

W. L. D. H.
8/28/91

James Ralbin
8/28/91

①

NOTES: E-46521

8/2/91 - DILL JACOBSON: MISCELL. TRANSFORMED ABOUT A
ONE PIECE BARREL; RECEIVER FIREARM.
ONE PIECE BOLT BODY ASSEMBLY.
LUGS IN REAR

8/3/91 - DEVELOPED BASIC PARAMETERS - RUGLYN SIXTEN
HARDENED WELD LUG IN RECEIVER
60° LUG ROTATION
SINGLE ASSEMBLY PARTS
LUG IN FOR NOT RECEIVER
UNIVERSAL BOLT CUT - LENGTH 29.45.

8/5/91 - REVIEWED MAT'L SELECTION W/ GLEN SIGESMA - (4/40 AND 200)
LUG WELD NO GOOD ON RESULATED MAT'L
COPPER BRASS WAY TO GO
TOP TANG, TO STOP ROTATION
MIRROR IMAGE CAN CUT
MIRROR IMAGE EXISTOR; EXTRACTOR

8/6/91 - MEALON CONFORM TO POINTS REQUIRES 1.44" OF MAT'L D.I.A.
FOR RADIUS WILL RUN POSSIBLE 1.370" D.I.A.
RECEIVE BOLT BODY FOR BOLT HANDLE - FEED .815 D.I.A.
REVIEWED SPEED EXTRACT W/ SIM POMEYANIN (GENERAL)
LUG, MAT'L TO BE 8640 - POSSIBLE TWO LUGS?

8/7/91 - GATHERED TOOLING, FOR RECEIVERS; BOLTS
WAYNE CARLE HAD TROUBLE DRILLING
KIND BURNING. TREMENDOUS RUBBING - COULD
BE DUE TO SIFT MATERIAL?

8/8/91 - CALCULATED POSITION OF END OF BOLT FROM FRONT
TRIGGER ASSY HOLE, (USING STD. M/700 DIMENSIONS)
DIA: .8495"
∴ AT 201 WILL BE $5.600 \times .8495 = 6.4495$ " IN LENGTH
OR 6.450" - LUG

DEVELOPED SPEC SHEETS.

TRIGGER ASSY HOLE LOCATION ON ASSY WILL HAVE TO CHANGE.

*Walt P. [unclear]
8/28/91*

*James Rabbia
8/28/91*

②

Notes: E-40321

8/8/91 CONT'D.

BOLT R.A., O.D. TO CHANGE TO .810 - MATCH BOLT U.D.
F.P. HEAD DIST - 6 TO ENGAGEMENT SURFACE INCREASE
TO ACCOMMODATE .810 BOLT DIAMETER

8/9/91 - WROTE NEW SPEC FOR LUG / BARREL / BOLT
SET UP MANDREL - LUNDGREN & REAM
RESERVED CUSTOM CHAMBERING, OPSE.
WAYNE WITH RUN CHAMBER AND .660" DIA
COUNTERBORE.

8/10/91 - RAN BARREL/RECEIVER PROGRAM ON MANDREL LATHE
W/ HELP OF J. RABBA. PROGRAM IS OOB/D. (KEVIN)
CUT RECEIVER TO 1.250 DIA. DID NOT GOVERN
STEP.
PROCESSED WITH MANDREL - CUT BOLT HOLE & REAM
AT 200 RPM F=.020 ZPK TO A DEPTH OF
.850 FROM REAR FACE OF RECEIVER.
SET MANDREL TRAVEL TO 47" - USE 322 CENTER.

8/11/91 - PROCESSED RECEIVER ON FACE W/ INDEXING UNIT.
PORTS AT 20° ABOVE HORIZONTAL
90° LUG ROTATION (TWOHALL DUTY)
TOP TANG
LUG IS WIDE (WITH 5/16" RND IN ALL CORNERS) BY 1.0" - .315"
STD. TARE DRILL SLEW POSITION.

8/12/91 - C'BORE DIA" FOR BVS IS .650" DIA.
BOLT CAL - 6.450 - DRILL SHOULDER AT 5.260" FROM REAR
STEP O.D. AT .325" FROM END - FROM .646" DIA TO .812" DIA.

8/13/91 - RAN LUG CONTROL ON MANDREL - PROGRAM 8/10
TURNED BOLTS ON DRUM - 325 AT .648 DIA.
TANG CUT AT .690"
WAYNE DRILLED SLOPE HOLES - FRONT AND REAR THE SAME DIST.
.650" C'BORE & .150 DEEP.

W. L. D. J.
8/1/91

James R. Rabin
8/28/91

(3)

NOTES: E-46321

8/14/91

- HAND FILED EXTRUDER - 20° ROTATION W/ 180° SEP. FOR EXTRUDER
- BOLT PLUGS MINGED
- BOLT HEAD HOLE LOCATION: STARTER

8/16/91

8/16/91 - RESULTS OF PRESENTATION:

WELL RECEIVED FOR CONCEPT

CAMERONS: REPAIR LOCK-UP - REPAIR STRETCH

BEARING, DIA. OF BOLT - POSS. 700 BOLT SHAFT

SOLUTIONS: DOUBLE LOCK-UP IN FALLOUT

90° LOCK ROTATION

WILL TEST W/O BOLT SHAFT - IF LUGS,

WITH STAND LOAD (250,000 PSI) BOLT

SHAFT SHOULD NOT BE REQUIRED.

CAM CUT, THREADS & BOLT HANDLE ONE

UNIT PRESSED INTO REAR OF BOLT BODY.

8/19/91 - GREEN: PAPA REVIEWING HEAT TREATMENT.

8/21/91 - FOR TWIN LOCKING, LUGS. POSITION 20° BELOW HORIZONTAL

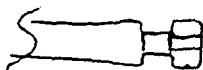
PORTS 30° ABOVE HORIZ.

RING BOLT .5" x 360°

LUG WIDTH .5" ?

90° LOCK ROTATION WILL BE POSSIBLE

W/ 20° POSITION



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NOTES: E-46321

8/28/91 - DEVELOPED TWO SKETCHES:

(1) RECEIVER w/ FRONT LUG UP

TWO LUGS AT 20° BELOW HORIZ.

OAL = 8.0"

LUG RADIUS 3" (3/16" DIA CUTTER)

SEAL TREATERS RUN SINGLE BARREL SAMPLE IN

VACUA FURNACE - HORONESS RELATED AT

R. 20. NOT HIGH ENOUGH.

WILL RUN IN CONTROLLED FURNACE - RESULTS MAY

SHOW WARPAGE AND SCALE.

RUN 7 BARRELS THROUGH STHAKO - READY FOR

TEST CUTS.

