M1911-A1 REDUX

FROM RIO BENSON, BENSON CONSULTING, LLP, ON THE PREPARATION OF THESE DOCUMENTS

To qualify my efforts in the development of this drawing package: As a Machine and Mechanical Designer, I've been preparing drawings to DOD-100/1000 and ASME/ANSI Y14 standards, for a living, for more than a half century. I am also a shooter and a firearms enthusiast with sporting experience since my mid-teens and significant military firearms experience from my late teens to my late-twenties. I am also an avid fan of John M. Browning and the "original" M1911.

Historically, when the drawings for John M. Browning's Colt M1911 were first created, there was little in the way of 'consensus' standards to guide the designers and manufacturers of the day in either drawing format or in DOD documentation of materials and finishes. For the most part, these were added, hit or miss, in later drawing revisions. Furthermore, due to the original design's flawless practicality and it's amazing longevity, the government's involvement, and the fact that in the ensuing 100-plus years of production the M1911 design has been officially fabricated by several different manufacturers, the drawings have gone through many, many revisions and redraws in order to accommodate all these various interests. These 'mandated by committee' redraws and revisions were not always made by the most competent of designers, and strict document control was virtually non-existent at the time. All of this has led to an exceedingly sad state of credibility, legibility, and even the availability of legitimate M1911 drawings today.

Granted, the M1911 is still being produced by a multitude of manufacturers, but obviously not to the original drawings. The current manufacturers have their own documentation, including their own modifications and production improvements. Because of their competitiveness, there is little chance any of these current manufacturers will publish or furnish any part of their documentation, since they might be giving away some of their trade secrets. Of course, we must assume that none of these manufacturers have ever heard of "reverse engineering" (LOL).

With that being said, I have noticed numerous requests for M1911 drawings over the years, and now having the time, the knowledge, and the means, I decided to model the M1911 in 3D, using SolidWorks 2009, and then create updated drawings from those models. My source for the original?[?] drawings came, free of charge, from the internet. As a drawing set for the M1911 these were better than nothing, but they were full of misinterpretations, errors, omissions, in addition to being very difficult to read. Unfortunately, that was all that was available.

Due to the poor legibility of the reduced drawing sizes, original drafting quality, and reproducibility of the source documents, and also of the collective questionable veracity of revision status, a number of assumptions and even interpolations had to be made in the creation of the subject documentation package. While every attempt was made regarding the maintenance of technical correctness and completeness, I (Rio Benson), or Benson Consulting, LLP, cannot warrant or guarantee the package's accuracy or suitability for manufacture, and recommend its use be limited to only that of a source of interesting and historical information. This package is furnished free of charge, and the user must assume any and all liability in any connection with its use. The laws regarding intellectual property apply here. This documentation may be published and distributed freely as a complete package, without charge, provided nothing is altered in any way. Furthermore, this writing is an integral part of the package and must accompany it in any of its published forms. By the way, this package prints best on a tabloid (11 x 17 inch) printer, color or no. Only two sizes of drawing format were used, B (11 x 17) and D (22 x 34). The advantage of the D size is less format per drawing area. The D size printed on a tabloid sheet results in a half-size reproduction (half-size is not half a sheet; do your math) that is still quite legible for all but the legally blind.

All of the SolidWorks 2009 models and drawings created for this package are available from me, at BensonConsulting@earthlink.net, for a small fee to help cover my expenses in materials, equipment, and time. While I will gladly assist anyone wishing it, technically, I am not in the habit of doing anyone's work for them without some form of compensation.

The approach to the updated modeling and redrawing contained in this package was as follows:

1. Wherever possible, 'turn-of-the-century' machine shop methodology and technology was used in determining the design intent of the original documentation.
2. Otherwise, no attempt was made to arbitrarily change any dimensions or tolerances, however costly they would be to reproduce. There were, however, a few instances where the "original" dimensions were geometrically impractical to fabricate or were incorrect, thus dictating a change. Furthermore, the application of current drafting standards required some additional changes. Overall, and as an added benefit, the changes made should make the drawings more logical, logical, and easier to read.
3. Manufacturing technology in materials, heat treatment, and finishes have changed considerably in the past several years, thereby making virtually all of the "original" drawing notes obsolete. In fact most of the standards and specifications originally referred to have been obsoleted or superseded. As a result the remaining drawing notes, referring primarily to materials, heat treatment, and finish, have been standardized and updated to what is currently available and more practical from a manufacturing standpoint in this package.
4. Some of the newer methods in drafting technology, such as Geometric Dimensioning and Tolerancing, and particularly that of True-Position Dimensioning, have been purposefully avoided in this effort. These were not available for the original design, nor were they necessary. The use of these practices becomes economically feasible only in high volume production applications where the technical expertise is available, and the purchase and deployment of expensive Coordinate Measuring Machines (CMM) and costly templates and gages can be justified. Seldom, if ever, are the tried and true bilateral tolerancing methods of the past insufficient to manufacture excellent parts. Case-in-point, the decades old M1911-A1 design, itself, using no Geometric Tolerancing, has had a success and longevity that is unmatched throughout all industry. Go figure! [BG]
5. No attempt was made to make these drawings DOD compliant. The driving intent here was to illustrate dimensional accuracy and functionality of the overall design. Markings, references to inspection of surface hardness, and other superfluous military requirements were omitted. The optional alternative designs were generally used since they represent improved or simplified fabrication methods.

In the creation of this documentation package, a number of issues became quite obvious and apparent: To begin with, it is doubtful the multitude of the very complex and intricate features found on the many parts of the M1911-A1 were present, or even necessary, in John M. Browning's original design before Colt and the government got hold of it. This sort of complexity was just not his style, and moreover, is probably the result of too many cooks stirring the soup. The result is a firearm that is simply too expensive to fabricate for today's consumer market, without radical simplification. Hence, resulting "copies" of the M1911-A1 are now being produced by many very expert manufacturers, that when disassembled and measured would bear little resemblance to what is described in this package. For my money and in my opinion, the modern "copies" are usually better weapons than the so-called "original", and are probably closer to what John Browning originally intended.
AFTER CRIMPING.

MOVEMENT TO EACH OTHER

CRIMP THESE TWO AREAS SUFFICIENT TO LOCK PAD TO BOW WITHOUT PERCEPTIBLE

PAD, TRIGGER

BOW, TRIGGER

FLUSH

.03

.432

CRIMP THESE TWO AREAS SUFFICIENT TO LOCK PAD TO BOW WITHOUT PERCEPTIBLE

MOVEMENT TO EACH OTHER AFTER CRIMPING.

6147780

HEAT TREAT

10/12/2010 R Benson


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NOTES:

1. REFINISH, IF NECESSARY AFTER CRIMPING, IAW PARA 5.3.1.2 OF MIL-STD-171.
NOTES:

1. PEIN OVER PIN END TO FILL HOLE CSK, BOTH SIDES, TO FIRMLY RIVET TUBE TO BASE. GRIND SMOOTH, FLUSH WITH TUBE. 2 PLACES.

2. GRIND PROTRUDING TUBE FLUSH WITH BASE ON 3 SIDES.

3. MAGAZINE TUBE SHOWN TRANSPARENT FOR ILLUSTRATION PURPOSES.
HEAT TREAT
CASE DP .002-.005, RH 15-N 78-82
08/29/2010 R Benson

THIRD ANGLE PROJECTION

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PLUNGER, SLIDE STOP
1st MADE FOR: M1911-A1 REDUX

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES.
TOLERANCES:
ANGULAR ± 5°,
2 PL ± .01, 3 PL ± .005, 4 PL ± .002,
SYMM & CONC: ± 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH,
BRK/FIL: SHARP COR .005 MAX.

MATERIAL:
STEEL 1117 ASTM A108

SCALE: 8:1
WEIGHT: 0.00 LB
SHEET 1 of 1
MODEL SHOWN COMPRESSED FOR ASSEMBLY

Diameter of Wire .............................................. .018
Diameter of Coil (OD) ........................................... .104 ± .003
Free Length ....................................................... (.593)
Active Coils ....................................................... 12.5
Total Coils ......................................................... 14.5
Direction of Helix ................................................. CCW
Load at Compressed Length Of .............................. .400 = 2.50 ± .50 LB
Spring Rate ......................................................... (.160 LB/INCH)
Solid Length ....................................................... .279 MAX
Type of Ends ....................................................... Squared & Ground
Hole Dia into Which Spring Fits Freely ............. .109 MIN
Rod Dia over Which Spring Slides Freely ..... ----- MAX

Notes:
1. Manufacture IAW Type 1, Grade A, of SAE AS 13572.
2. Stress relief at 450°F for 20 minutes after forming.
CAST: STEEL, IC-1020, ASTM A732.
THIRD ANGLE PROJECTION


UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES.
TOLERANCES: Angular ± 3°,
2 PL ± .01, 3 PL ± .005, 4 PL ± .002,
SYMM & CONC. ± 1/2 FEATURE TOL.
FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.

