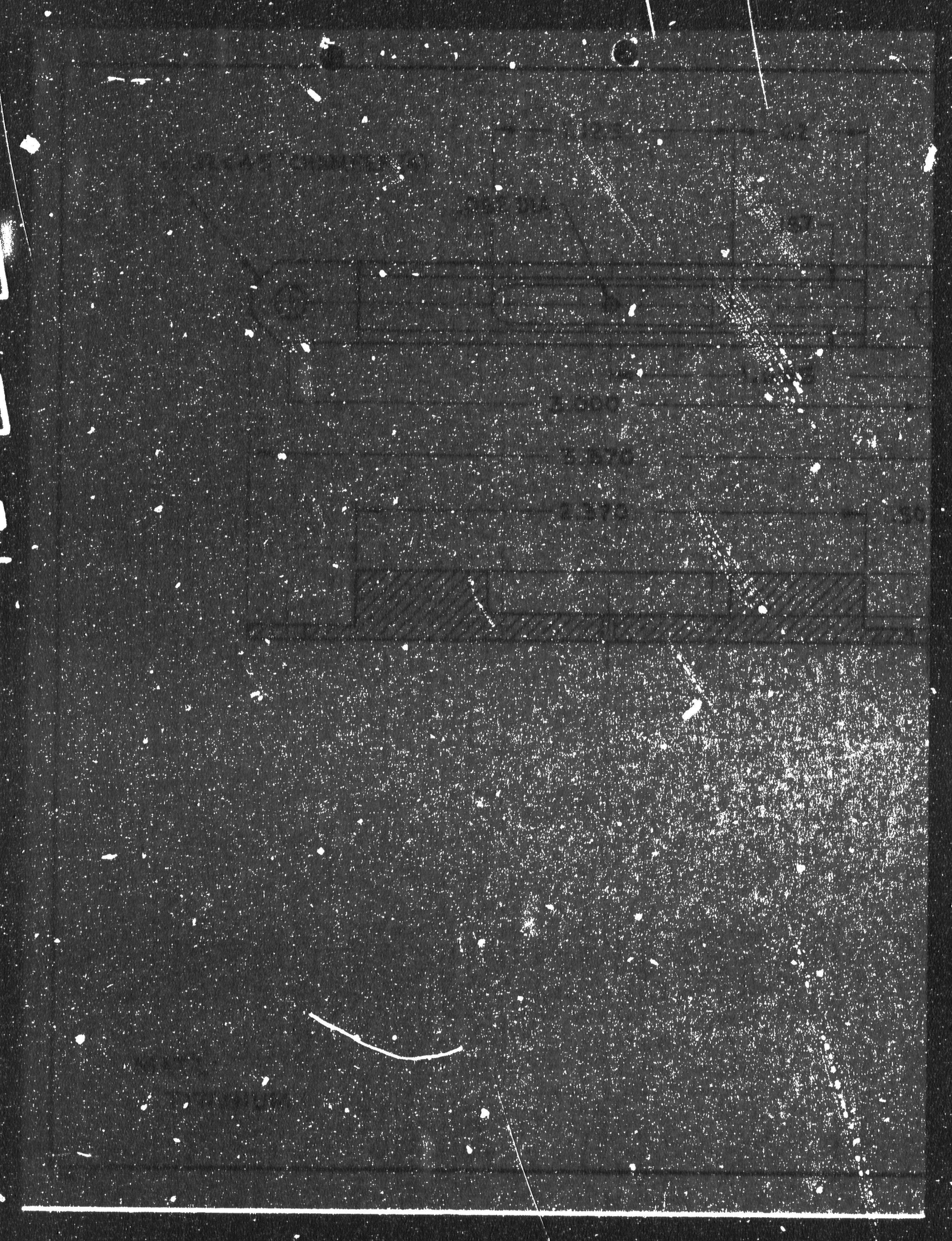


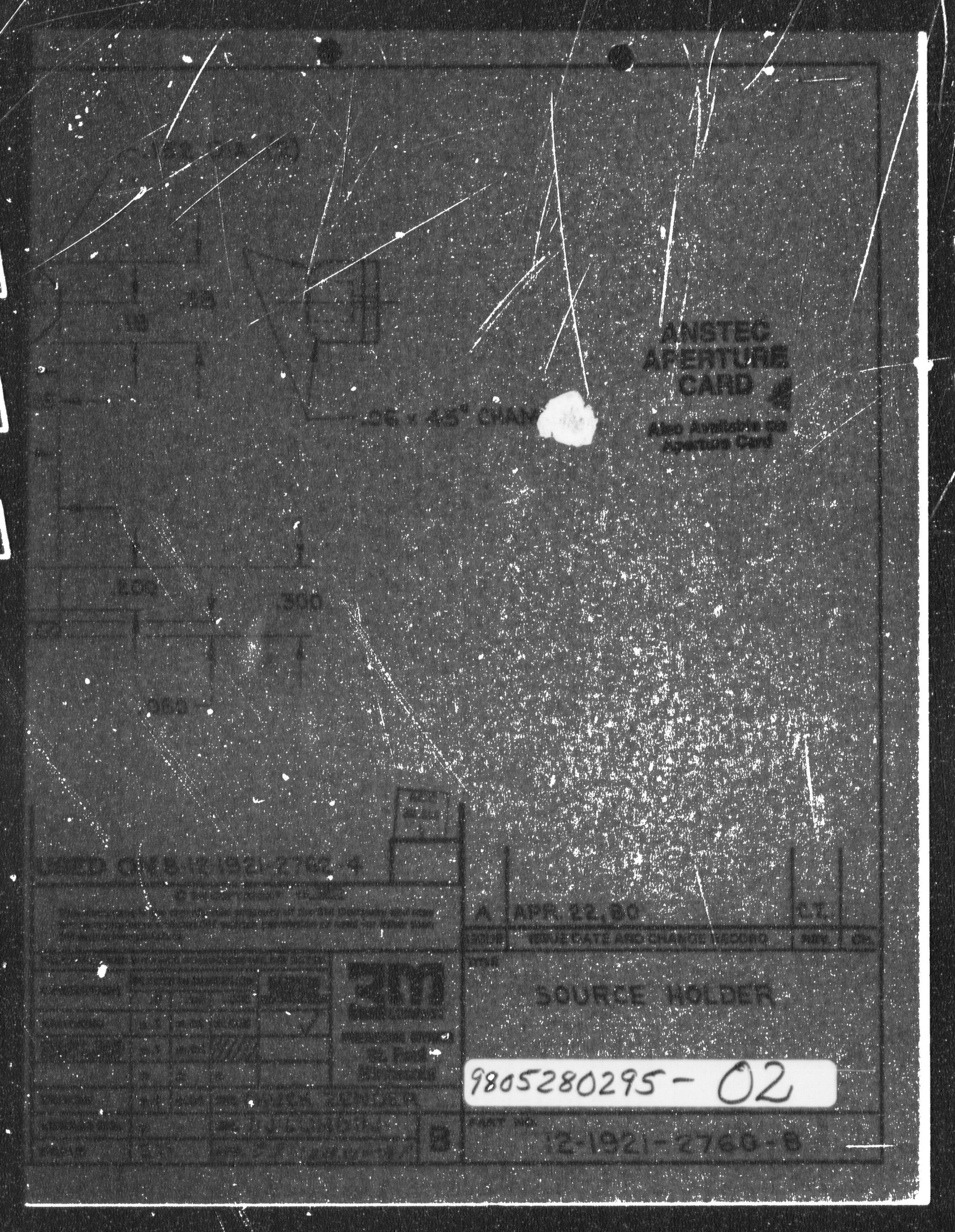


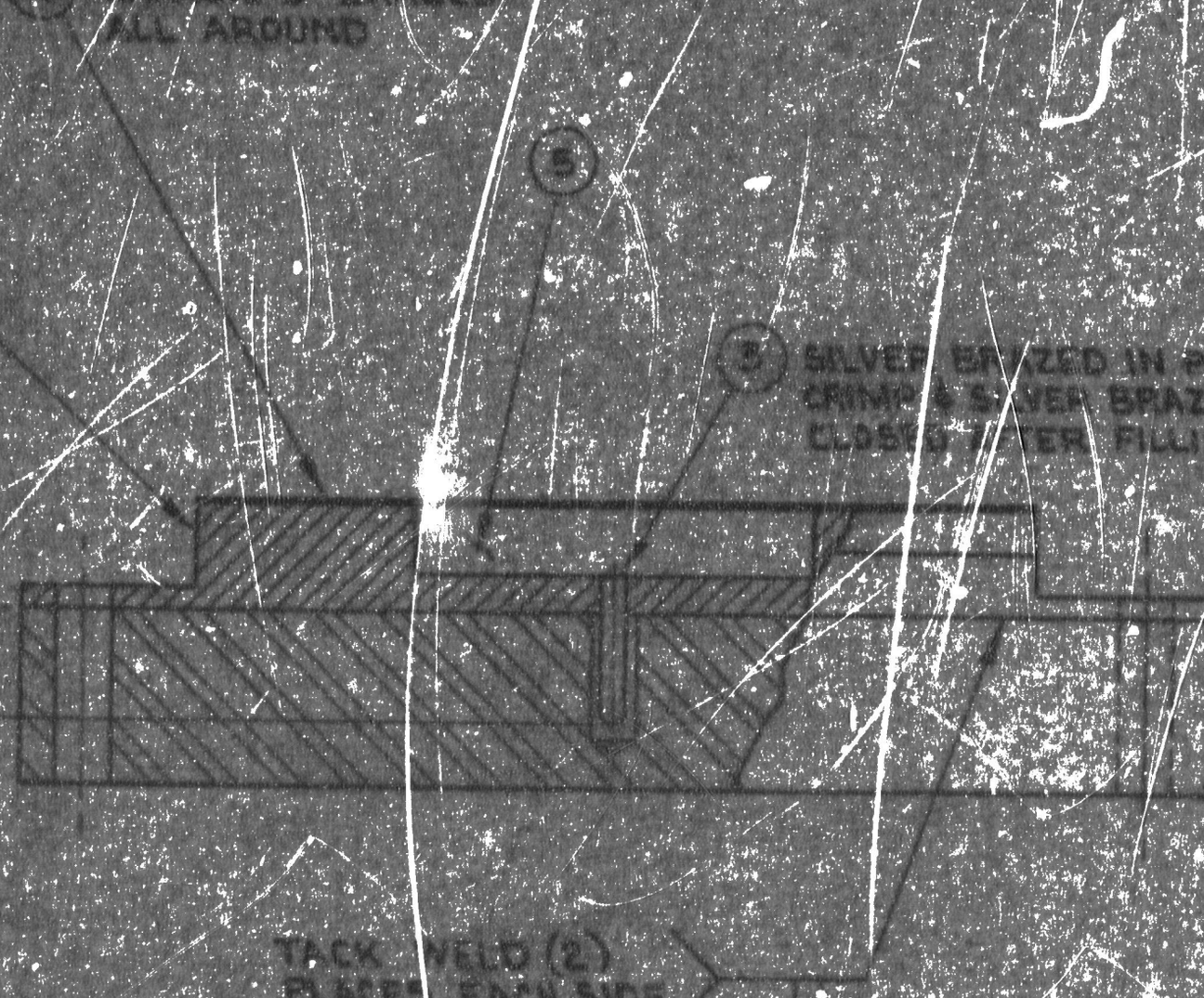
9805280295- 05

USED ON

TOLERANCES EXCEPT AS NOTED	MAXIMUM SURFACE ROUGHNESS EXCEPT AS NOTED 63	SIZE	ISSUE DATE AND CHANGE RECORD	REV.	CH.
MACHINED DIMENSIONS .xx ± .02 .xxx ± .005			1 MAY 15, 1967		
ANGULAR DIM. ±	SCALE 2" = 1"		DIVISION NUCLEAR PRODS PROJ.		
TOLERANCE DIM. UNDER 30° ±	DR. J.D. SWENSON		TITLE KR-85 SOURCE		
30° & OVER ±	CH. J W JOHNSON		3M MODEL No. 3E40		
±	APP. [signature]				
MINNESOTA MINING & MANUFACTURING CO. ST. PAUL, MINNESOTA		B	1921-645		