W. D. L. 8/28/91

James R. 8/28/91

9/4/91 - REVIEWED THIN LUG, IN FRONT w/ DILL JENSEN,

DILL PREFERRED 60° LUG ROTATION OVER 90°.

UPON REVIEWING, 20° LUG ORIENTATION,

70° LUG ROTATION WOULD BE ~~THE~~ ULTIMATE

SUPPORT LUG ROTATION, SO THAT C₂ OF LUG,

IN RECEIVER MATCHES C₂ OF LUG ON

BOLT - PRODUCING FULL SUPPORT OF LUG

SURFACES.

⑤

9/5/91

NOTES: E-46321

LOCATION OF TRIGGER ASSY HOLE:

CURRENT TOO LOW. IS .580 BELOW C_1 .
 DUE INCREASED BOLT DIA. HOLE C_2 LOCATION
 WILL REQUIRE LOWERING OF ~~.0015~~ .05825"
 $\therefore C_2$ OF T. A. HOLES WILL BE ~~.5785~~ .5783"
 C_2 OF NEW RECEIVER.

9/11/91 FOR EXAMINATION: RUN C'BORE AT ANGLE TO
 FULL EXTRACTOR OVER RIM OF SHELL:



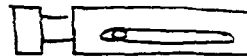
RUN PRIMARY W/ SUPPLEMENTAL ON OPPOSITE
 SIDS USING SPRING LOADED BUSHING AS
 PRIMARY SENSOR AT 120° FIELD EXTRACTOR.



FUR PROCESSING, SQUARE LUGS AFTER RPADE WITH
 I.D. GROOVING TOOL.

James P. Rabie
 9/11/91
noted
 9/11/91

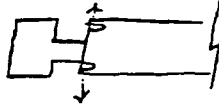
FUR BOLT STOP/GUIDE - PUNGER FROM 6.756
 INTO SLIT IN BOLT (BEHIND RECESS) ANGLE



PUNGER TO HIT IN BOLT INSERTIBLE / ALIGNMENT.

6

9/13/91 - IN THE CASE OF HEAD FAILURE, TO INSURE THE SEAL OF GAS FROM OPERATOR, A RECESS IN SECONDARY BOLT FACE WILL SEAL RADIALY AGAINST RECEIVER.



McL Dk
9/13/91

9/19/91 - DISCUSSION ABOUT LUG ATTACHMENT, WILL TEST HIGH TEMP. SILVER SOLDER. LUGS HAS BEEN COMPLETED, REQUIRES H.T. & TESTING.

9/23/91 - RESULTS OF MEETING W/ FRED SHAW & DICK JARLSON, LOOKING LUGS WILL NOT SHOULD NOT REQUIRE COPPER BRASS. SUGGESTED LOCALIZED INDUCTION DRIFTING. FRED WILL REVIEW LUGS DESIGN AND ADVISE.

PREPARING BARREL FOR TESTING. STRESS RELIEVE AND THEN H.T. BY STEEL TREATERS. LUGS WILL BE SILVER SOLDERED IN PLACE AFTER H.T.

McL Dk
9/27/91

TEST TO BE PROGRESSIVE: TEST LOAD, PROOF, EXTREME HIGH PRESSURE, PLUGGED BORE.

* EXPECTED MODES OF FAILURE: HIGH PRESS. LOAD WILL SWELL/FRATURE CASE HEAD, ALLOWING PRESSURE INTO RECEIVER. BRASS WILL GO IN INTO LEADING RECESS IN BOLT. GAS SHOULD OBTURATE SECONDARY BOLT FACE AND SEAL GASSES FROM SHOOTER. SEE ABOVE SKETCH
9/13/91

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NOTES: D-46321

9/23/41 GWT'D -

RECEIVER : BARRON SHOULD SHOW NO SIGNS
OF FAILURE. GUN WILL BECOME INOPERABLE,
BUT SHOULD NOT CAUSE DAMAGE TO SHOOTER.

TEST TO VERIFY WHETHER SILVER SOLDER WILL HOLD
UNDER CASE HEAD FAILURE STRESSES.

TO REDUCE DAMAGE DUE TO GAS PRESSURE,
A RELIEF VALVE IS UNDER CONSIDERATION TO
FUNNEL GAS OUT OF THE BOTTOM OF THE
RECEIVER.

RAISED LUG DESIGN W/ INTERNAL BARRER REARCT,
PRESS FIT : BARRER INTO RECEIVER.



Michael D. L. H.
9/23/41

(3)

NOTEBOOK: E-46321

10/3/91 RESULTS OF INITIAL TEST ON (6MM CALIBER) 9/27/91

CONDITIONS:- BARREL/REC R 43

- NO BOLT SHROUD/ART FANG - TWIN LUGS R 43
- .650" DIA C-BORE IN REC - MIL. WELDED W/ RECEIVER JUNT
- .810" DIA BOLT - NO LUGS RELIEF HOLES
- 1.25" DIA RECEIVER - OPEN BORE

1ST ROUND - STANDARD PRODUCTION ROUND

NOTE: RESULTS AS EXPECTED,

NO VISUAL FAILURE

2ND ROUND - STANDARD PAPER LOAD

NOTE: RESULTS AS EXPECTED

NO VISUAL FAILURE

3RD ROUND - HIGH PRESSURE - EST. 140,000 PSI

RESULTS: MECHANICAL FAILURE OF
RECEIVER.

(1) BOTH W/CS SEPARATED FROM RECEIVER

(2) BOLT REMAINED IN RECEIVER BUT

FORWARD APPROX. 1 1/2"

(3) REC SPLIT INTO MAJ. OPENING, THROUGH

(LEFT PORT) WELDED INTERSECT

NOTE: TEST GUN WAS ETCHED WITH #923 ON
TOP RAIL OF RECEIVER

W/Label D
90/3/91

(9)

E-46321

10/12/41 - REF. NOTES DATED 9/23/41: SINGLE PIECE CUL DESIGN

- FURTHER DEVELOPED CUL DESIGN, BEGAN

FIRST PROTOTYPE

- CONSIDERING THIN GAS RELIEF HOLE DESIGN

- DEVELOPED POSSIBLE SHROUDED BOLT/CLAW

EXTRACTOR DESIGN.

