

The STEN MKII

Complete machine plans



STEN SUBMACHINE GUN, 9-millimetre submachine gun that became the standard such weapon in the British Commonwealth armed forces during World War II. Moreover, hundreds of thousands of Sten guns were provided to underground movements everywhere in Europe during that war. The gun was so ubiquitous that its name became all but a generic term for submachine gun. The Sten gun remained in service until the late 1950s.

The most common version of the Sten gun was 30 inches (76.2 cm) long with a barrel of 7.5 inches (19 cm). It fired at a rate of 550 rounds per minute, and it had a 32-round box magazine that, however, tended to jam if more than 30 rounds were loaded. The butt was a steel frame that, with the barrel, could be removed without difficulty so that the disassembled weapon could be easily hidden. Its weight was just over six pounds (2.7 kg) unloaded.

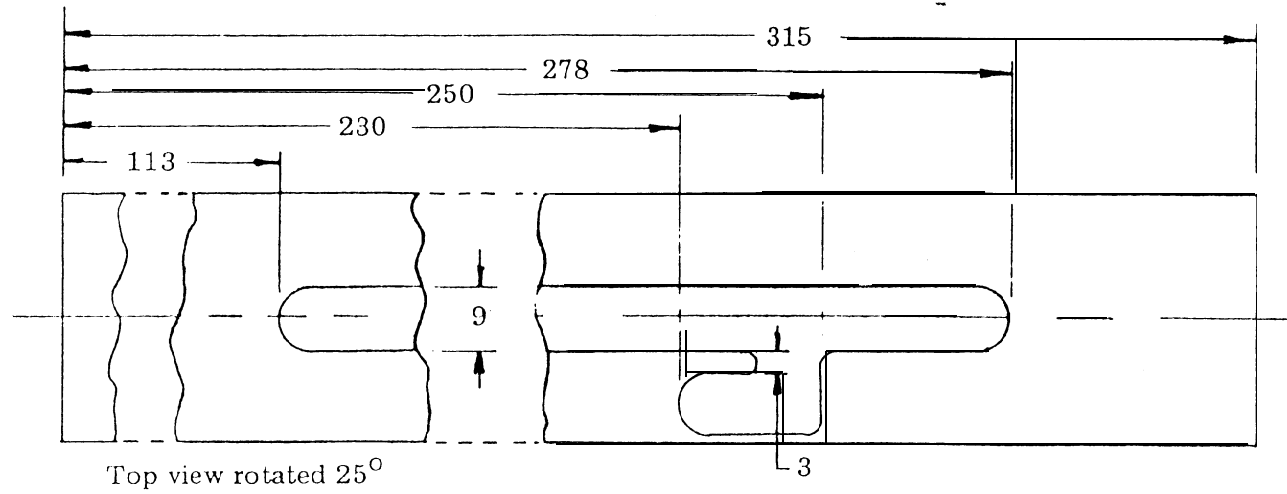
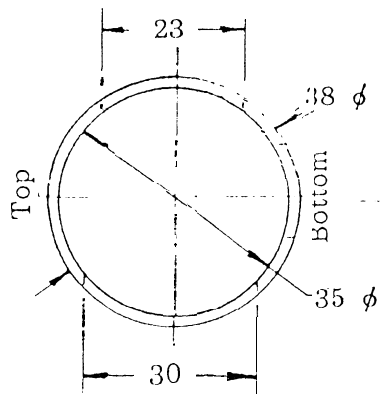
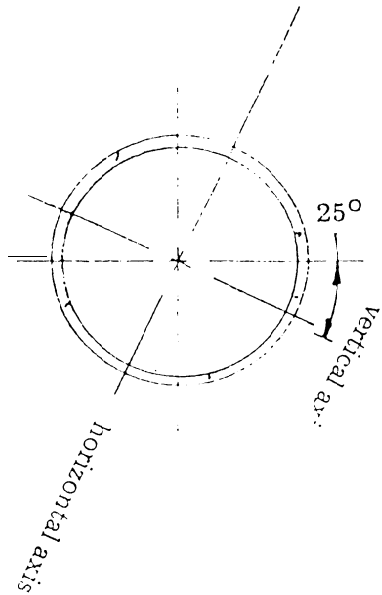
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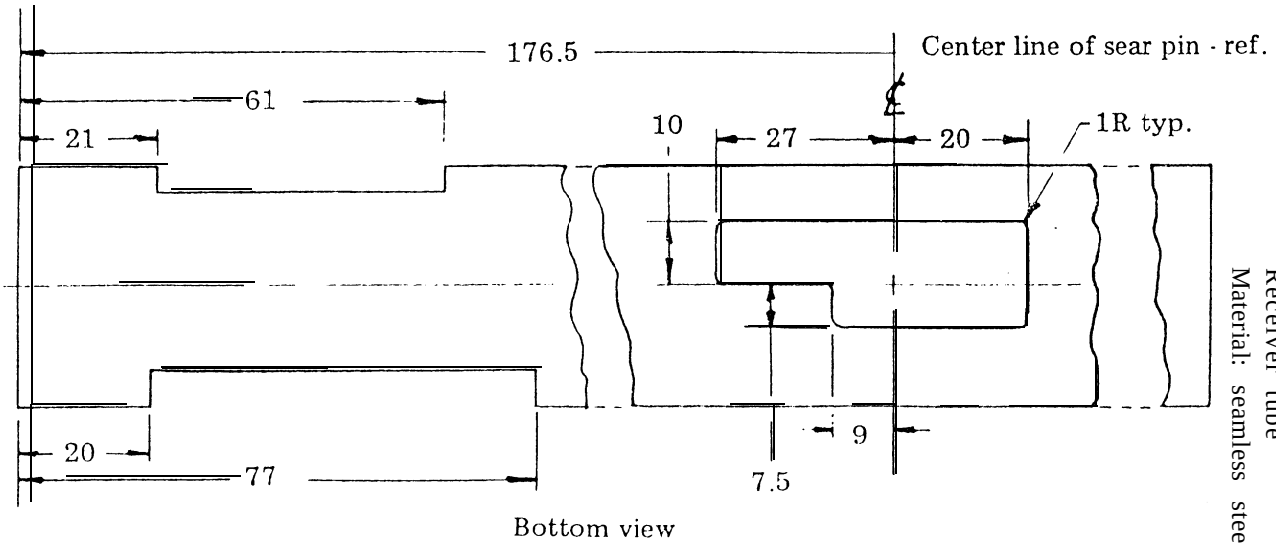
Sten Mk II

PARTS LIST

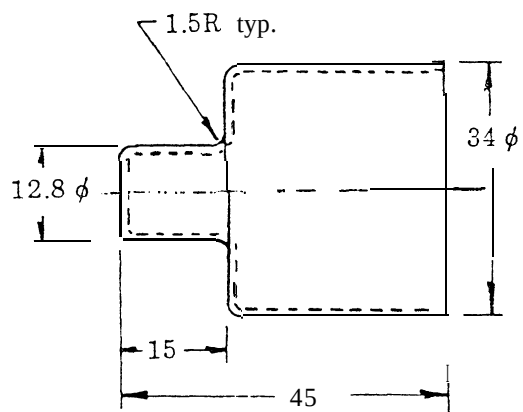
- | | |
|---------------------------------------|--|
| 1. Barrel | 24. Sear |
| 2. Barrel sleeve | 25. Sear spring |
| 3. Barrel sleeve lock | 26. Sear pin |
| 4. Barrel sleeve lock spring | |
| 5. Front sight | 27. Bolt |
| 6. Barrel bushing | 28. Firing pin |
| 7. Receiver tube | 29. Extractor |
| 8. Receiver cap | 30. Extractor spring |
| 9. Trigger housing | 31. Extractor pin |
| 10. Butt stock assembly: stock tubing | 32. Bolt handle |
| butt plate | |
| stock grip | 33. Closing spring |
| stock ring | 34. Closing spring cup |
| | 35. Trigger housing cover |
| 11. Magazine housing | 36. Trigger housing cover screw (2) |
| 12. Magazine housing spacer | |
| 13. Magazine housing spacer screw | 37. Magazine housing |
| 14. Magazine latch | 38. Magazine follower |
| 15. Magazine latch spring | 39. Magazine spring |
| | 40. Magazine spring latch |
| 16. Trigger | 41. Magazine bottom |
| 17. Trigger spring | |
| 18. Trigger pin | 42. Rear sight |
| 19. Disconnecter | |
| 20. Disconnecter pin | NOTES: |
| 21. Selector | 1. Bolt stopping surface on barrel is 1mm forward of magazine well slot. |
| 22. Selector spring | 2. Bolt stroke is |
| 23. Selector plunger (2) | |



Scale: .87 : 1



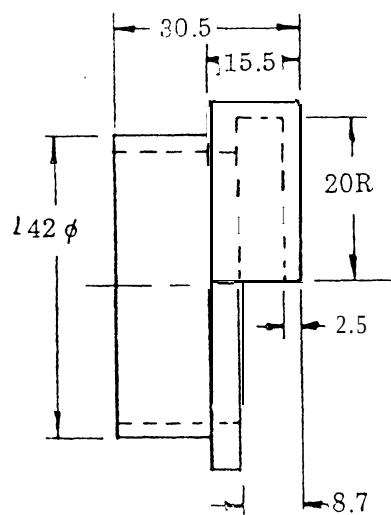
Receiver tube
Material: seamless steel tubing