.06 x 45° CHAM
.200
.300
.360
ANSTEC
APERTURE
CARD
Also Available For
Aperture Card
A
APR. 22,80
C.I.
SOURCE HOLDER
9805280295-02
12-1921-2760-8
B



TACK WELD (2)
PLACES EACH SIDE

ANSI CLASSIFICATION: 3Z23i (N.S.I.C. 1968)

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	B-12-1921-2760-8	SOURCE HOLDER
2	1	B-12-1921-2761-6	BACK-UP PLATE
3	1		1/16" O.D. COPPER TUBE
4	AR		.002 THK. TITANIUM WINDOW
5	AR		KR-85 GAS

2

9805280295- 03

USED ON

ISSUE	ISSUE DATE AND CHANGE RECORD	REV.	CK.
A	APR 22, 80	C.Z.	

TOLERANCE AND SURFACE REQUIREMENTS UNLESS NOTED

DIMENSIONS	PLACES OF DECIMAL .X	.XX	.XXX	MATERIAL SPECIFICATION
MACHINED	±.1	±.01	±.005	✓
SHEET METAL BEND RADII	±.1	±.03		
	±	±	±	
WELDING	±.1	±.05		
ANGULAR DIM.	±			
SCALE	2:1			

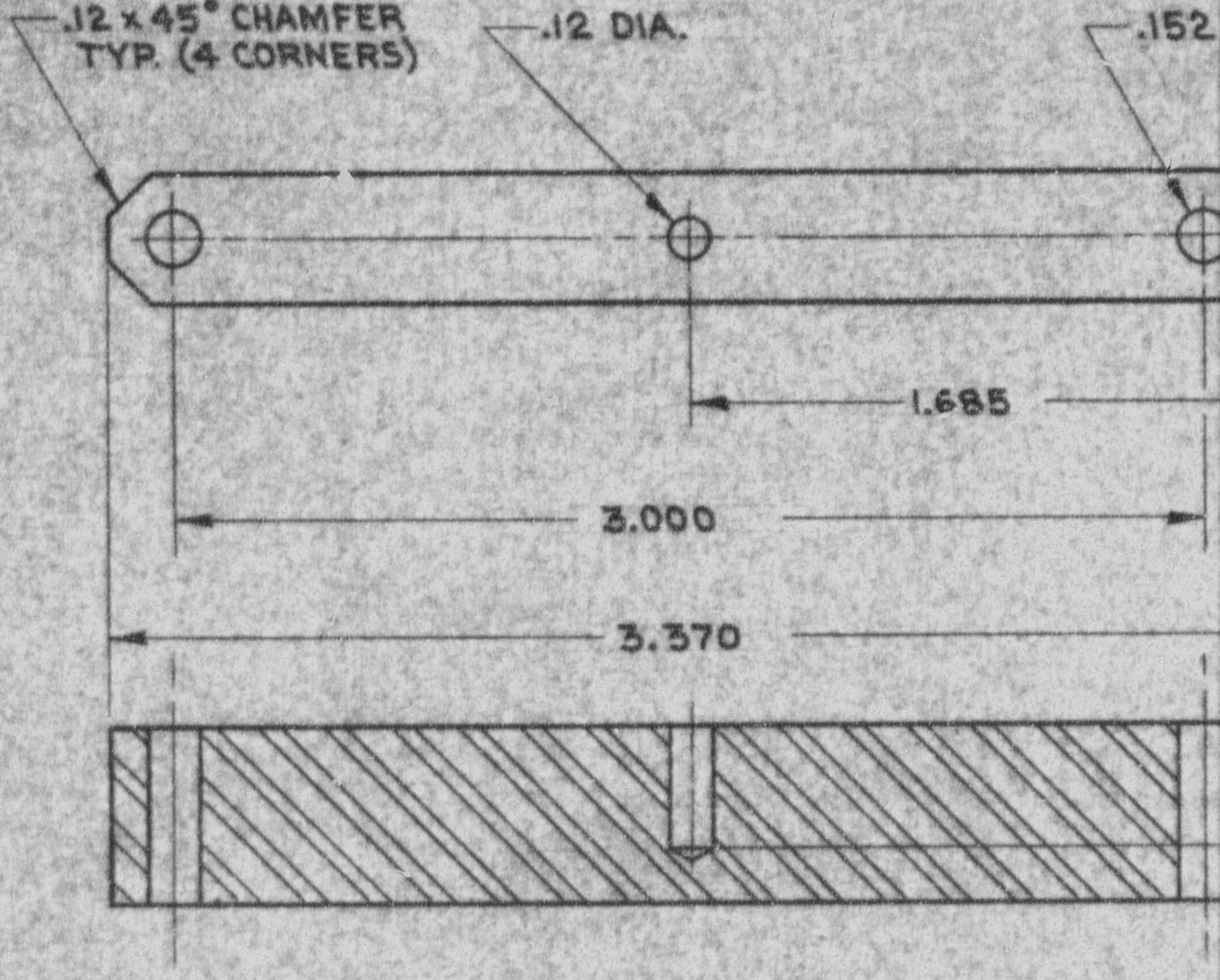
3M COMPANY
Occupational Health Division
St. Paul
Minnesota