TEETH OF EXTRACTOR WILL FIT INSIDE BOLT

SHROUD WITH EXTRACTOR PROTRUDING THROUGH

TEETH IN SHROUD UPON CASE HEAD FAILURE,

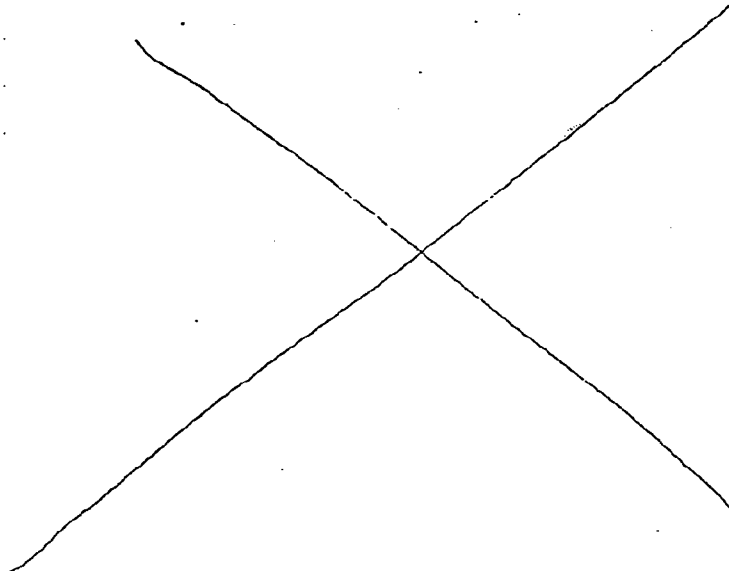
EXTRACTOR WOULD ACT AS CONTINUATION OF

BOLT SHROUD SEALING, RUPTURE OF CASE HEAD.

W. L. Stewart
10/13/41



EXTRACTOR PLACEMENT



(12)

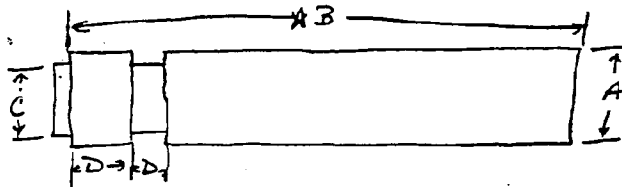
E-46321

10/6/91. DEVELOPED BOLT CONTOUR W/ SHROUD.

RAN (FORMED) 6 BOLTS TO FOLLOWING DIM.

A. BOLT O.D. - $.900 \pm .0015$

B. BOLT LENGTH - 6.120 BOLT FACE TO END - (W/O SHROUD)

C. SHROUD D.I.A / LENGTH, SURFACE - $.645 \pm .0015$ D. LUG WIDTH - $.500 \pm .0015$ 

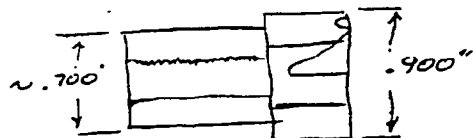
TO ENSURE GAS SEAL UPON CASE HEAD FAILURE, A REVISED 7700 SHROUD DESIGN IS DESIRED. TO ACHIEVE SUCH A SHROUD DESIGN, BOLT LOCKING, SURFACE AND MAXIMUM CAPABILITY, THE BOLT O.D. HAS TO BE $.900$ " WHICH WILL ALLOW FOR $.125$ " LUG WIDTH (HEIGHT OR CONTACT SURFACE) AND A SHROUD THICKNESS OF $.050 \pm .002$. AS STATED PREVIOUSLY, THE EXTRACTOR WILL BE OF THE CLAW (RAVIER) TYPE, WHICH WILL INTERFERE THE SHROUD BUT UPON CASE HEAD FAILURE WILL ACT AS A UNIFORM MEMBER OF THE SHROUD, TO CONTAIN THE PRESSURE, PREVENTING MECHANICAL FAILURE OF LOCKING MECHANISM AS WELL AS RECEIVER WAWS. THE O.D. OF THE RECEIVER WILL BECOME 1.300 ALLOWING $.200$ " WALL THICKNESS AROUND THE BOLT.

Handwritten signature
10/6/91

10/6/91 CONT'D. BOLT CONFIGURATION

TO IMPROVE WEIGHT DISTRIBUTION AS WELL AS OVERALL WEIGHT, THE ~~2ND~~ FIRING P.N. CLEARANCE HOLE WILL BE BORED OUT, AS A WEIGHT REDUCTION PROCESS, TO ALLOW BOLT BODY WALL THICKNESSES TO BE IN THE RANGE OF .100". TO ADD USE THE A/700 FIRING PIN ASSY, A BUSHING, WILL BE PRESSED INTO THE REAR OF THE BOLT. THE BUSHING WILL CONTAIN THE CORE THREDS FOR THE BOLT PULL, CAM CUT AND COCKING NOTCH, AND THE ASSEMBLY CUT FOR THE BOLT HANDLE, AS IN DRAWING SKETCH BELOW.

Wick D
10/6/91



10/11/91 - ALTERED MURBLE DIAMETER FROM ORIGINAL 700 BASED LENGTH - NEW .600" MURBLE DIA. SPREAD BACK TO .700 THEN TO .547 OF STD 700 AMMUNITION BARREL.

DISCUSSED MURBLE FEEDING - ROTARY OR STACED WILL REQUIRE CLEARANCE IN THE BOLT. WILL INVESTIGATE NEW SULPHURED MATERIAL TO ALLOW FOR EASIER WEARING.

12

E-46321

10/14/91 - SENT 12 BLS. TO CATION FOR ZIRLING.
BARRELS WERE DRILLED, REAMED AND SIZED
FOR .30 CAL. AFTER A.T. TO OUR CURRENT
BARREL SPEC. THE BARRELS WILL BE BUILT
INTO 402 2 ACTIONS AND TESTED FOR RELIABILITY.

10/22/91 - ON 10/21/91 FIRED 4 TEST ROUNDS THROUGH A
NBAR WITH FOLLOWING SPEC: BOLT SHROUD I.D. AT .582"
BOLT SHROUD O.D. AT .645
BOLT SHROUD DEPTH AT .120"
TEST ROUNDS FIRED AT NORMAL RELOADINGS, BUT
SHOWED POSSIBLE HEADSPACE PROBLEMS. AFTER
INSPECTION, WAS FOUND TO BE .809" DEEP.
BOLT WAS ALTERED WITH A .005" SHIM INSERTED IN
BOLT FACE. ON 10/22/91 - 4 FIRING, PIN INDENTS TAKEN,
RESULTS - .019, .017, .020, .014. IN AGREED TO
FIRE H.I.H. PRESSURE .30:06 LOADS. LOAD: 50 GRAINS
OF 4198, 220 GRAIN BULLET. ESTIMATED PRESSURE
AT 140,000 PSI.
RESULTS: NO VISUAL METAL FAILURE, LOW TEMP
BRAZE JOINT SPLIT BUT LVG, DID NOT EXIT
RECEIVER.

TITLE _____

(13)

E-46321

11/5/91- RAN ONE BARREL/RECEIVER WITH:

RECEIVER D.A. - 1.300

RECEIVER I. D.A. - .906

DOUBLE PORTS

RIGHT HAND BOLT HANDLE CUT ONLY

WILL USE THIS ASST, FOR STOCK CONSTRUCTION. (FOR SAMPLE USE ONLY, PART WILL NOT BE H.T.D.)