FAB FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.

TOLERANCE: ANGULAR ± 3°,
2 PL ± .01, 3 PL ± .005, 4 PL ± .002,
SYMM & CONC. ± 1/2 FEATURE TOL.
FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.

DIMENSIONS ARE IN INCHES.
TOLERANCE: ANGULAR ± 3°,
2 PL ± .01, 3 PL ± .005, 4 PL ± .002,
SYMM & CONC. ± 1/2 FEATURE TOL.
FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.

TOLERANCE: ANGULAR ± 3°,
2 PL ± .01, 3 PL ± .005, 4 PL ± .002,
MODEL SHOWN COMPRESSED FOR ASSEMBLY

DIAMETER OF WIRE ............................................. .043
DIAMETER OF COIL (OD) ........................................ .430 ± .005
FREE LENGTH .................................................... (6.55)
ACTIVE COILS ..................................................... 29
TOTAL COILS ...................................................... 30
DIRECTION OF HELIX ............................................. CCW
LOAD AT COMPRESSED LENGTH OF ......................... 3.72 = 8.00 ± .50 LB
LOAD AT COMPRESSED LENGTH OF ......................... 1.81 = 13.55 ± .60 LB
SPRING RATE ..................................................... (2.88 LB/INCH)
SOLID LENGTH .................................................... 1.375 MAX
TYPE OF ENDS ..................................................... NOT SQUARED OR CLOSED
HOLE DIA INTO WHICH SPRING FITS FREELY .......... .448 MIN
ROD DIA OVER WHICH SPRING SLIDES FREELY .... .336 MAX *
CRIMP ONE END OF COIL TO .................................. .326 +.000 -.010 ID

* EXCEPT FOR CRIMPED END.

NOTES:
1. MANUFACTURE IAW TYPE 1, GRADE A, OF SAE AS 13572.
2. STRESS RELIEVE AT 450°F FOR 20 MINUTES AFTER FORMING.
DISTANCE OF 1/4 COIL.

.430 OD, .218 PITCH SHALL ENTER FOR A MINIMUM .043 WIRE, 1.

NOTES:

1. HELICAL COMPRESSION SPRING OF φ .043 WIRE, .430 OD, .218 PITCH SHALL ENTER FOR A MINIMUM DISTANCE OF 1/4 COIL.

SEE NOTE 1

.09+.00 -.01

.5

150°
UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES.
TOLERANCES:

1. ANGULAR: ±.5°
2. PL: ±.01
3. PL: ±.005
4. PL: ±.0005
SYMM & CONC: 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH.
BROKEL SHARP COR: .005 MAX.
DM & TOL, IW, ASME Y14.5 - 1994


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1st MADE FOR: M1911-A1 REDUX

PIN, EJECTOR

REV DESCRIPTION DATE APPRVD
5013203 HEAT TREAT RH C 34.5-41
08/30/2010 R Benson

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES.
TOLERANCE: ANGULAR ±.5°
2 PL ±.01 3 PL ±.005 4 PL ±.0005
SYMM & CONC: 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH.
BROKEL SHARP COR: .005 MAX.
DM & TOL, IW, ASME Y14.5 - 1994

UNIT SCALE: 8:1
WEIGHT: 0.00 LB
SHEET 1 OF 1
MODEL IS SHOWN COMPRESSED FOR ASSEMBLY

DIAMETER OF WIRE ..................................................  .026
DIAMETER OF COIL (OD) ...........................................  .207 ± .005
FREE LENGTH ......................................................... (1.70)
ACTIVE COILS ......................................................... 38
TOTAL COILS ........................................................... 40
DIRECTION OF HELIX ................................................ OPTIONAL
LOAD AT COMPRESSED LENGTH OF ............................. 1.36 = 1.030 ± .135 LB
SPRING RATE .......................................................... (3.0 LB/INCH)
SOLID LENGTH ......................................................... 1.066 MAX
TYPE OF ENDS .......................................................... SQUARED AND GROUND
HOLE DIA INTO WHICH SPRING FITS FREELY ........... .219 MIN
ROD DIA OVER WHICH SPRING SLIDES FREELY .... .150 MAX *
CRIMP ONE END OF COIL TO ............................ .135 +.010 -.000 ID

* EXCEPT FOR CRIMPED END.