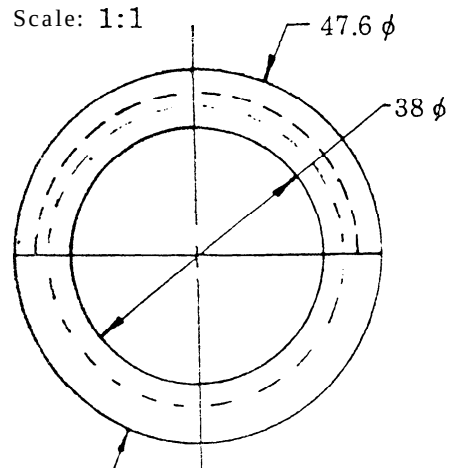
Main spring cap
Material: 1mm stock

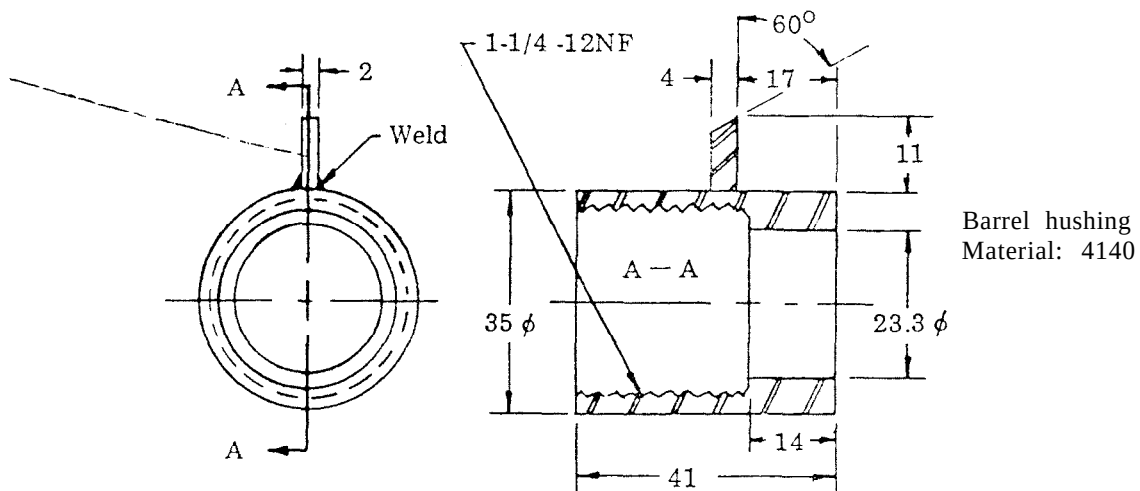
Scale: 1:1

Receiver rear end bushing
Material: AISI 1010 or equivalent

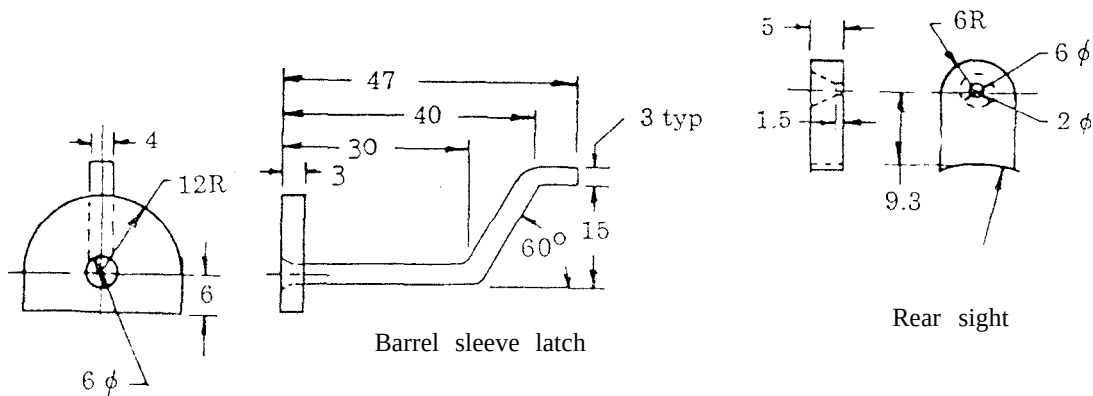
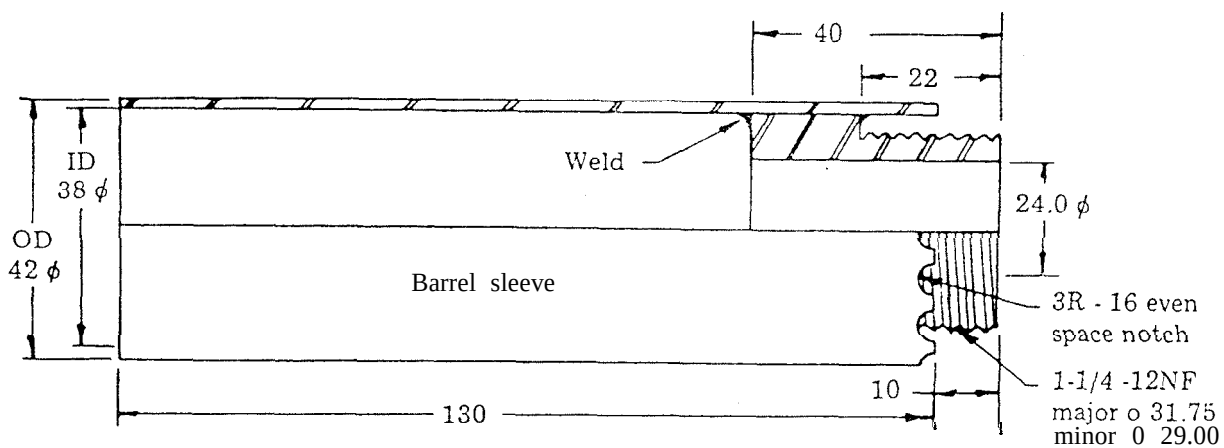


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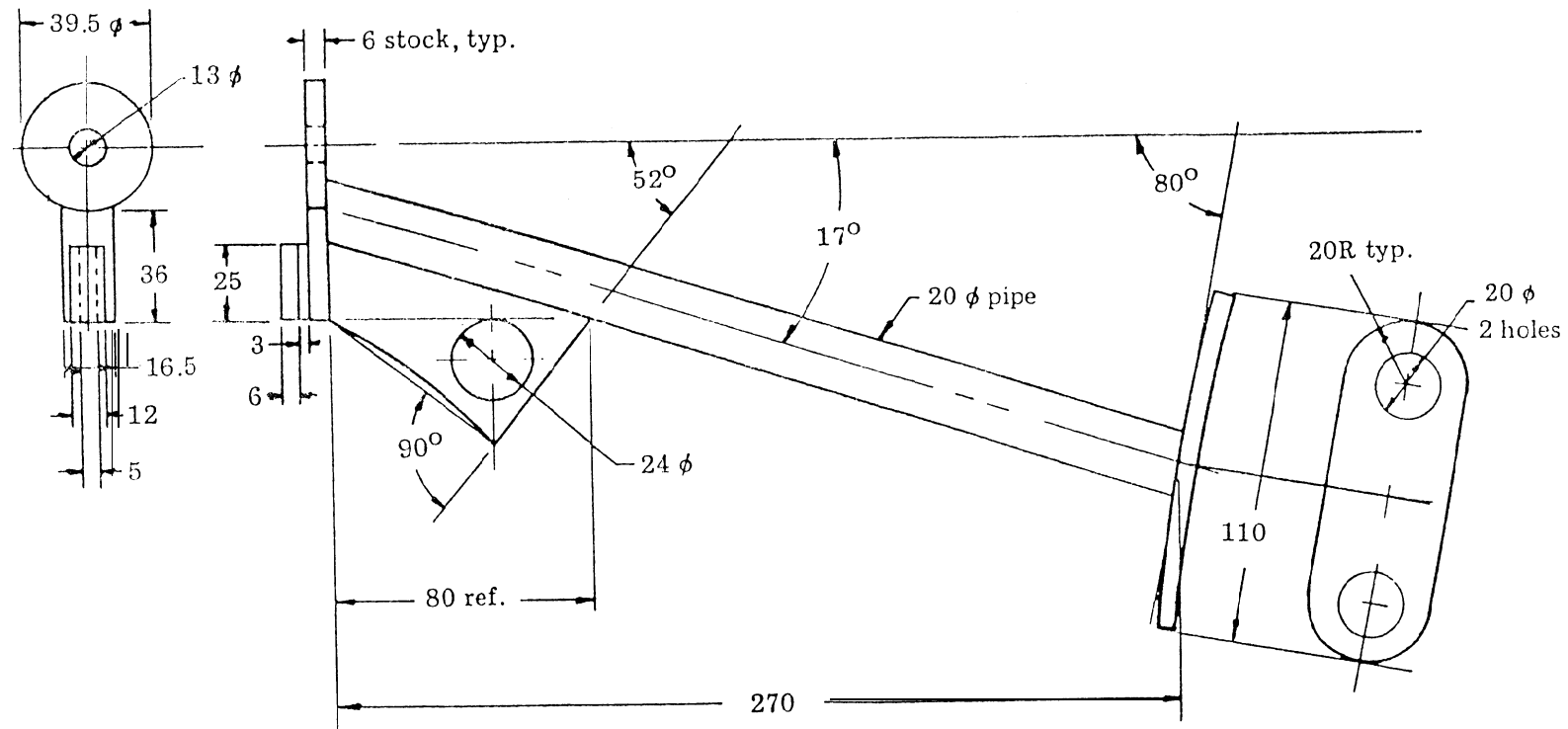


Scale:



Note: Stake at assembly
with magazine housing

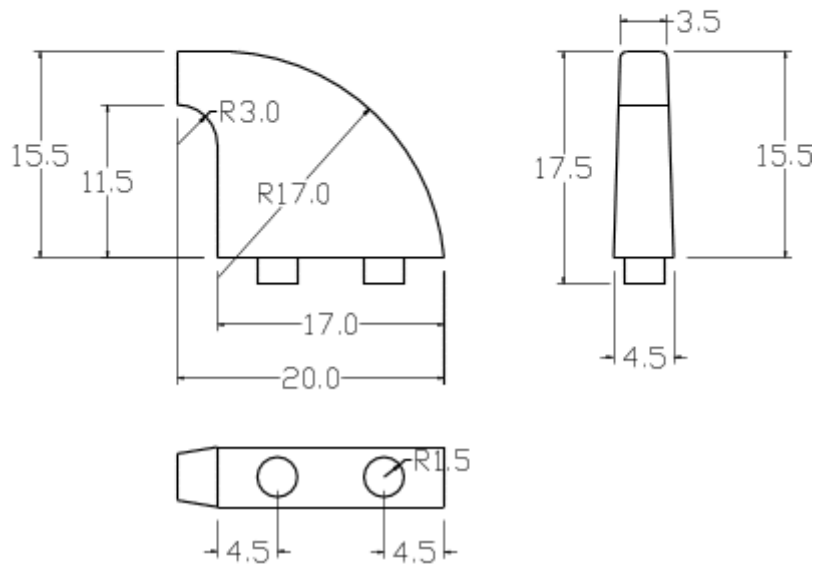
Butt-stock assembly
Material: low carbon steel
or aluminum, welded construction



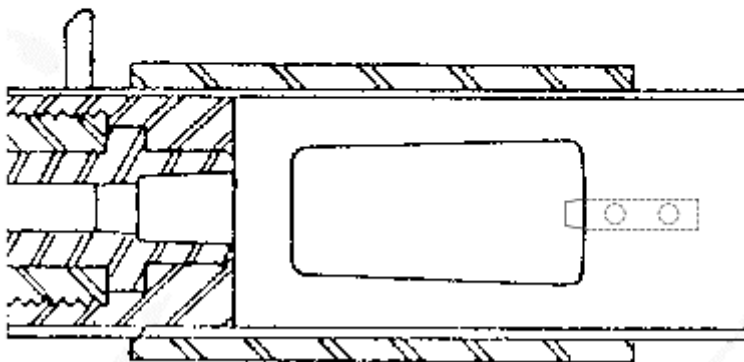
Ejector

Material: 4140 steel, hardened.