RECEIVED FROM BARRELS ON 11/17/91, HAD BARREL

SECTIONED FOR VISUAL INSP. OF SURFACE.

SURFACE FINISH APPEARS TO BE AS REQUIRED, NO

VISUAL DISCREPANCIES. WILL BUILD 10 BARRELS

WITH: .308 CALIBER

1/2 TWIST

BORE D.A. DRILLED, REAMER ? SIZED

LYROOVE D.A. ECM'D

WALSH P. 11/17/91

IF LASER WELDING, OR ELECTRON BEAM WELDING, IS APPLICABLE; NOT CHANGE WELD POSITION TO 180° AND 190° AS IS CURRENTLY. MAY ALSO WIDEN WELDS TO INCREASE BEARING SURFACE AREA.

(14) E-46321

8/21/91

700 3 BODY - 5.3175

3120 REAR OF BODY TO END BODY

5.6695

3RD FEEL 3RD DEPTH - 1.150

TO LENGTH 5.920

4.82 DIST BETWEEN LOCK SURFACE
TO FIRST FEEL HOLE

DIST FROM FIRST FEEL HOLE TO END OF BODY

5.6695 - 4.82 = .8495

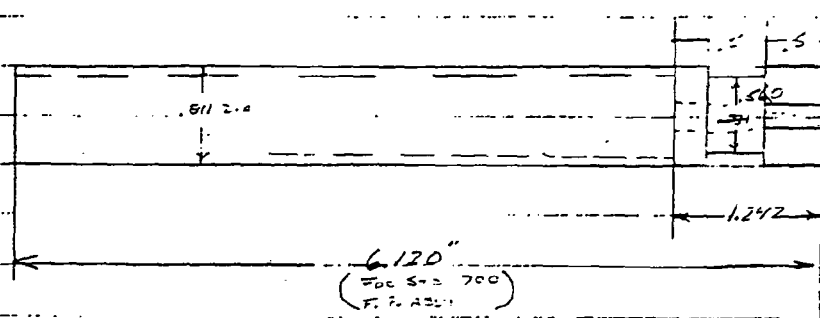
→ FROM 1.150
1.8495

TO PRODUCE A LONG ACTION FEEL THAT WITH

FUNCTION WITH A SEPARATE FEEL ASSEY THE FEELING

WILL BE 5.6695" LONG FROM 1.150

BACK W/ OAL = TO 6.120"



Weld D
James Ralston
8/22/91

TITLE _____

DATE 12/14/91

Page No. _____

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PURPOSE EXPLANATION OF FOLLOWING VOID PAGESBook No. E 46321

PAGES NUMBERED 1-20 INCLUDING WERE SAVED FOR

ORIGINAL DEVELOPMENTAL CASE WORK NOTE BOOK PAGES.

THAT HAVE BEEN INSERTED ON PAGES 1-14 INCLUDING,

ON 12/14/91

THEREFORE, PAGES 14-20 WILL NOT BE USED AND

MARKED ACCORDINGLY.

EXPERIMENTER John D. LongDATE 12/14/91

WITNESSED BY _____

DATE _____

16

Page No. TITLE

DATE

E 46321

Book No. PURPOSE

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EXPERIMENTER

DATE

TITLE _____ DATE _____ Page No. **17**

PURPOSE _____ Book No. **E 46321**

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Page No.

TITLE

DATE _____

E 46321

Book No.

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DATE _____

TITLE _____ DATE _____ Page No. 19

PURPOSE _____ Book No. E 46321

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TITLE

DATE _____

E 46321

Book No.

PURPOSE

DATE _____

DATE _____

TITLE NBAR - PROCESS DEVELOPMENT DATE 12/16/91 Page No. 21PURPOSE REVIEW OF PROGRESS FOR WEEK OF 12/4/91 TO 12/14/91 Book No. E 46321

PROPOSED A TEST SPECIMEN TO DETERMINE THE ULTIMATE
STRENGTH OF THE LOCKING MECHANISM, WITH THE FOLLOWING
SPECIFICATIONS: TEST SPECIMEN # XC-0731

BARREL/RECEIVER: .700 MAGNUM BARREL CONTAINING
CHAMBERED FOR .30.06 CALIBER
RECEIVER O.D. = 1.300"
RECEIVER I.D. = .9065"
HARDNESS Rc 22 (MAT'L 4137R)
TWIN EJECTION PORTS .425" WIDE

BARREL BRACKET/LUGS: MAT'L 4140
HARDNESS Rc 35
WIDTH .5"
LUG SURFACE WIDTH .375"
170° SEPARATION OF LUGS
SINGLE PIECE/YOKE DESIGN
BARREL BRACKET WAS LOW TEMP. SILVER SOLDERED
INTO RECEIVER.

BOLT: MAT'L 8640
HARDNESS Rc 43
BOLT O.D. .900"
BOLT SHROUD O.D. .645"
BOLT SHROUD I.D. .575"

TEST CONDITIONS: OBSTRUCTED BORE - 4 RUGGERS SEATED AHEAD
OF CHAMBER
30.06 LOADED WITH 55 GRAINS OF 4195 POWDER
CONTAINED IN IRON CHAMBER.

RESULTS: BARREL LUGS ROTATED REARWARD AND KEPT BOTTOM
OF RECEIVER.

BOLT WAS FOUND AT REAR OF IRON CHAMBER.
BOLT LUGS SHEARED AT APPROX. 45 DEGREES
BOLT SHROUD SEPARATED FROM BOLT.
SHROUD

EXPERIMENTER W. D. L. NO VISIBLE FRACTURE OF BARREL OR RECEIVER.

DATE 12/16/91WITNESSED BY W. M. M.DATE 12/17/91

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Page No. TITLE NDP - PROCESS DEVELOPMENT DATE 12/14/91

E46321

Book No. PURPOSE INVESTIGATION OF ELECTRON BEAM WELDINGCOMPILED FOR SGO. AT FERRANTI - SUPPLY TO DISCUSPOSSIBILITY OF ELECTRON WELDING, BARREL BRACKET/LUM. INTRRECEIVER. AFTER SHOOTING, PRINTS AND SECTIONED. RECEIVEDFOR HIS REVIEW, HIS SUGGESTIONS ARE AS FOLLOWS:- AFTER AS WOULD BE NECESSARY TO ELIMINATE
RESULPHURIZATION.- THIS WORK WOULD REQUIRE PRE HEATING AS WHEN
AT POST HEAT TREAT TO REDUCE INTERNAL HEAT
LEAK PROBABILITIES.- CURRENT WELD DESIGN SHOULD NOT PERMIT. POWER
WELD, FILER WOULD NOT BE USED, THEREFORE
"KEY HOLE" EFFECT WOULD BE PROVIDED AT
INITIATION OF WELD. "KEY HOLE" EFFECT WOULD
INCREASED LIKELY HOOD OF FILLER AT
THAT REGION.- DUE TO VARIOUS REQUIREMENTS, LARGE BATCH PROCESSING
WOULD BE BENEFICIAL, BUT WOULD BE DILUING EFFECT
ON PRE HEATING, NON UNIFORM TEMPERATURES FROM
FIRST TO LAST WORK PIECE.- MACHINE/FILTER COST APPROX. \$600,000- SUGGESTED INVESTIGATING A WELDING PROCESS THAT
UTILIZES FILLER MATERIAL (E.G. ARGON WELDING).