NOTES:
1. MANUFACTURE IAW TYPE 1, GRADE A, OF SAE AS 13572.
2. STRESS RELIEVE AT 450°F FOR 20 MINUTES AFTER FORMING.

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SPRING, FIRING PIN
1st MADE FOR: M1911-A1 REDUX

MUSIC WIRE, STEEL, ASTM A228

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DIMENSIONS ARE IN INCHES. TOLERANCE: ANGULAR ±5°, 2 PL ±.01, 3 PL ±.005, 4 PL ±.0005, SYMM & CONC. 1/2 FEATURE TOL. FAB FINISH: 125 MICRONCH. BRK/FIL SHARP EDGES .005 MAX. CM & TOL IW ASME Y14.5-1994.

SPHER R.16

Ø .157±.000
.002

Ø .182±.000
-.008

60° ±5°
MODEL IS SHOWN COMPRESSED FOR ASSEMBLY

DIAMETER OF WIRE ................................................. .045
DIAMETER OF COIL (OD) ........................................... .273 + .000 - .003
FREE LENGTH ....................................................... (2.156)
ACTIVE COILS .......................................................... 19.5
TOTAL COILS ........................................................... 21.5
DIRECTION OF HELIX ............................................... CCW
LOAD AT COMPRESSED LENGTH OF .................... 1.312 = 22.0 ± 2.0 LB
LOAD AT COMPRESSED LENGTH OF .................... 1.062 = 29.5 ± 2.0 LB
SPRING RATE ......................................................... (27.69 LB/INCH)
SOLID LENGTH ....................................................... .968 MAX
TYPE OF ENDS ....................................................... CLOSED, SQUARED & GROUND
ROD DIA OVER WHICH SPRING SLIDES FREELY .... .174 MAX*
CRIMP BOTH END COILS TO ................................ .160 + .008 - .000 ID

*EXCEPT FOR CRIMPED ENDS: CHECK AT A STAGE OF MANUFACTURE OR BY CUTTING OFF CRIMP IN SAMPLE.

NOTES:
1. MANUFACTURE IAW TYPE 1, GRADE A, OF SAE AS 13572.
2. STRESS RELIEVE AT 450°F FOR 20 MINUTES AFTER FORMING.
STEEL 1117 ASTM A108

1st MADE FOR: M1911-A1 REDUX

REVOLUTION HISTORI

REL DATE APPROV

UNLESiratespECIFIED:
DIMENSIONS ARE IN INCHES.
TOLERANCE: ANGULAR ±5°.
2 PL ±.01, 3 PL ±.005, 4 PL ±.005.
SYMM & CONC: 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.


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PIN, RETAINER,
Mainspring Housing

DIMENSIONS ARE IN INCHES.
TOLERANCE: ANGULAR ±5°.
2 PL ±.01, 3 PL ±.005, 4 PL ±.005.
SYMM & CONC: 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.


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PIN, RETAINER,
Mainspring Housing

DIMENSIONS ARE IN INCHES.
TOLERANCE: ANGULAR ±5°.
2 PL ±.01, 3 PL ±.005, 4 PL ±.005.
SYMM & CONC: 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.


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MODEL SHOWN COMPRESSED FOR ASSEMBLY

Diameter of wire: 0.026
Inside diameter (ID), free, not less than: 0.091
Outside diameter (OD), solid, not more than: 0.149
Free length (approx): 0.708
Active coils: 11
Total coils: 13
Direction of helix: CW
Load at compressed length of: 5.7 + 0.5 lb
Load at compressed length of: 8.5 + 0.7 lb
Solid length: 0.364 max
Type of ends: Plain (open ends, not ground)
Hole dia into which spring fits freely: 0.152 min
Reduce ID of last coil on both ends to: 0.085 + 0.000 - 0.010

Notes:
1. Manufacture IAW Type 1, Grade A, of SAE AS 13572.
2. Stress relieve at 450°F for 20 minutes after forming.
ARE CONTOURED ALONG BOTH THE R.500 AND R.188 SURFACES.