Construction: Mill, or filed from stock, pins shown can be replaced by slotting the receiver and welding in place, although harder to position

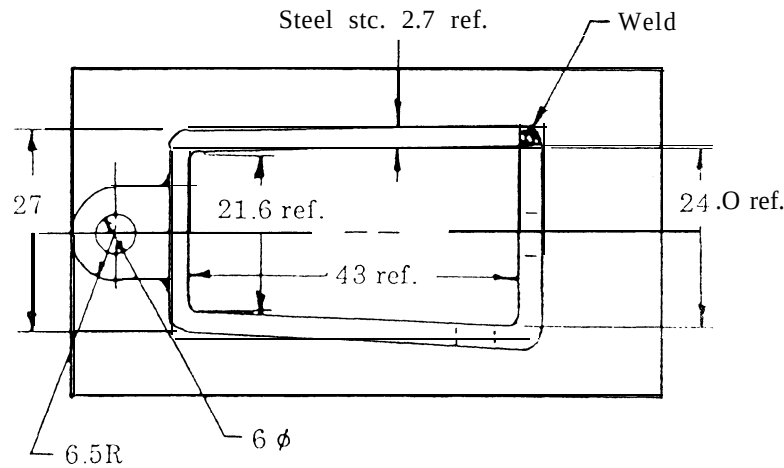
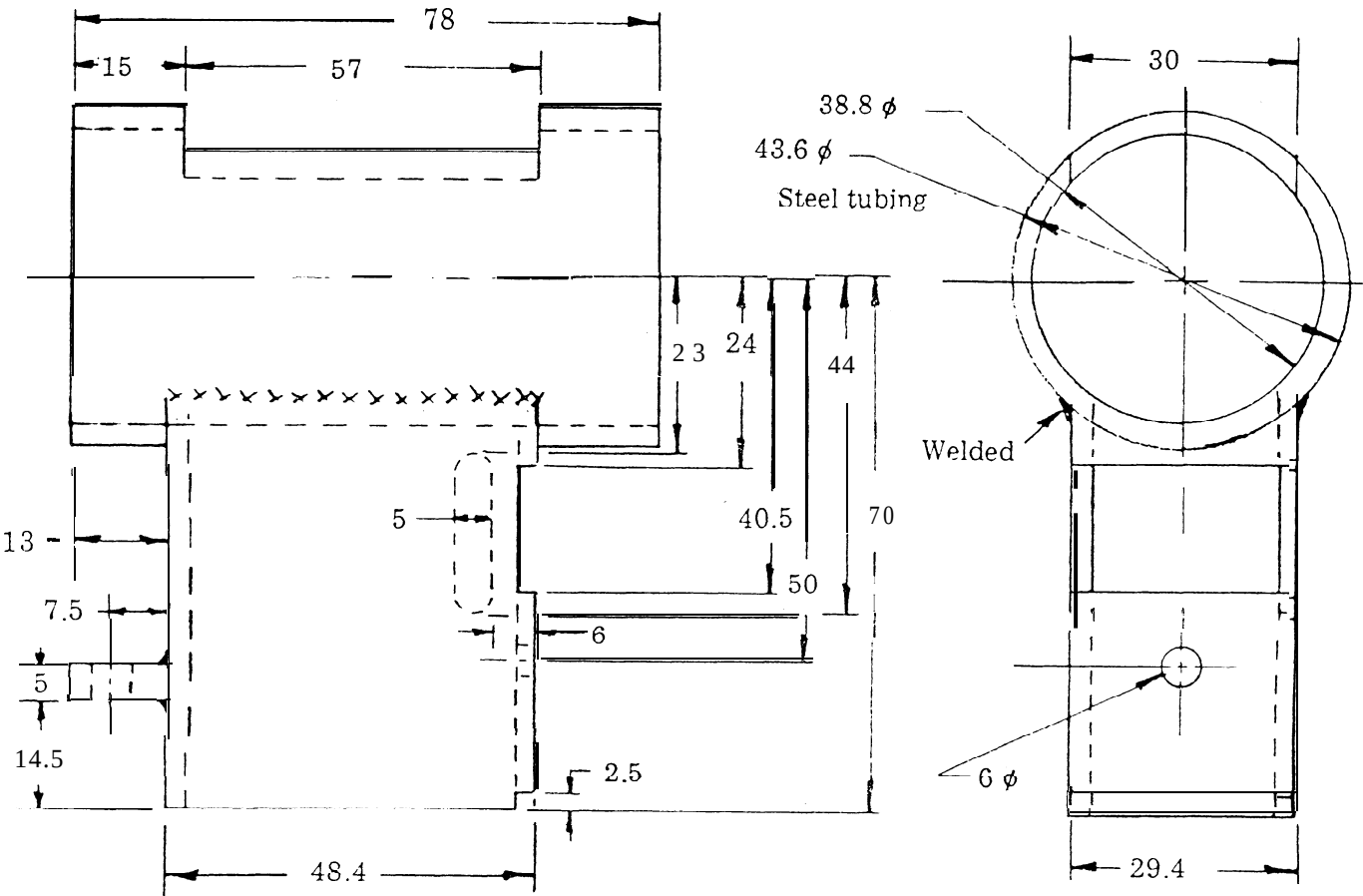


The ejector is positioned central with the magazine aperture of the receiver tube as shown. Construction can vary, here an ejector supported by two pins through the receiver tube is welded in place.



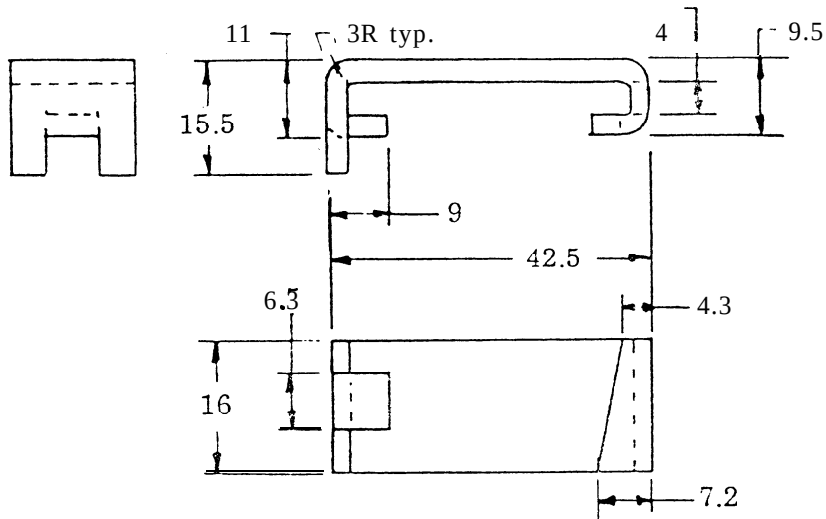
Magazine housing
Material: as noted

Scale: 1 : 1



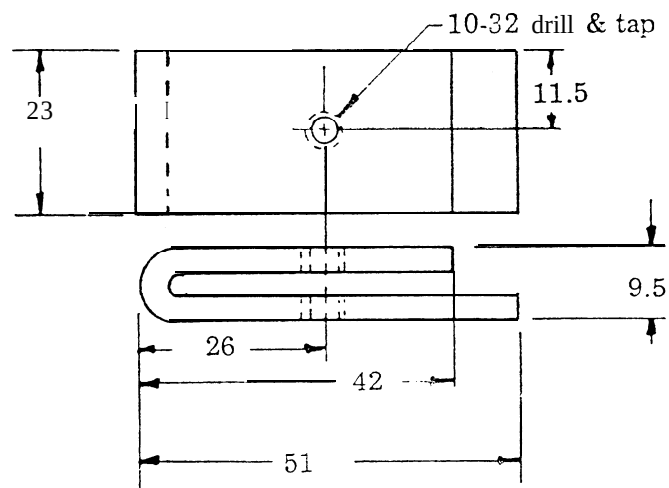
Magazine latch
 Material: AISI 1010 or equivalent
 2.7mm stock. Case harden 0.1mm deep