EXPERIMENTER

WILL D LDATE 12/16/91

WITNESSED BY

J. H. P. WilsonDATE 12/17/91

TITLE NBAR - PROCESS DEVELOPMENT DATE 12/16/91 Page No. 23
PURPOSE INVESTIGATION OF EDM PROBLEMS FOR ^{INTERNAL} LUGS Book No. E 46321

CONTACTED DON. KOV. OF INGRESSOL LMBH TO DISCUSS

PRODUCTION REPRESENTING OF INTEGRAL LUGS UTILIZING

AN EDM PROBE PROCESS. SENT A COPY OF FILE

EDM REC (AUTOLOG BY M. KEENEY) WHICH INDICATES

THE USE OF A EDM PROBE THAT WILL NOT DAMAGE

A SERIES OF THREE LUGGING LUGS 7.5" FROM REAR

OF RECEIVER.

IS CURRENTLY WAITING FOR HIS REVIEW.

EXPERIMENTER Nicholas D. Long

DATE 12/16/91

WITNESSED BY J. H. Johnson

DATE 12/17/91

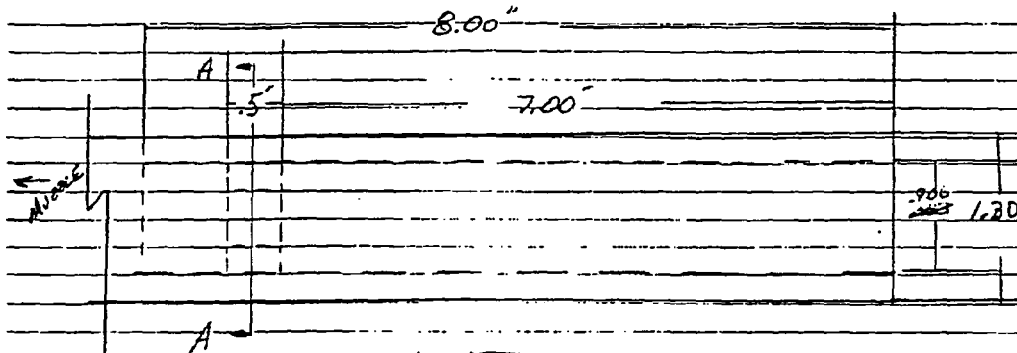
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Page No.

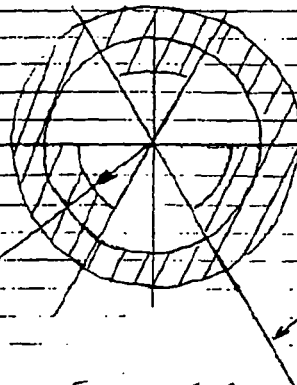
TITLE NRAP - PROCESS DEVELOPMENTDATE 12/19/91

E 46321

Book No.

PURPOSE PROPOSED EDM'S LOOKING LUG CONSIDERATION

.3325 R



SECTION A-A

EPH1 PACE WOULD BE CONSTRUCTED WITH THREE

LOOKING LUGS, TRANVERSED AXIALLY TO A DEPTH OF

8.0", THEN ROTATED 300°, PRODUCING THE .5"

WIDTH LOOKING SURFACE AND THREE MACH PROJECTIONS

FROM E. D. OF RECEIVER.

EXPERIMENTER

W. H. D. H. H.DATE 12/19/91

WITNESSED BY

J. H. H. H.DATE 12/23/91

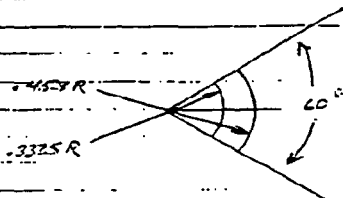
TITLE NEAC- PROCESS DEVELOPMENTDATE 12/19/91

Page No.

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PURPOSE DETERMINING BEARING SURFACE OF LULINING MECHANISMBook No. E 46321

SKETCH OF SINGLE LULINING LULIN:



$$A = \frac{60^\circ (\pi)}{360^\circ} (R^2 - r^2) \leftarrow \text{REF:}$$

MACAHER'S HANDBOOK

22ND EDITIONPAGE 44 - SURFACE AREA
OF A CIRCULAR RING SECTOR

$$= \frac{60^\circ (\pi)}{360^\circ} ((.455)^2 - (.3325)^2)$$

$$A = .0496 \text{ in}^2$$

FOR TOTAL LULINING MECHANISM:

$$A_{TOT} = 3(A_{LULIN})$$

$$= 3(.0496 \text{ in}^2)$$

$$A_{TOT} = .1487 \text{ in}^2$$

TOTAL BEARING SURFACE FOR
3 LULIN EDM SYSTEM

EXPERIMENTER

*Mike D. [Signature]*DATE 12/19/91

WITNESSED BY

*[Signature]*DATE 12/25/91

26

Page No.

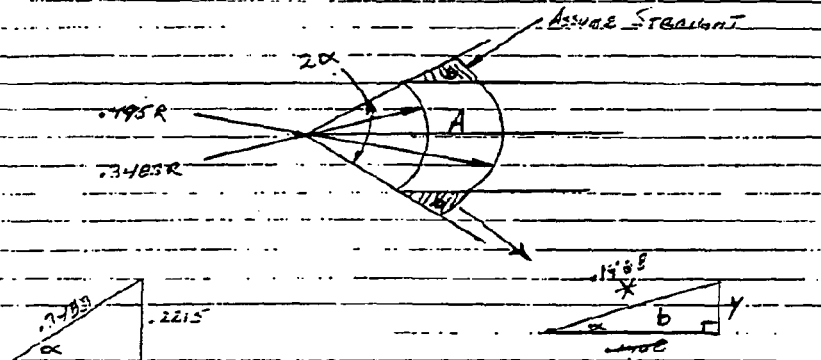
TITLE NBAR - PROCESS DEVELOPMENT

DATE 12/15/91

E 46321

Book No. _____

PURPOSE DETERMINE BEARING SURFACE OF SUBBIT A/700



211 8 = 225
 .3423

$$\sin 34.5^\circ = \frac{y}{1.469} \quad \cos 34.5^\circ = \frac{x}{1.469}$$

$$y = 0.9924 \quad x = 1.133$$

$$\alpha = 39.5^\circ$$

$$b = \frac{1}{2} \bar{x} \bar{y}$$

$$= (0.5X, 0.734X, 1.173)$$

$$A = A \cdot 2b = \frac{2\alpha(\pi)}{360} \cdot (2^2 - 1^2) \quad b = 0.003 \text{ m}$$