NOTES:

1. 11 CONTOURED GROOVES EQUALLY SPACED AT 5° AND CENTERED ABOUT CENTERLINE. GROOVES ARE CONTOURED ALONG BOTH THE R.500 AND R.188 SURFACES.
NOTES:

1. MATERIAL:
   WROUGHT: STEEL, 4140, ASTM A108.
   CASTING: STEEL, IC 4140, ASTM A732.

MATERIAL: 1. WROUGHT: STEEL, 4140, ASTM A108, AUSTENITIC GRAIN SIZE 6 OR FINER.
CASTING: STEEL, IC 4140, ASTM A732.
NOTES:
1. THE 3D MODELING OF THIS COMPONENT IS AS ACCURATE AS THE CAD SOFTWARE WILL REASONABLY ALLOW. WHILE THE DIMENSIONS ARE BELIEVED TO BE CORRECT, THE ACTUAL PART MAY VARY VISABLY SOMEWHAT FROM THAT SHOWN.
DIAGONAL DIAMOND, 90° CENTER TO CENTER ON THE DIAGONAL.

3. CHECKERING IS 20" GROOVES, CENTER TO CENTER ON THE DIAGONAL.

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. RECESSES SHOWN ARE NONFUNCTIONAL, AND ARE PERMITTED WITHIN REASONABLE LIMITS FOR STABILITY OF THE MOLDED PRODUCT.
3. CHECKERING IS 20° DIAGONAL DIAMOND, 90° GROOVES, CENTER TO CENTER ON THE DIAGONAL.
NOTES:

1. MATERIAL:
   WROUGHT: STEEL, 4140, ASTM A108;
   AUSTENITIC GRAIN SIZE 6 OR FINER.
   CAST: STEEL, IC4140, ASTM A732.

BUSHING, BARREL
1st MADE FOR: M1911-A1 REDUX

MATERIAL: 1. WROUGHT: STEEL, 4140, ASTM A108;
REVISION HISTORY
REV DESCRIPTION DATE APPRVD
6008596 HEAT TREAT 09/07/2010 R Benson
THIRD ANGLE PROJECTION
MATERIAL: STEEL, 1144, ASTM A108; AUSTENITIC GRAIN SIZE 7 OR FINER.
NOTES:

1. MATERIAL: STEEL, 1144, ASTM A108; AUSTENITIC GRAIN SIZE 7 OF FINER.
NOTES:

1. MATERIAL:
   WROUGHT: STEEL, 1018, ASTM A108.
   CAST: STEEL, IC1020, ASTM A732.

DIMENSIONS ARE IN INCHES.
TOLERANCE: ANGULAR ± 3°,
2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
SYMM & CONC: 1/2 FEATURE TOL.
FAB FINISH: 125 MICROINCH.
BRK/FIL SHARP COR .005 MAX.
UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCE: ANGULAR ± 3°,
   2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
   SYMM & CONC: 1/2 FEATURE TOL.
   FAB FINISH: 125 MICROINCH.
   BRK/FIL SHARP COR .005 MAX.
   UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCE: ANGULAR ± 3°,
   2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
   SYMM & CONC: 1/2 FEATURE TOL.
   FAB FINISH: 125 MICROINCH.
   BRK/FIL SHARP COR .005 MAX.
   UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCE: ANGULAR ± 3°,
   2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
   SYMM & CONC: 1/2 FEATURE TOL.
   FAB FINISH: 125 MICROINCH.
   BRK/FIL SHARP COR .005 MAX.
   UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCE: ANGULAR ± 3°,
   2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
   SYMM & CONC: 1/2 FEATURE TOL.
   FAB FINISH: 125 MICROINCH.
   BRK/FIL SHARP COR .005 MAX.
   UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCE: ANGULAR ± 3°,
   2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
   SYMM & CONC: 1/2 FEATURE TOL.
   FAB FINISH: 125 MICROINCH.
   BRK/FIL SHARP COR .005 MAX.
   UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCE: ANGULAR ± 3°,
   2 PL ± .01, 3 PL ± .005, 4 PL ± .0005,
DIAMETER OF WIRE ............................................. 0.0472 ±0.001
DIAMETER OF COIL (OD) ..................................... N/A
FREE LENGTH ............................................. 7.12
ACTIVE COILS ............................................. 11.5
TOTAL COILS ............................................. 12.5
DIRECTION OF HELIX ..................................... CCW
LOAD AT COMPRESSED LENGTH OF .................... N/A
LOAD AT COMPRESSED LENGTH OF .................... N/A
SPRING RATE ............................................. N/A
SOLID LENGTH ............................................. N/A
TYPE OF ENDS ............................................. IAW DRAWING DIMENSIONS
HOLE DIA INTO WHICH SPRING FITS FREELY .... N/A
ROD DIA OVER WHICH SPRING SLIDES FREELY .... N/A