Scale: 1:1

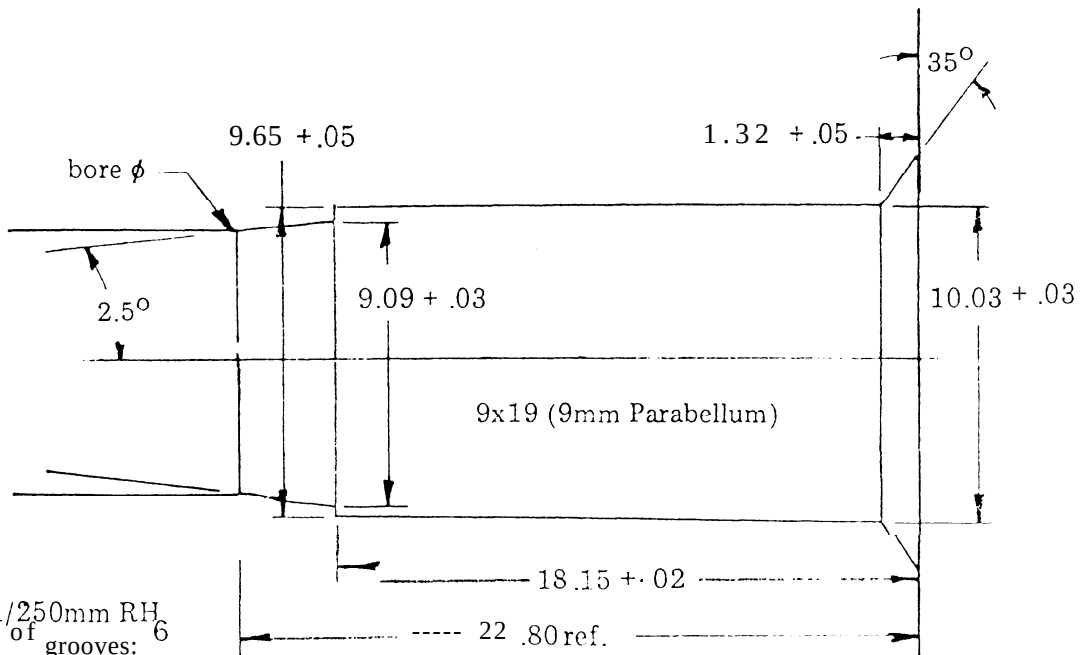
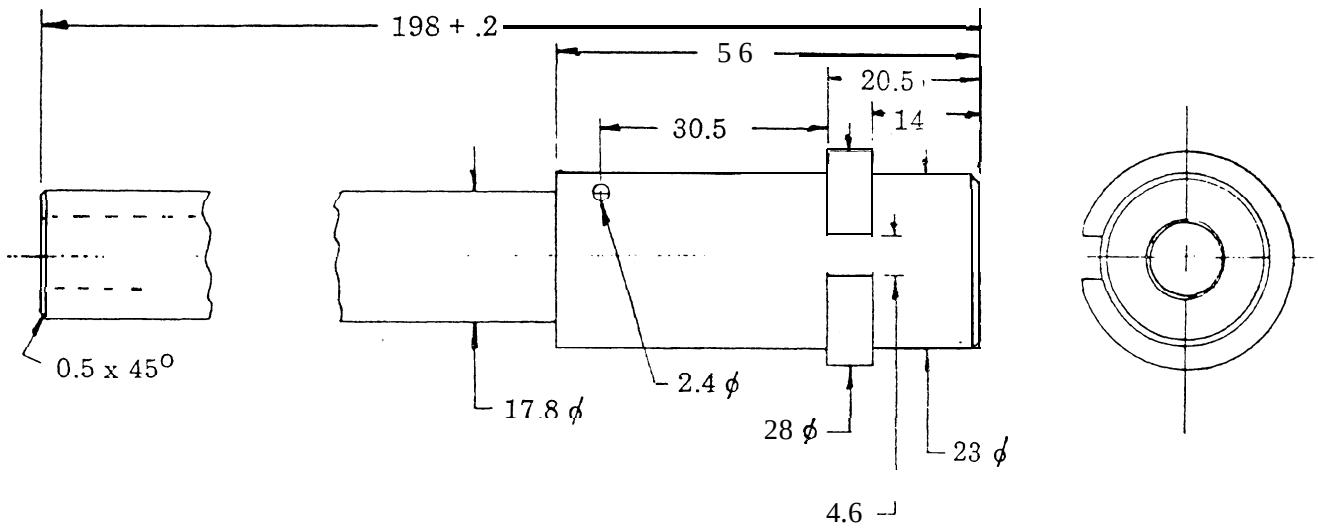


Magazine housing spacer
 Material: AISI 1010 or equivalent
 3mm stock. Heat treat: none

Scale: 1:1



Barrel
Material: AISI 4140
Harden to: Br 255-277



Twist: 1/250mm RH
Number of grooves: 6
Groove width: 2.5 +.02
Bore diameter: 8.84 +.02
Rifling diameter: 9.06 +.05

STEN Mk II SPECIFICATIONS

1. Cartridge:	9mm Parabellum	
	Bullet weight	116 grains
	Powder weight	6 grains
	Muzzle velocity	1400 ft./sec.
2. Recoil Spring:	Wire diameter	0.067 in.
	Spring OD	1.00 in.
	Active coils	15
	Free length	9.40 in.
	Initial length	6.80 in.
	Final length	3.20 in.
	Work stroke	3.60 in.
3. Bolt:	Weight	1.327 lb. (9290 grains)
	(including extractor)	
	Cocking handle	0.077 lb. (540 grains)
Total recoiling weight:		1.404 lb. (9830 grains)
	Bolt maximum dia.	1.381 in.
	Bolt overall dia.	5.75 in.
	Bolt body length	4.21 in.

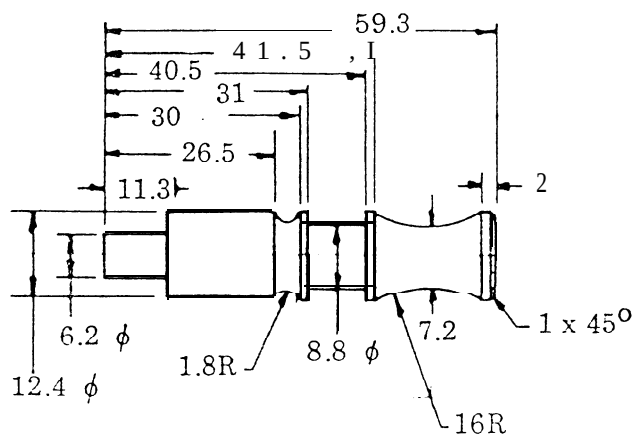
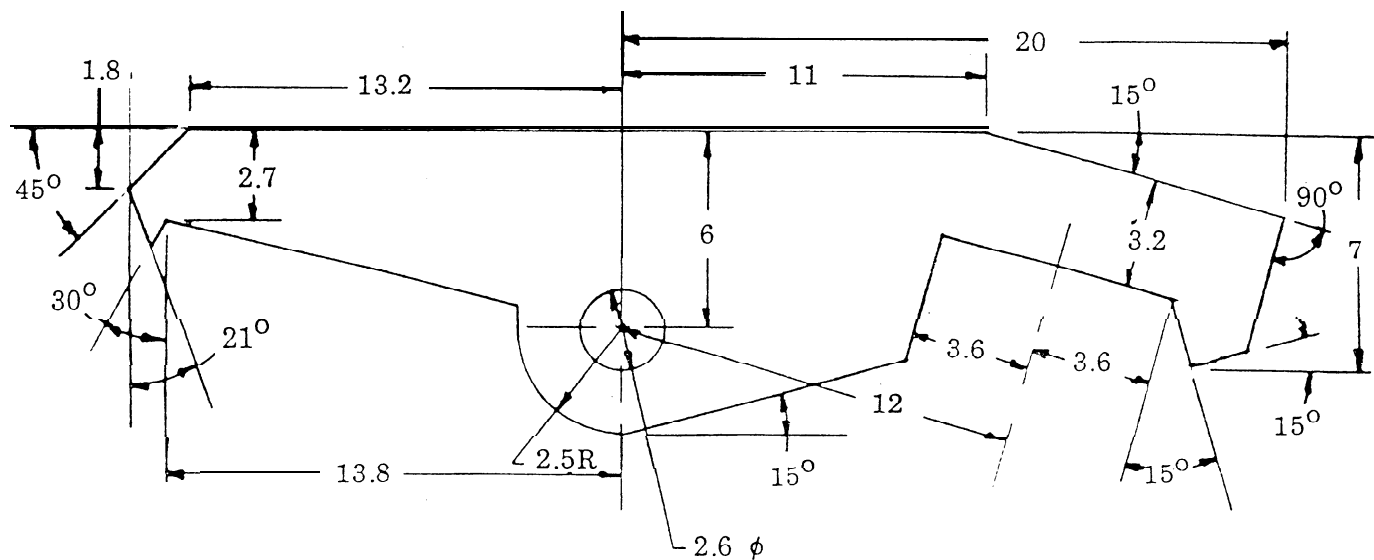
SUGGESTED STEN MANUFACTURING MODIFICATIONS

- Select suitable lightwall steel tubing which is commercially available. For example, a fence post pipe (galvanized) is 38.5mm OD and 35.0mm ID, most suitable for use as a receiver.
- Eliminate barrel sleeve.
- Weld barrel bushing into the front end of the receiver for simple, permanent assembly.
- Turn barrel blank OD (outside diameter) without any shoulder, fit the barrel in the bushing by sliding fit.
- Fasten the barrel in the bushing by two roll pins of 3/16" diameter, or equivalent.
- Turn the bolt OD to fit the receiver ID.
- The external portion of the cocking handle (sticking out of the receiver) may be a straight 8.8mm OD, the same as the inside.
- The trigger housing cover acts only as a guard against dirt entering the trigger assembly. This cover can be eliminated or made from plastic.
- All pins can be roll pins of standard commercial size, or pieces of drill rod.
- All springs can be of a standard commercial size.
- Trigger material may be aluminum or plastic, side tabs may be replaced by spacers or washers to keep the trigger located neutrally.
- 1-1/4" diameter nominal size galvanized pipe, schedule 40 is suitable for a modified receiver:
OD: 42.2mm
ID: 35.05mm
Wall thickness: 3.55mm

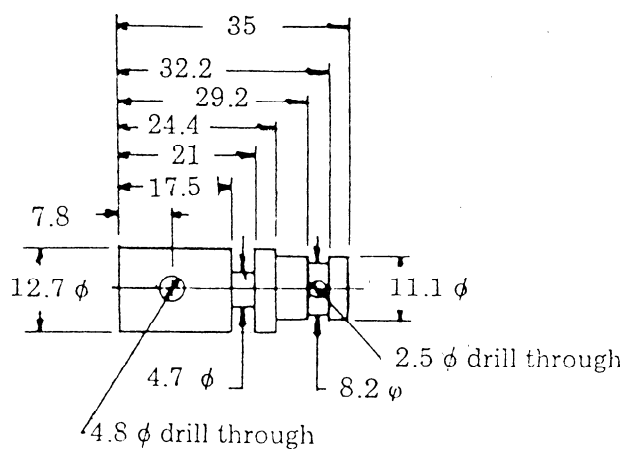
Note: A 1" galvanized pipe fits loosely inside a 1-1/4" pipe and can be welded as a filler-spacer where needed,