$$A_{\text{cm}} = \frac{2\alpha(r)}{3\pi} (R^2 - r^2) - 2b$$

$$= \frac{2(39.5)(17)}{360} \left((1.45)^2 - (.3783)^2 \right) = 2(1.6653)$$

$$A = .0747 \text{ in}^2$$

$$A_{TOT} = Z(A)$$

$$A_{TOT} = .1294 \text{ in}^2$$

EXPERIMENTER *GLD L.*

DATE 12/18/61

WITNESSED BY *J. H. Johnson*

DATE 12/23/91

TITLE NR-12 - Process Development DATE 1/3/92 Page No. 27PURPOSE Revised of standard feeding Book No. E 46321

The standard cylindrical press geometry with press

opening width of .625" the maximum value is .61"

in line style with a capacity of three times, also

or four per hour (1200/hrs.)

The press shall be rotated 60° from the station

on page 24. The press shall be rotated 75° to be

read easily with the hole shown with the

rotated geometry the changing will not be

on the first loading only, but will pass between

the two loading levels, depending on the selected

parameter. This will also make the bottom level

in the receiver to give a standard train, improving

the feeding action of the equipment.

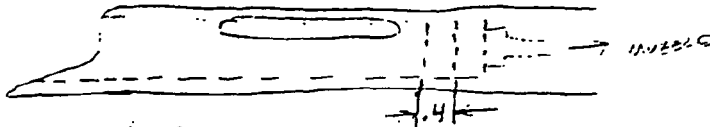
To further reduce the amount of the receiver,

the loading level with parameter with the selected

of the receiver) may change from .6" to .4". This

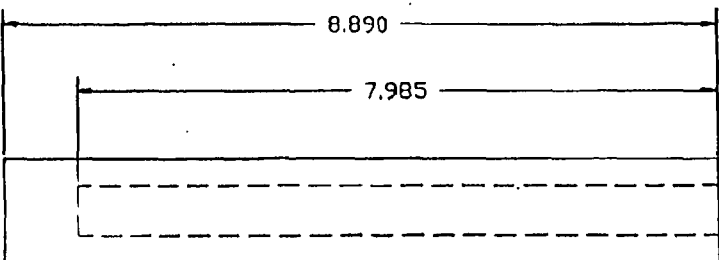
will require additional .250" support between the

loading level and the receiver.

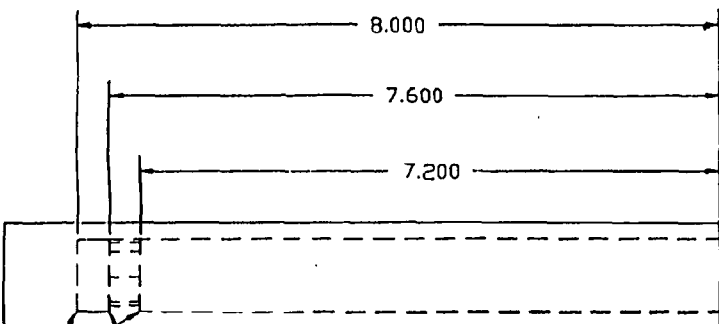
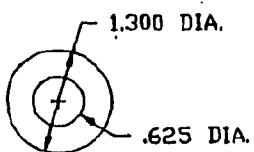
EXPERIMENTER Michael D. KingDATE 1/3/92WITNESSED BY H. W. KingDATE 1-10-92

E-46321
Page 28

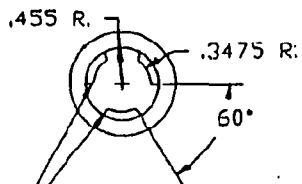
FILE: EDMREC
DATE: 1/7/92
TOPIC: EDM RECEIVER CONTOUR
DRAWN BY: MIKE KEENEY



BLANK



EDM CONTOUR



.03 R. TYP.

.02 R. .015 R.

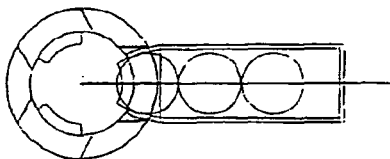
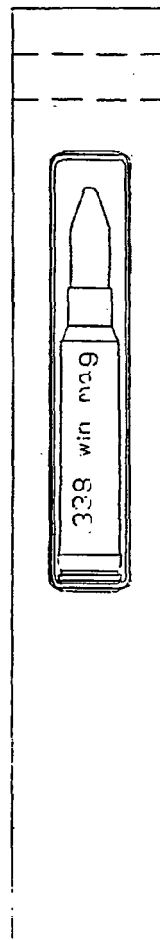
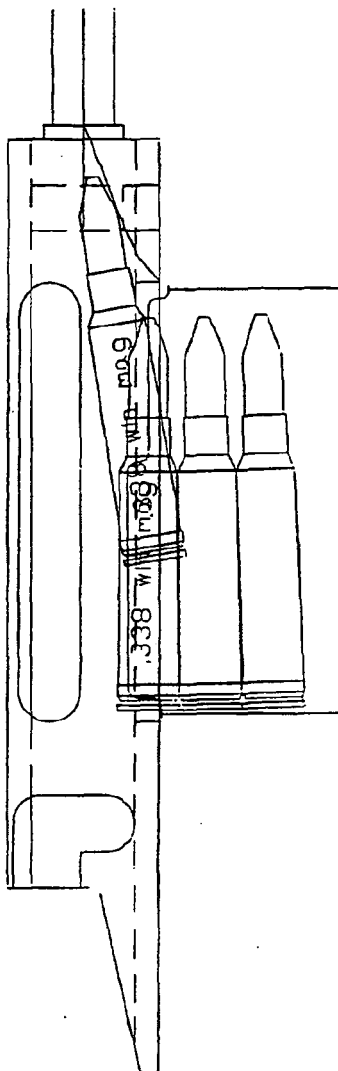
EXPERIMENTER Mike Keene
WITNESSED BY Mike Keene

DATE 1/7/92
DATE 1-10-92

TITLE Process Development - NEAR DATE 1/1/42 Page No. 29
 PURPOSE Mag Box Development with respect to Feeding Book No. E 46321

E-46321
 Page # 29

FILE
 DATE 1/7/92
 TOPIC NEAR MAG BOX DEVELOPMENT
 DRAWN BY: MIKE KEENEY
1/1/42



WITNESSED BY

H. W. Lowry

1-16-42

30

Page No. TITLE Process Development - NBAC DATE 1/2/92

E 46321

Book No. PURPOSE Evaluation of systems attached to page 28:25

→ In reference to print attached to page 28:2

Developed for Enclosure, given for review, possibility

of providing the present/previous, control described

by the prints, compared Steve Dalton and

Richard Carson about information, per 1/2/92

Preliminary review, given for review, possibility with

Research, further, and, development, developed a

(unpublished) under the above process.