DR. CHUCK ZENGER
CK. D.J. LONDIN
APP. E.A. CHARPENTIER

B

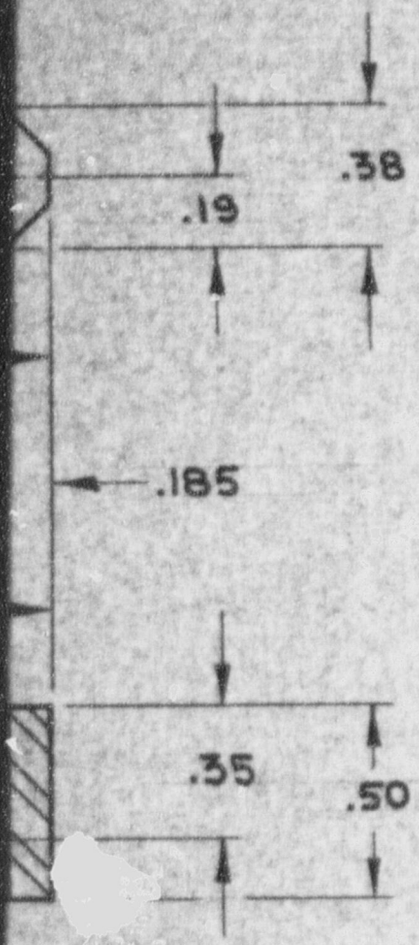
TITLE
ASSEMBLY
SOURCE WITH BACK-UP
PLATE, TITANIUM, 3E40

PART NO.
12-1921-2762-4



MAT'L:
TITANIUM

DIA. (2)



ANSTEC APERTURE CARD

Also Available on Aperture Card

ACC 3M BCS 3

USED ON B-12-1921-2762-4

ISSUE	ISSUE DATE AND CHANGE RECORD	REV.	CH.
A	APR 22,80		C.Z.

TOLERANCE AND SURFACE ROUGHNESS UNLESS NOTED

OPERATION	PLACES IN DECIMAL .0	.00	.000	MAXIMUM SURFACE ROUGHNESS
MACHINING	±.1	±.02	±.005	✓
CUT-OFF (SAW, BURN, SHEAR)	±.1	±.04		
	±	±	±	
WELDING	±.1	±.06		
ANGULAR DIM.	±			
SCALE	2:1			