Extractor
Scale: 4.5 : 1

Material: AISI 1040 or equiv., stock 4.7 wide
harden to: Rc 48-52



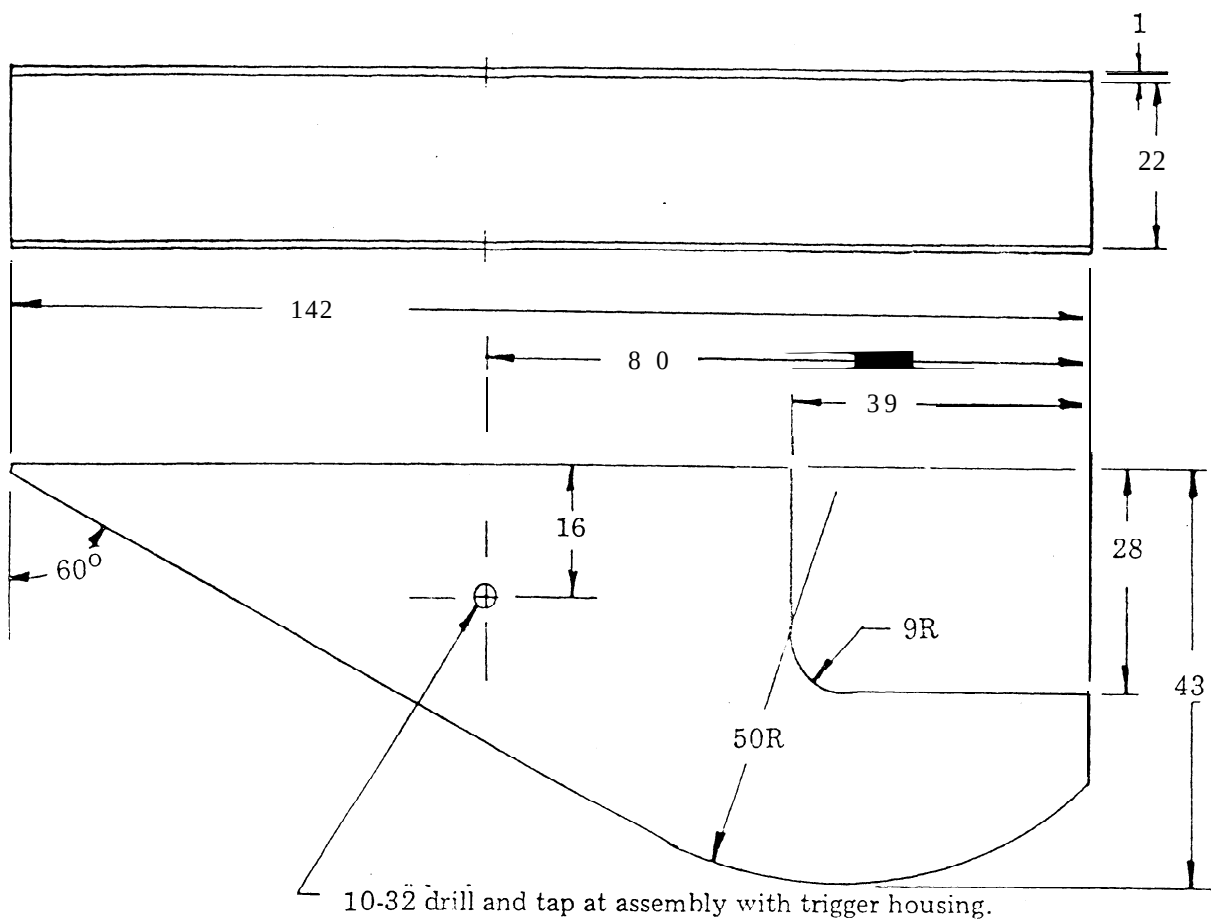
Bolt handle
Scale: .87:1
Material : mild steel
Heat treat: none



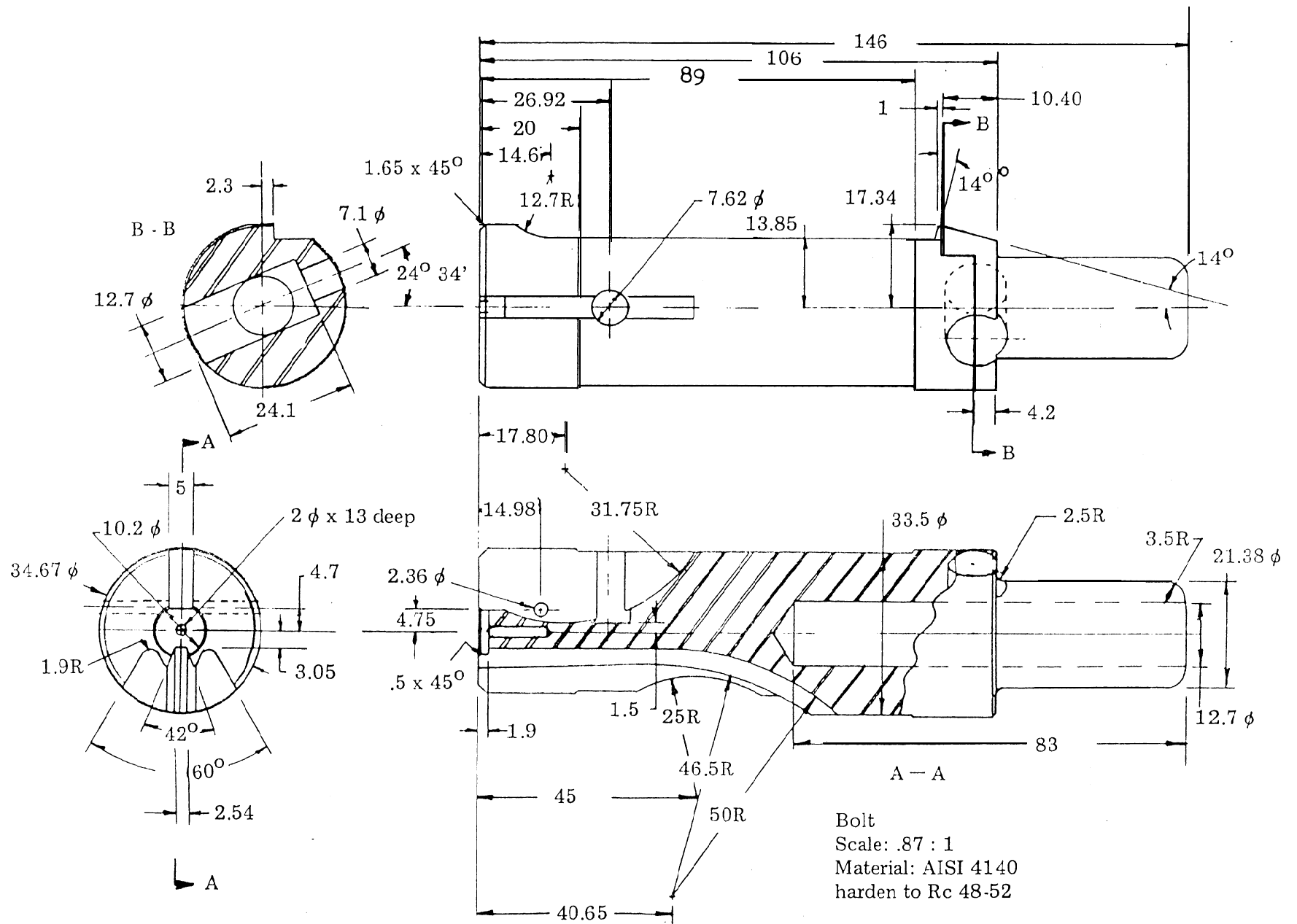
Selector
Scale: .87:1
Material: mild steel
Heat treat : none

Trigger housing cover
Material: 1mm stock, formed
Required: 1

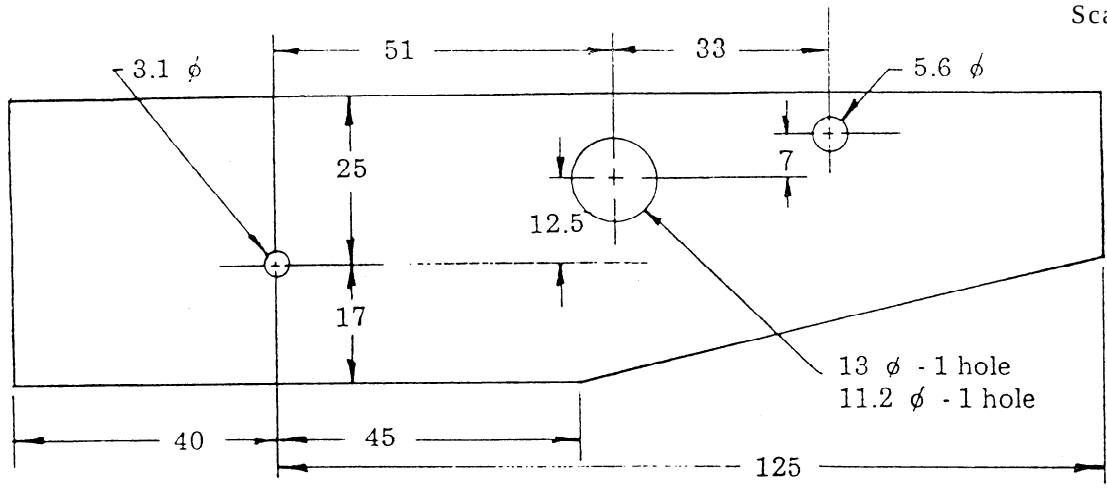
Scale: 1:1



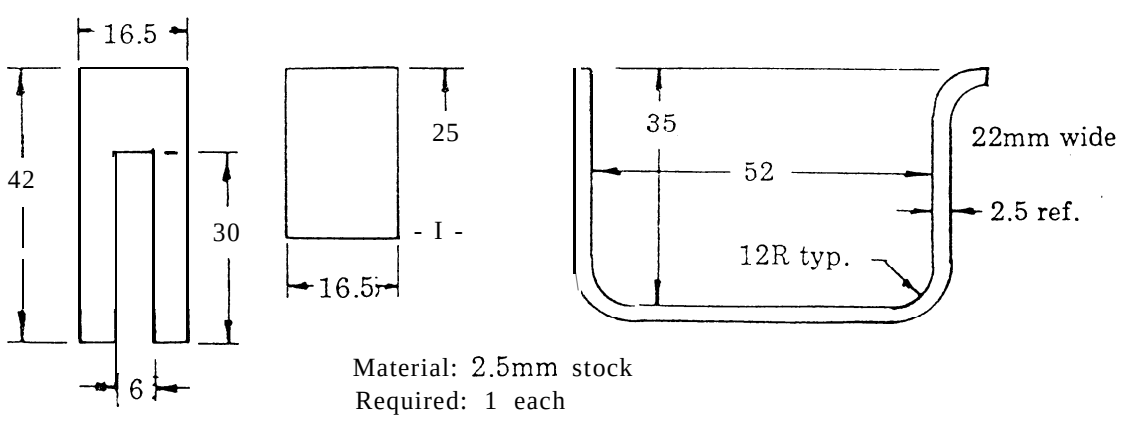
All Sten screws are 10-32 thread, round head type. Trigger housing screws (2) are 13mm long.