The "E-46321" will be processed at Remington, Ill. and

shipped to Emerson, Ill. for processing as per

the "E-46321" print.

→ In reference to print attached to page 28:2

Reviewing E-46321, review, review, review, review

to the machine, review, review, review, review, review

The receiver and the receiver, review, review

E-46321 as drawn in the review, review, review, review

to the review, review, review, review, review

335 Lin. in. machine and review, review, review

The review, review, review, review, review

EXPERIMENTER

Will D. Long

DATE 1/7/92

WITNESSED BY

Will D. Long

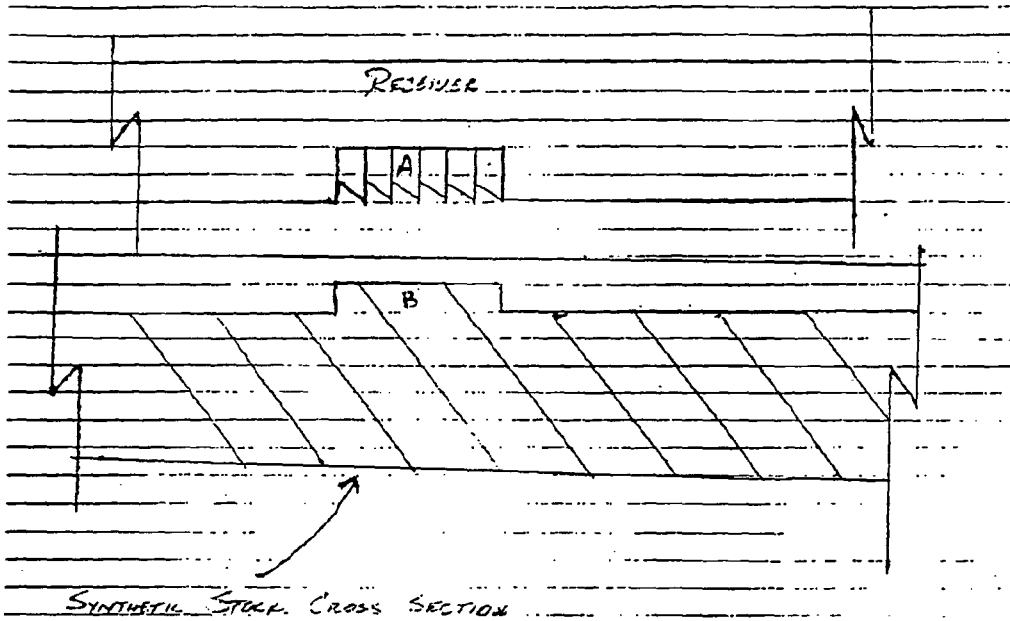
DATE 1-10-92

TITLE RESEARCH DEVELOPMENT - NBAR DATE 1/9/92 Page No. 31PURPOSE DEVELOPMENT OF NINE BOX & RECOIL PROJECT Book No. E 46321FURTHER INVESTIGATION SUGGEST THAT "SIX" IS DEPTIS REQUIRED FOR THE PURPOSES OF THE MACHINE TESTWHICH WILL BE THE REMINGTON 760. FURTHER A REMARKWILL BE MADE THAT THE REMARKS ARE NOT FOR THEREMARKS ARE NOT TO BE MADE. ALSO, THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOTREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEREMARKS ARE NOT TO BE MADE. THE REMARKS ARE NOTTO BE MADE. THE REMARKS ARE NOT TO BE MADE. THEEXPERIMENTER Michael D. KingDATE 1/9/92WITNESSED BY K. W. HoneyDATE 1-10-92

32

Page No. TITLE BRASS DESIGNER - NBR DATE 1/9/42

E 46321

Book No. PURPOSE RECEIL BIRMINGHAM SYNTHETIC CONCRETE (REIL SM. 1)

EXPLANATIONS METAL RESEINER WOULD HAVE BOTTOM HALF

RESINER AS SHOWN (A) SYNTHETIC STOCK WOULD HAVE

A THIN PAIR ADDED TO MATE WITH RECEIVER. (B)

UPON MOUNTING, SECTION (E) WOULD FOLD AND FOR

SECTION (F) TO PRODUCE THE BRIDGING AREA TEST FOR

FILL RESEINER. FIRST OF ALL, THE RESEINER

WOULD BECOME "RESEINER" TO THE STOCK. ON A WOOD

STOCK A SYNTHETIC PIECE COULD BE EXPANDED TO THE

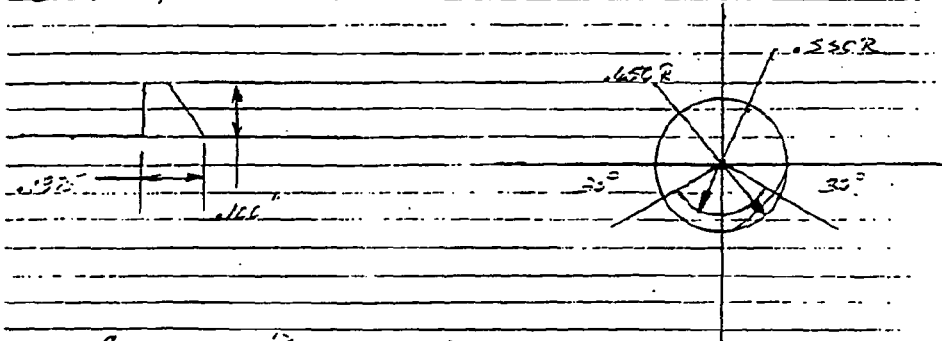
STOCK HALF THEN THE RECEIVER WOULD SINK TO THE

SYNTHETIC. B-2-1

EXPERIMENTER W. C. D. is h...DATE 1/9/42WITNESSED BY K. W. LongDATE 1-10-42

TITLE PROCESS DEVELOPMENT - NBR DATE 1/10/92 Page No. 33
 PURPOSE RECON. DESIGN SURFACE CALCULATION Book No. E 46321

SIMPLE GEOMETRIC CONSIDERATION



CONCENTRIC CIRCLES

LYNCH DEPTH: 1.25" - .25" = 1.00"

LYNCH RADIAL LENGTH: 120"