3M COMPANY
ENGINEERING DIVISION
St. Paul
Minnesota

DR. CHUCK ZENDER
CH. DJ LUNDIN
APP. E R CHARPENTIER

B

TITLE

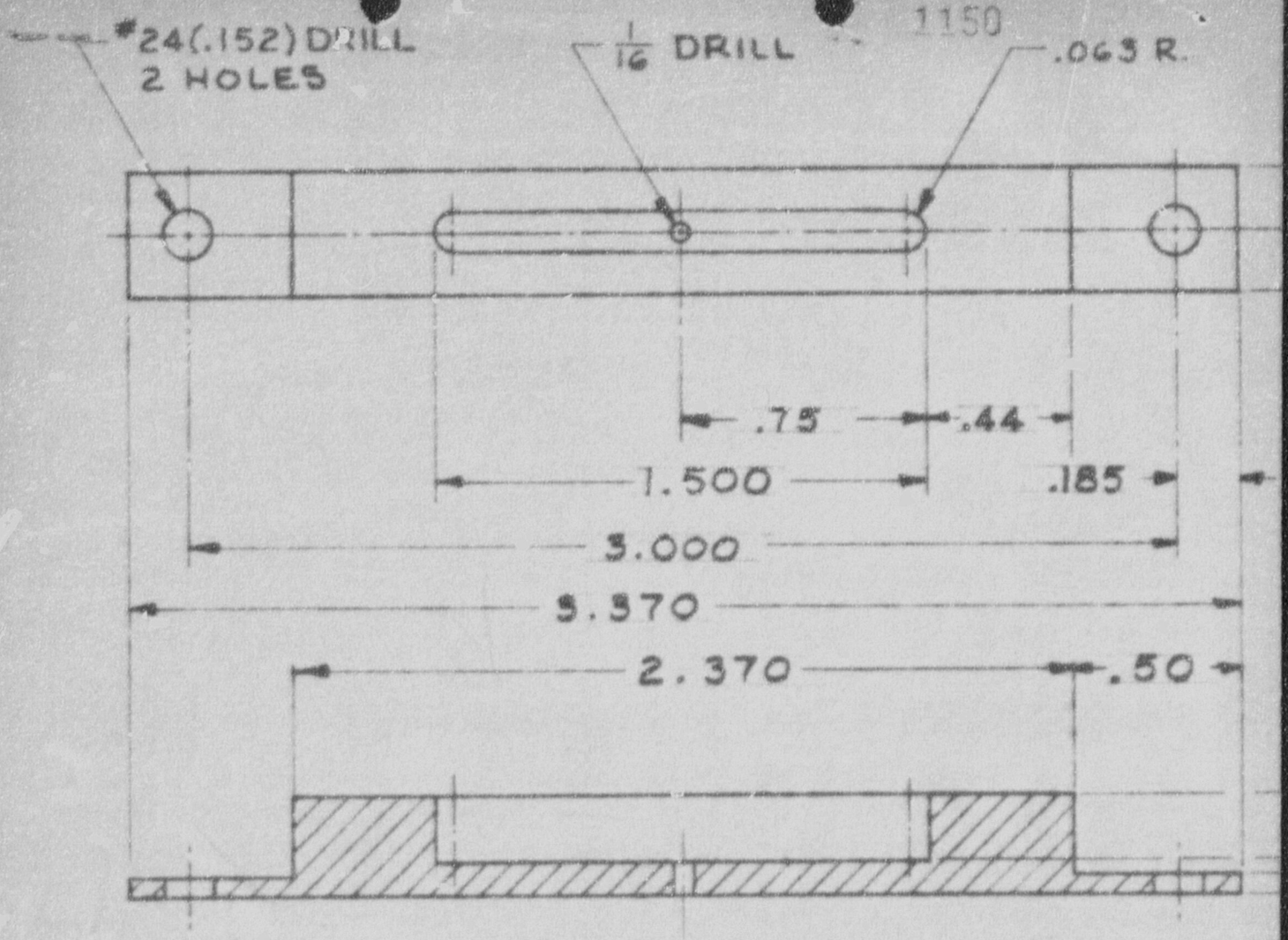
BACK-UP PLATE

9805280295-04

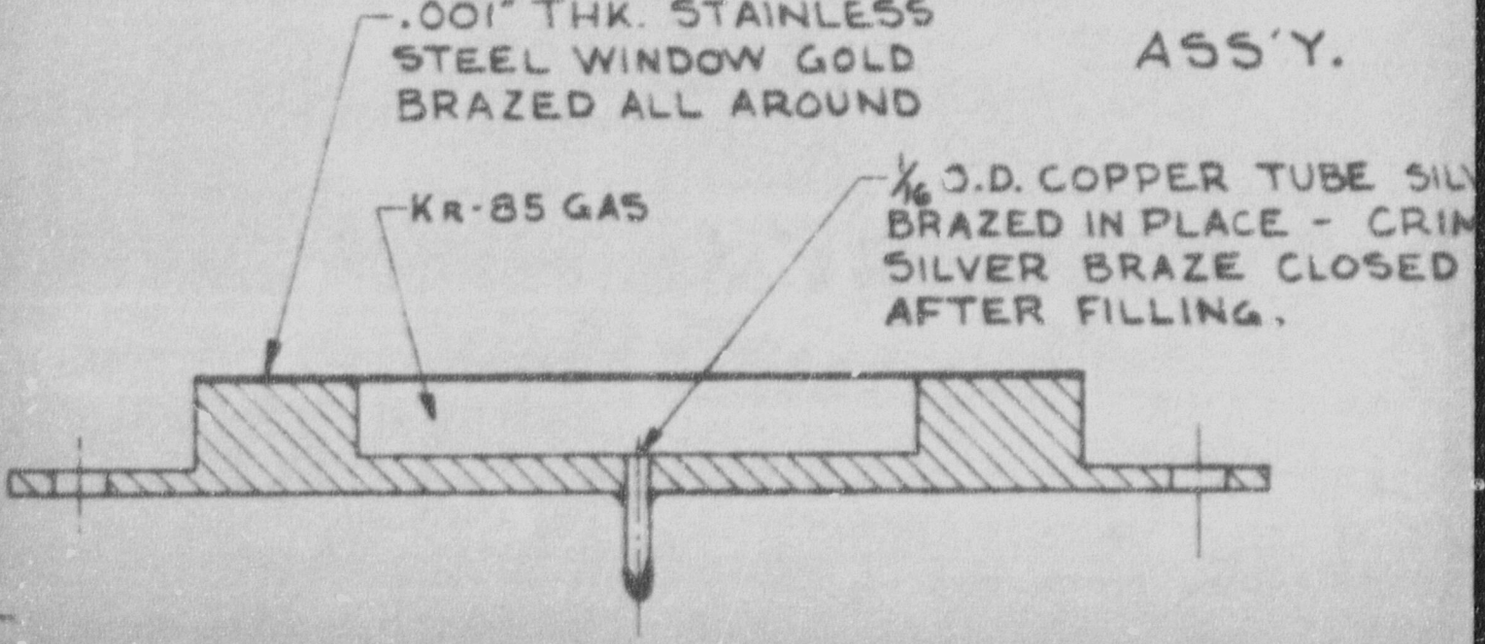
PART NO.

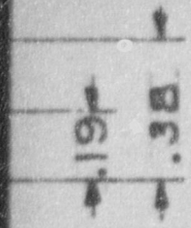
12-1921-2761-6

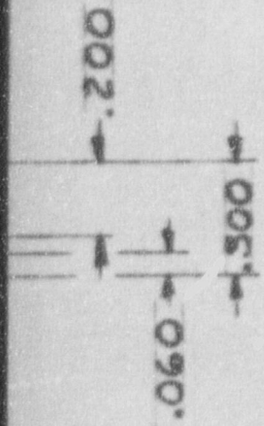
1150

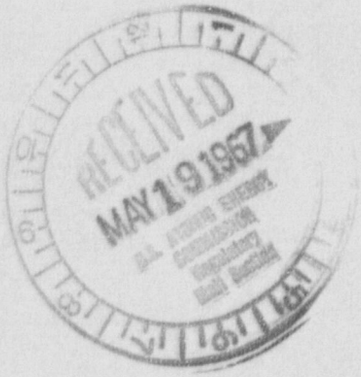


304 STAINLESS STEEL









9805280295- 05

VER
P ¢

USED ON

1	MAY 15, 1967			
REV.	ISSUE DATE AND CHANGE RECORD		REV.	CH.

TOLERANCES EXCEPT AS NOTED	MINIMUM SURFACE ROUGHNESS EXCEPT AS NOTED 63
MACHINED DIMENSIONS .00 ± .02 .000 ± .005	
ANGULAR DIM. ±	SCALE 2" = 1"
WELDMENT DIM. UNDER 30' ±	DR. J.D. SWENSON
WELDMENT DIM. 30' & OVER ±	CH. J W JOHNSON
±	APP. TN Latin

DIVISION NUCLEAR PRODS PROJ.

TITLE

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3M MODEL No. 3E40

MINNESOTA MINING & MANUFACTURING CO.
ST. PAUL, MINNESOTA

B 1921-645