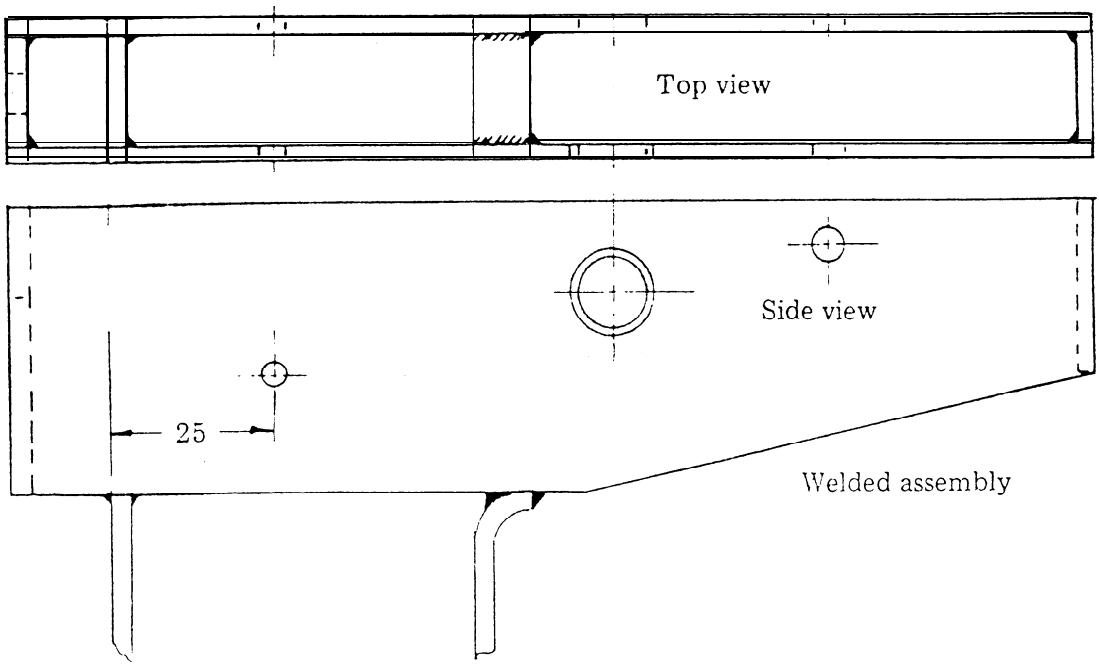
Trigger housing
Scale: .87:1

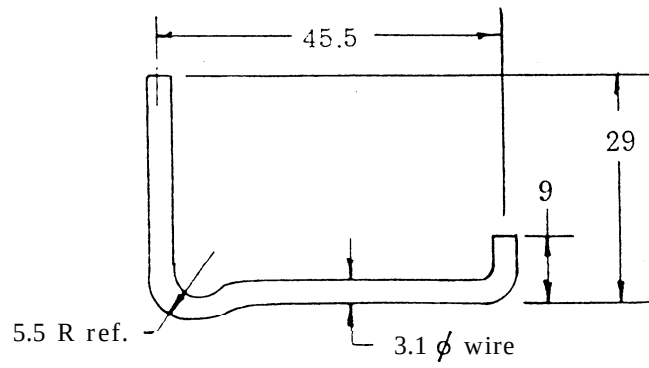


Material: 2.5mm stock
Required: 2



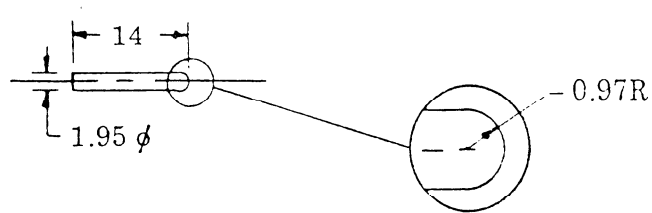
Material: 2.5mm stock
Required: 1 each





Trigger pin

Note: Trigger pin may be substituted by spring pin 3.1 ϕ by 26 long.



Firing pin
Material: Drill rod
Harden to Rc 50

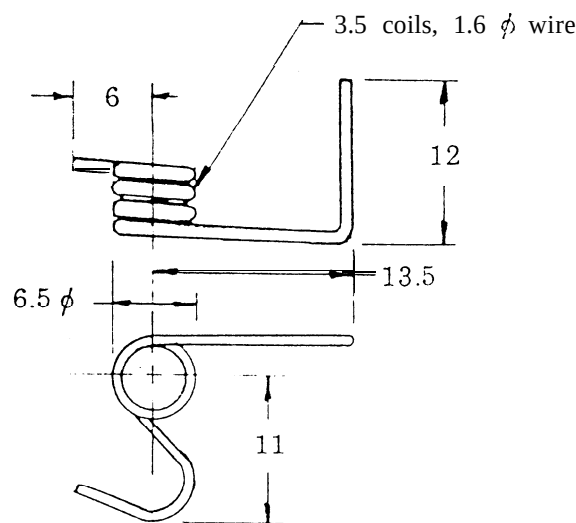
PINS (Spring pins)

USE	DIAMETER	LENGTH
Extractor	2.5	25
Sear	5.5	24

SPRINGS

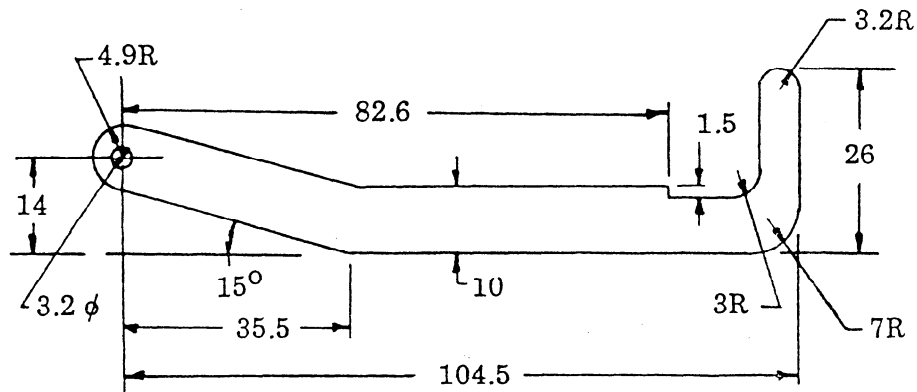
USE	Wire dia.	Coil OD	Free length	Number of coils	Coil ends	SUBSTITUTE”:
Extractor	1	7.1	12	5.5	Sq.	LC-040C-4
Magazine latch	1	8.7	15.5	6	Gr.	LC-040C-6
Closing	1.6	26.5	245	17	Sq.	
Trigger	0.7	4.6	57	72	Extension spring loops	LE-026B-7 or LE-026C-8
Selector	0.45	4.6	14	8	Gr.	LC-018B-6
Barrel sleeve latch	1	8.7	35	15	Sq.	

Sear spring, formed
substitute LT-059K-1-R



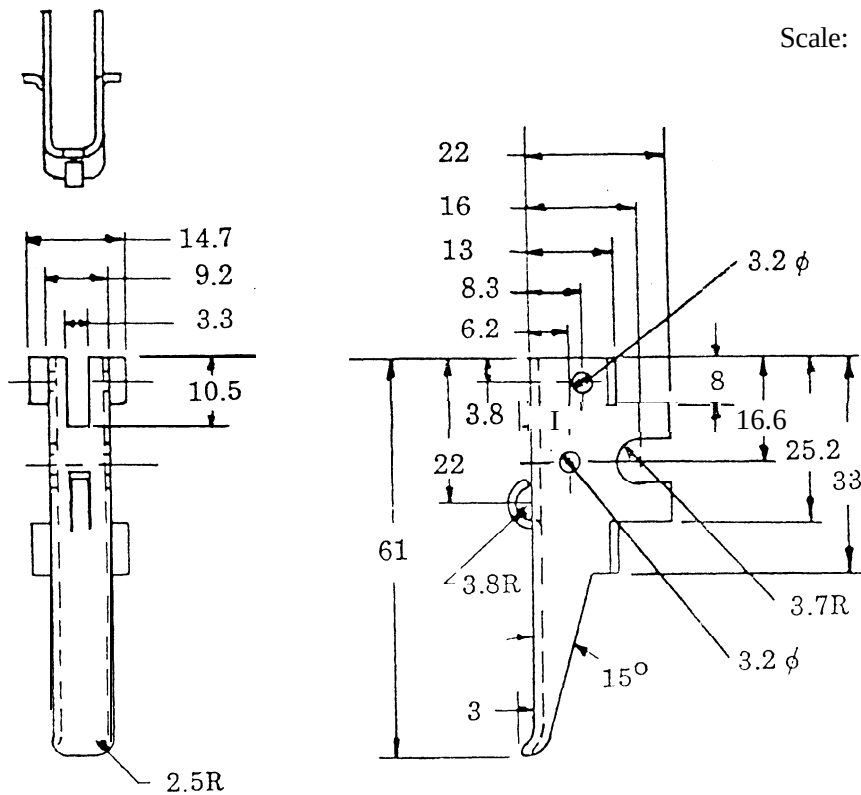
*Lee Spring Company, 30 Main St., Brooklyn, NY 11201; catalog No. 112/1970