RET. SURFACE AREA: $A = \frac{(120^2) \pi ((.656)^2 - (.556)^2)}{360}$ (ONE CYCLE)

PAGE 454

SURFACE AREA OF $A = .1257 \text{ in}^2$

A SURFACE RING SECTOR

RETURNING TO RECON. SKETCH FORM ON PAGE 29, THE LYNCHES WERE TO START AT MIDPOINT OF COLLING, WITH WIDTH GRID THEREAFTER TO MATCH FOR OPENING. THE TOTAL LENGTH AVAILABLE IS 750". THEREFORE WITH THE WIDTH OF WHICH LYNCHES EQUAL TO 195" WE COULD ACHIEVE A SERIES OF 3 LYNCHES ALONG THIS LENGTH. THEREFORE THE TOTAL AREA WOULD BE:

$$A_{\text{TOT}} = 5A = 5(.1257 \text{ in}^2)$$

$$A_{\text{TOT}} = .6285 \text{ in}^2$$

EXPERIMENTER [Signature]

DATE 1/10/92

WITNESSED BY [Signature]

DATE 1-10-92

34

Page No. TITLE Recoil Proofing Subcase Concept DATE 1/10/92

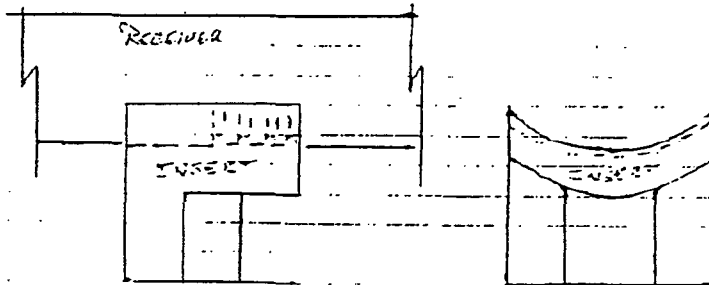
E 46321

Book No. PURPOSE Recoil Proofing Subcase Concept

UPON FURTHER INVESTIGATION OF SYNTHETIC MATERIAL PROPERTIES
 RELATIVE TO HIGH STRESS, SUCH A SYSTEM AS DESCRIBED ON
 PAGE 33 WOULD NOT BE AVAILABLE. SUCH A STEEL MATERIAL
 WOULD HAVE A MELTING POINT AT 500° - 550° F. IF
 RECEIVER WERE TO BE HEATED TO THIS TEMPERATURE, IT
 WOULD AFFECT THE RECOILING MECHANISM IN A SIGNIFICANT
 WAY.

THUS, THE CONCEPT AND DESIGNING THE RECOIL
 WITH THE MIND, IT REMAINS DIFFICULT. THE A METAL INSERT
 COULD BE INSERTED INTO THE STEEL WHICH WOULD INTERFERE
 WITH THE WORKING OF THE RECOILING MECHANISM. THE REQUIRED
 SEATING SURFACE. THIS METAL INSERT COULD ALSO BE DESIGNED
 FURTHER TO BE USED AS A RECOILING PAD FOR THE RECEIVER.
 SUCH A METAL INSERT COULD BE PRODUCED BY A POWDER

METAL OR METAL INJECTION MOLDING PROCESS.

EXPERIMENTER E. I. Du PontDATE 1/10/92WITNESSED BY J. H. RemingtonDATE 1/15/92

TITLE PROCESS DEVELOPMENT - NEAR DATE 1/16/92 Page No. 35PURPOSE RECON. READING INSERT Book No. E 46321

FURTHER DISCUSSION AND LEADING CALCULATIONS HAVE
 DEMONSTRATED
 LEAD TO THE BALANCE OF THE INSERT BY A FOLLOWING
 PROCESS WITH SIGNIFICANT MODIFICATION, SPECIFICALLY
 WHILE STARTING PREVIOUSLY A PRESTIGE INSERT, FROM
 THIS MATERIAL, BY USING AN STANDARD MILLING
 OPERATION.

LESS READING, THE NEW BOX CONSTRUCTION AND
 STICK LEADING, IT IS CONSIDERED PROBABLY THAT AN
 IN LINE STICK CONSTRUCTION WILL PRODUCE A "FIVE" OR
 "SEVEN" STICKS. WILL FURTHER INVESTIGATE OTHER
 STICKING, OR GAMING OR HALL BOX.

RECORDED PURCHASES TO SENT INGRESSOR LYMAN

TO SHOW A CONFIDENTIALITY AGREEMENT, BEFORE OTHER

DEVELOPMENT READING EDM PROCESS

EXPERIMENTER

John D. King

DATE

1/16/92

WITNESSED BY

DATE

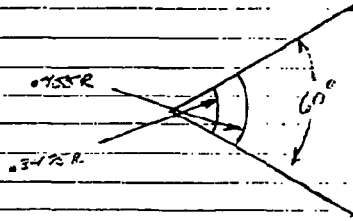
36

Page No. TITLE Process Development - NGAR DATE 1/20/92

E 46321

Book No. PURPOSE Lesson Log - Bedrock, Spence Lines (Edm. Calculations)

REF. TABLE #28, SYSTEM OF EDM. CONTINUOUS SPENCE LINES



FOR PROPOSED THREE LINE SYSTEM, BEDROCK SPENCE AREA CALCULATION

AS FOLLOWS:

REF. ADMINISTRATIVE HANDBOOK - 22ND EDITION

PAGE 444

$$A_{\text{TOT}} = 3A$$

$$A = \frac{60}{360} (\cdot 755^2 - \cdot 347^2)$$

$$A = .0452 \text{ IN}^2$$

$$\therefore A_{\text{TOT}} = 3A = 3(.0452)$$

$$A_{\text{TOT}} = .1356 \text{ IN}^2$$

EXPERIMENTER

[Signature]DATE 1/20/92

WITNESSED BY

DATE

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT



COMPUTATION SHEET

SHEET NO. _____

TITLE OF PROJ. _____ PROJ. NO. _____

SUBJECT _____ WORKS _____

COMPUTER _____ DATE _____ 19__

REMARKS #1

XC 0726 - NBAR PROTOTYPE WITH BLACK STOLK
WOODEN BOLT HANDLER
NON FUNCTIONING

XC 0727 - ORIGINAL SECTIONED REAR LOCK-UP PHOTO:
NON FUNCTIONING
WITH BOLT

XC 0728 - HIGH PRESSURE TEST #1: SEPARATE LOCK
NO BOLT SHROUD
EST. 150-150 PSI

XC 0729 - HIGH PRESSURE TEST #2: SINGLE LOCK BRACKET
BOLT SHROUD
EST. 150-150 PSI

XC-0730 - AMBIDEXTROUS REC/BARREL UNIT: NO LOCK
NO BOLT