NOTES:
1. MANUFACTURE IAW TYPE 1, GRADE A, OF SAE AS13572.
2. STRESS RELIEVE AT 450°F FOR 30 MINUTES AFTER FORMING.
NOTES:
1. MATERIAL:
   WROUGHT STEEL, 1117, ASTM A108.
   COST STEEL, IC1117, ASTM A712.
2. THIS DIMENSION OCCURS ONLY AT PRECISE ANGLE AND LOCATION SHOWN FOR SECTION B-B CUTTING PLANE IN PARENT VIEW.

MATERIAL: 1. WROUGHT STEEL, 1117, ASTM A108.
           2. CAST STEEL, IC1117, ASTM A712.
NOTES:

1. MATERIAL: STEEL, 1144, ASTM A311; AUSTENITIC GRAIN SIZE 6 OR FINER.

2. HEAT TREATMENT: HEAT LARGE PIN END 1450 TO 1500°F. OIL QUENCH. TEMPER 20 MINUTES AT HEAT TO RH C 48-52. LEAVE LONG PIN SOFT OR SOFTEN LONG PIN ONLY, SUFFICIENT FOR DRILLING.
NOTES:

1. MATERIAL: STEEL, 1045, ASTM A576; AUSTENITIC GRAIN SIZE 7 OR FINER.
1. MATERIAL:
   WROUGHT: STEEL, 4150, ASTM A476;
   CAST: STEEL, IC4150, ASTM A732.

NOTES:
   MATERIAL: WROUGHT STEEL, 4150, ASTM A576;
   CAST STEEL, IC4150, ASTM A732.

AUSTENITIC GRAIN SIZE 6 OR FINER.

UNLESS OTHERWISE SPECIFIED:
   DIMENSIONS ARE IN INCHES.
   TOLERANCES: LINEAR ± 0.005, ANGULAR ± 0.5°,
   FORM L O C O N C: ± 0.001, 1/2 FEATURE TOL.
   PARAS: 1.2, 0.003, 0.003, 0.004, 0.005, 0.006, 0.007.

SECTION A-A
SCALE 6 : 1

SEAR


SEE NOTE 1

− rhbenson@earthlink.net
RIFLING SHALL CONSIST OF 6 EQ SP GROOVES

FINISH: THIN DENSE CHROME COATING (ARMOLLOY TDC) IAW SAE AMS2438, AFTER SURFACE POLISHING.

ALL DIMENSIONS APPLY AFTER HEAT TREATMENT.

MADE FOR:

MATERIAL: STEEL, 4150, ASTM A-108; AUSTENITIC GRAIN SIZE 5 OR FINER.

HEAT TREATMENT: AUSTEMPER TO RH C 53 TO 56.5.

NOTES:

1. MACHINED FINISH EXCEPT AS NOTED.
2. DIAMETERS AT MUZZLE SHALL NOT BE GREATER THAN THOSE AT BREECH.
3. MATERIAL: STEEL, 4150, ASTM A-108; AUSTENITIC GRAIN SIZE 5 OR FINER.
4. HEAT TREATMENT: AUSTEMPER TO RH C 53 TO 56.5.
5. FINISH: THIN DENSE CHROME COATING (ARMOLLOY TDC) IAW SAE AMS2438, AFTER SURFACE POLISHING.
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. RECESSES SHOWN ARE NONFUNCTIONAL, AND ARE PERMITTED WITHIN REASONABLE LIMITS FOR STABILITY OF THE MOLDED PRODUCT.

2. MATERIAL: MOLDING PLASTIC IAW MIL-M-1416.
PHENOLIC, TYPE CFI-2.
COLOR: NO. 30045, 20509 OR 20602 OF TABLE II, FED STD NO. 595, SEMI-GLOSS BROWN.

3. CHECKERING IS 20° DIAGONAL DIAMOND, 96° GROOVES, CENTER TO CENTER ON THE DIAGONAL.