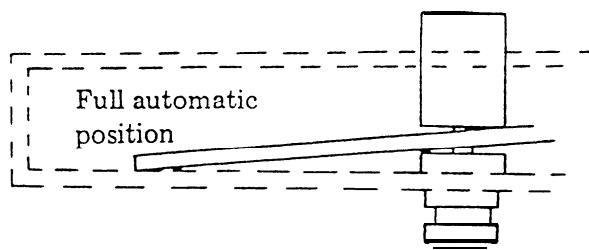
Scale: .87 : 1



Trigger
 Material: AISI 1010 or equivalent,,
 1.6mm stock
 Heat treat: none

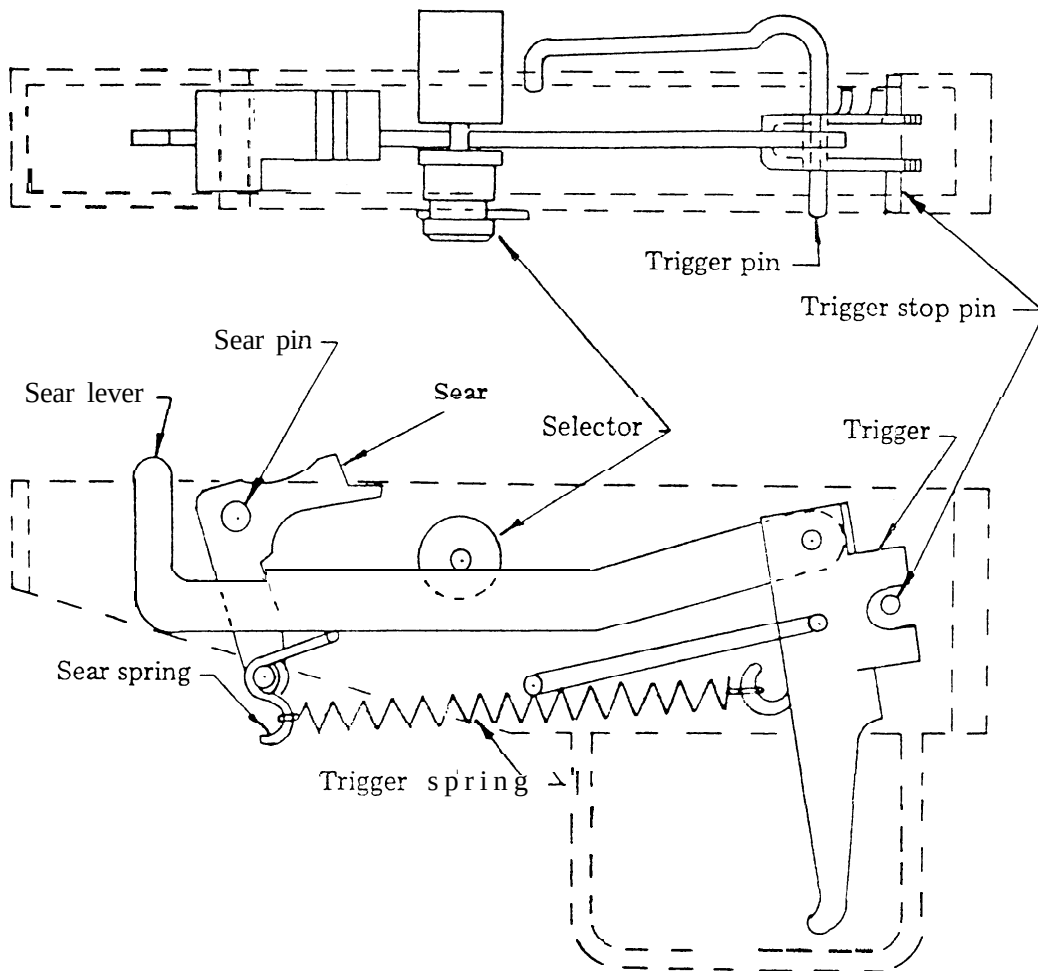
Scale: .87 : 1



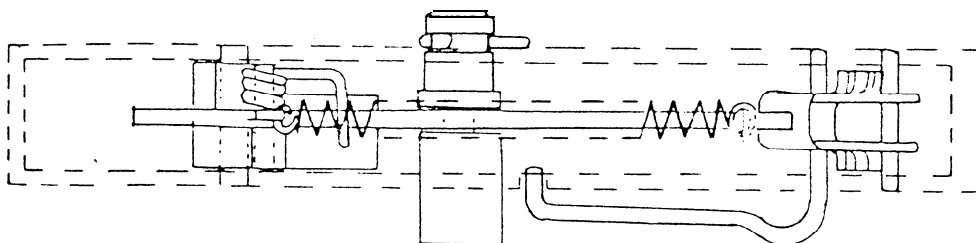


Top view

Trigger assembly

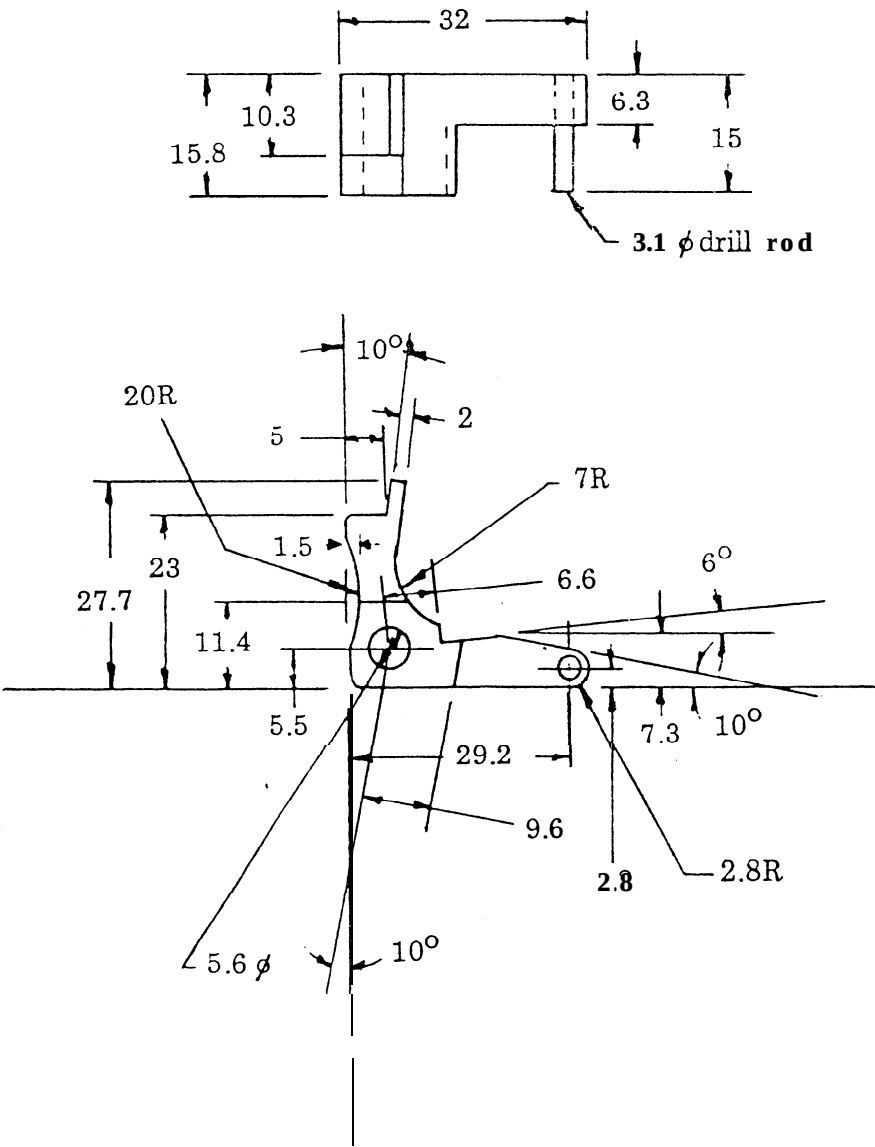


Bottom view

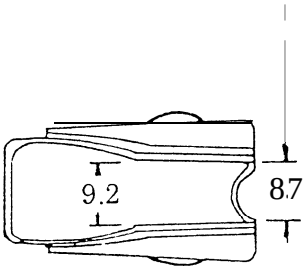


Sear
Material: AISI 4140 or equivalent
Harden to Rc 55

Scale: 1:1

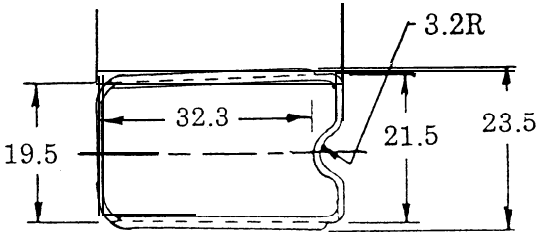
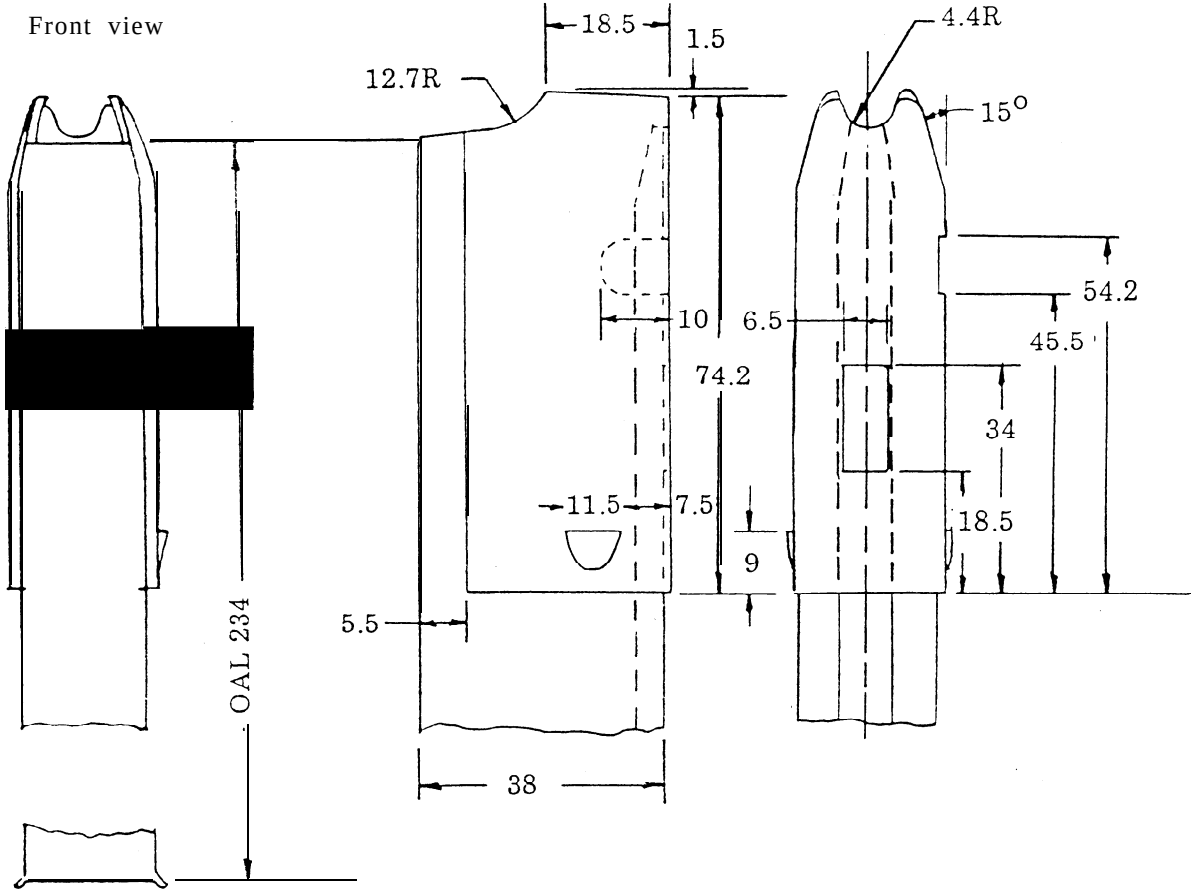


Top view



Magazine
Material: 1mm steel stock

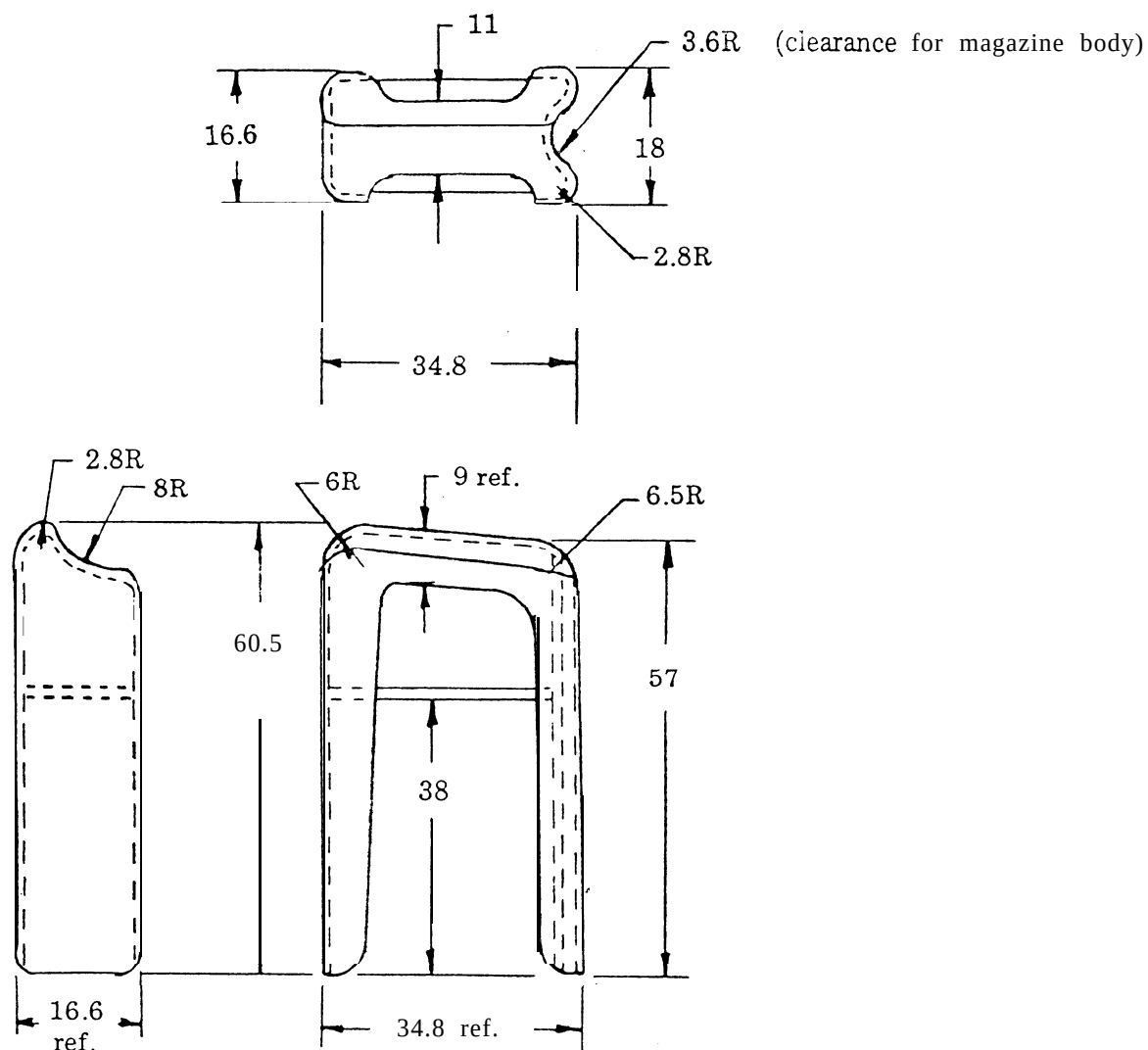
Rear view



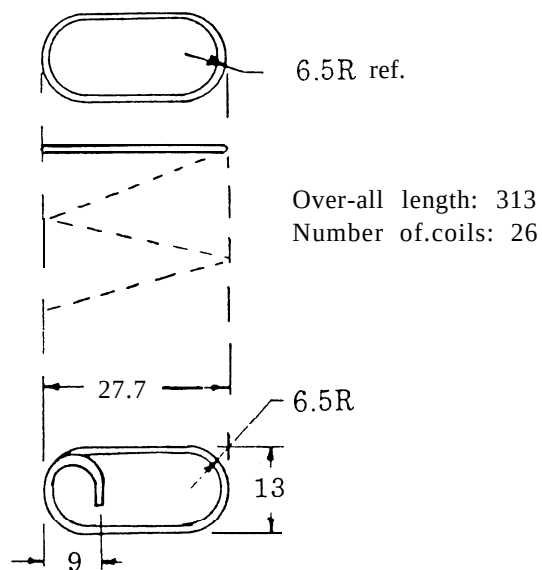
Bottom view

Magazine follower
Material: low carbon steel

Scale: 1:1



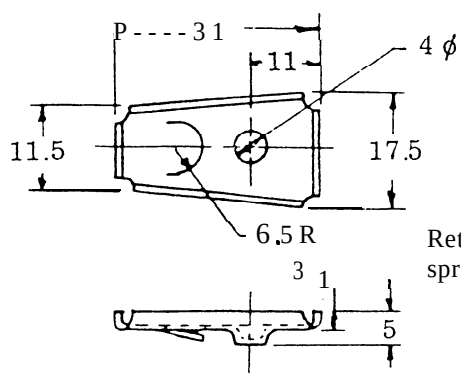
Note: The magazine follower is a complex stamping made on a progressive die. To make a follower in a simpler way is to follow the Degtyarev DP LMG approach — using a dummy round as the last one in the magazine. Thus a simple, flat follower with a dummy round soldered and/or screwed to it will replace a complicated stamping.



Magazine spring

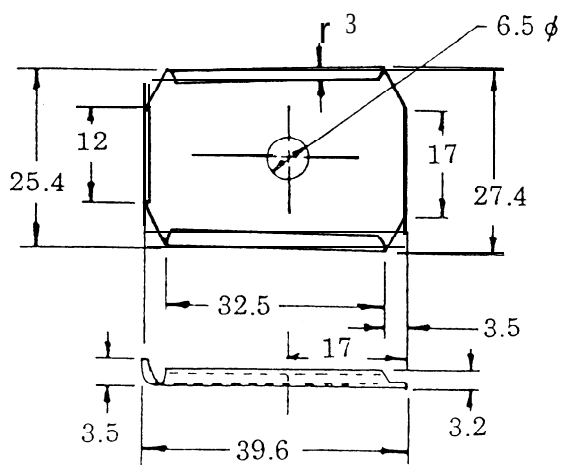
Material: Music wire 1.5mm dia.

Scale: .87:1



Magazine bottom retainer

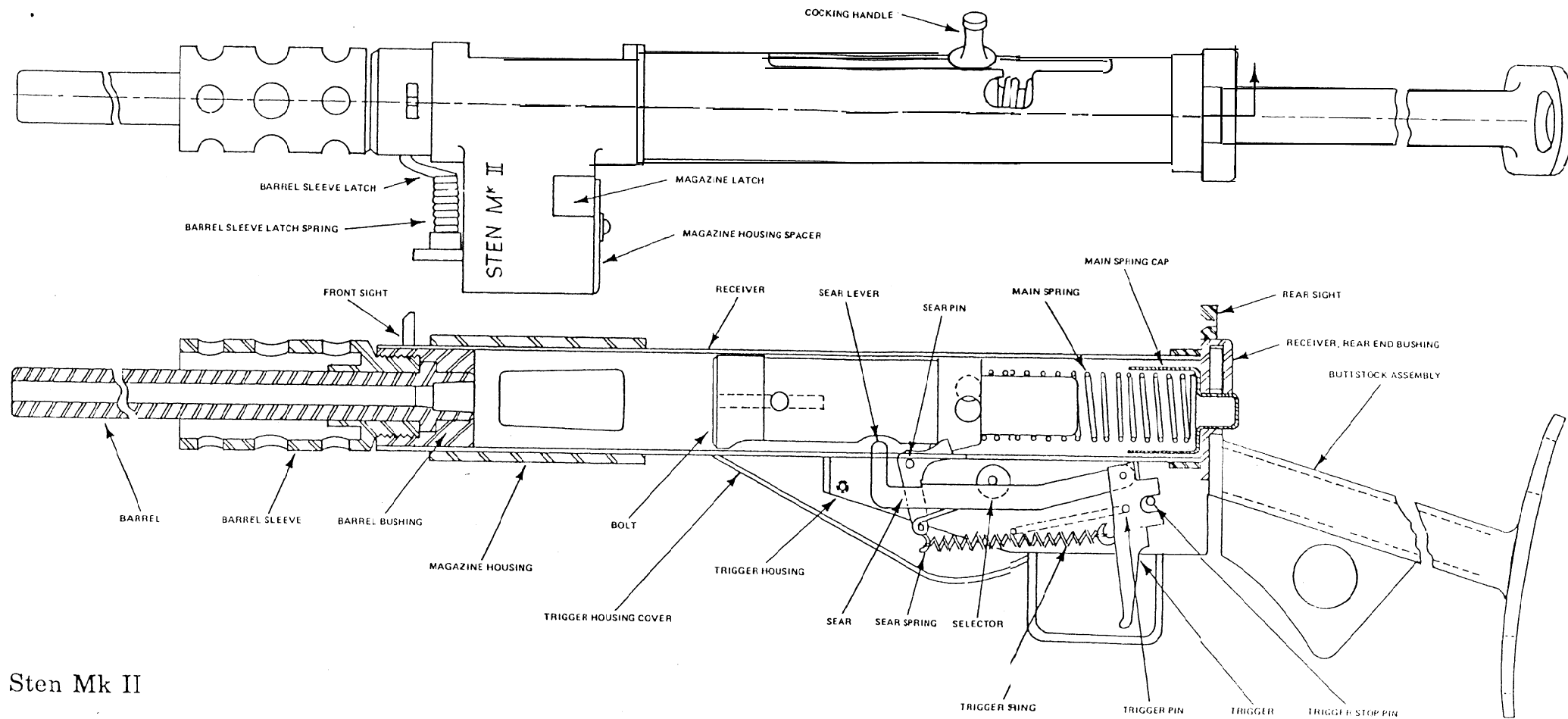
Material: 1mm mild steel



Magazine bottom plate

Material: 1mm mild steel

Scale: .87: 1



Sten Mk II