

Track Tools

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Applicability

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1.0	24 Sep 20	All	Initial version.

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1 General

1.1 Scope

The primary aim of this guideline is to specify the minimum design requirements that will reduce the risk of tool failure leading to personal injuries. Tools which undertake high impact or high load actions can release energy as a hazard when they fail. Correct design and manufacture are specified to reduce the likelihood of these failures occurring during the tool lifetime.

Tools detailed in this guideline shall comply with these requirements.

Tooling not listed in this document does not have any ARTC specific requirements.

1.2 Document Owner

The General Manager Technical Standards is the document owner. Queries should be directed to standards@artc.com.au in the first instance.

2 Reference

The following documents support this procedure:

- AS 1085.1 – Railway Track Material – Steel Rails
- AS 1442 – Carbon steels and carbon manganese steels – hot rolled bars and semifinished products
- AS 1448 – Carbon steels and carbon manganese steels – forgings
- AS 1444 – Wrought alloy steels - Standard, hardenability (H) series and hardened and tempered to designated mechanical properties
- AS 3797.1 – Hand hammers – General Arrangements

3 Tools

3.1 Claw Wedges

This section details the manufacturing specification for claw wedges and dodgers.

3.1.1 Material

AS 1448, K 1060 or K 1055 or K1045.

3.1.2 Manufacture

Claw wedges shall be cleanly forged. All fins and flashes shall be dressed to surface level.

3.1.3 Heat Treatment

The whole claw wedge shall be hardened and tempered to a hardness of 300 to 340 HV.

3.1.4 Dimensions

The dimensions and tolerances detailed in Figure 1 are those that are critical. All other dimensional tolerances are secondary and should be manufactured to $\pm 5\text{mm}$.

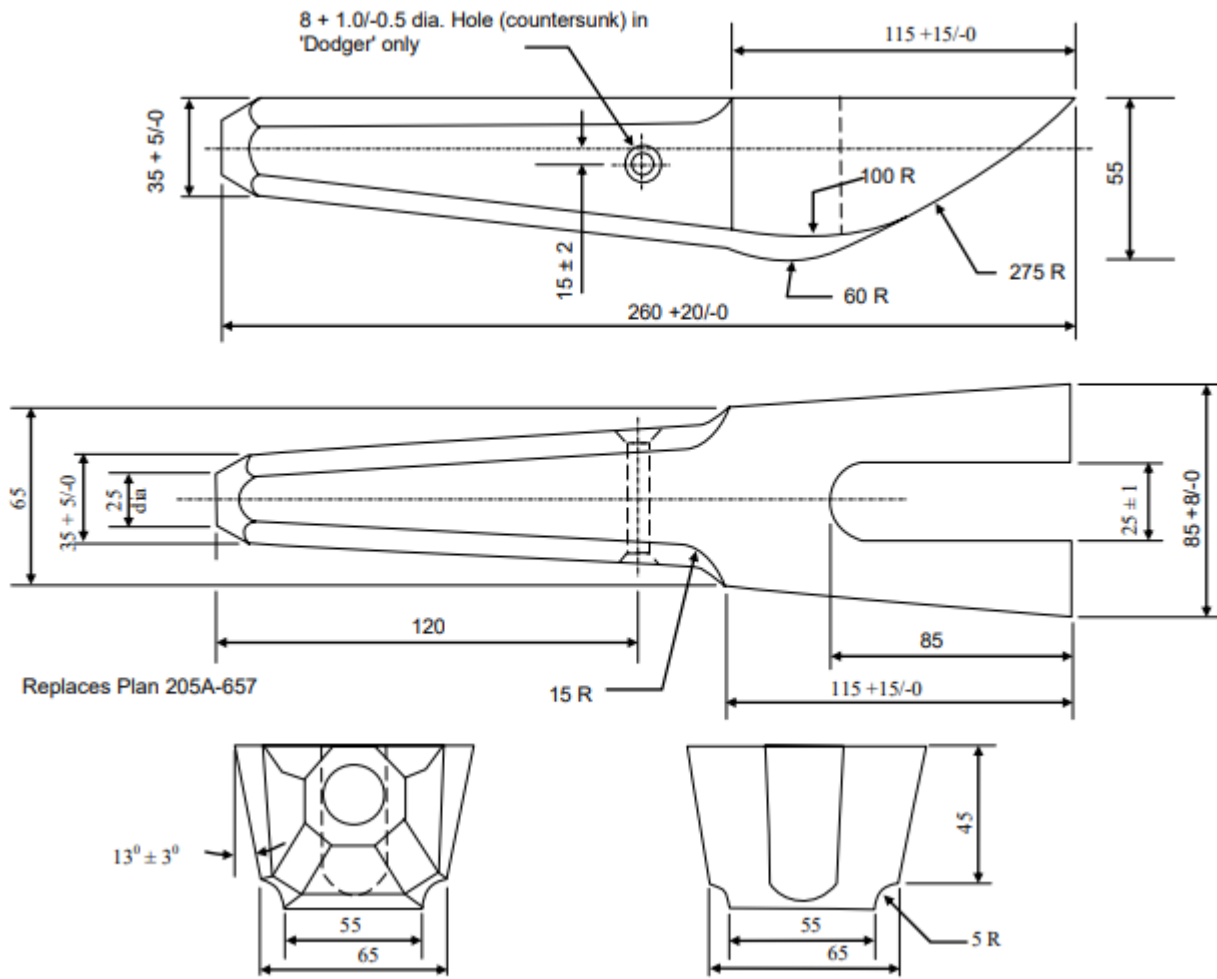


Figure 1 – Claw wedge

3.2 Rail Tongs

This section details the manufacturing specification for rail tongs

3.2.1 Material

AS 1448, K 1060 or K 1055.

3.2.2 Manufacture

Tongs shall be cleanly forged. All fins and flashes shall be dressed to surface level.

3.2.3 Heat Treatment

Normalised condition.

3.2.4 Dimensions

The dimensions are detailed in Figure 2.

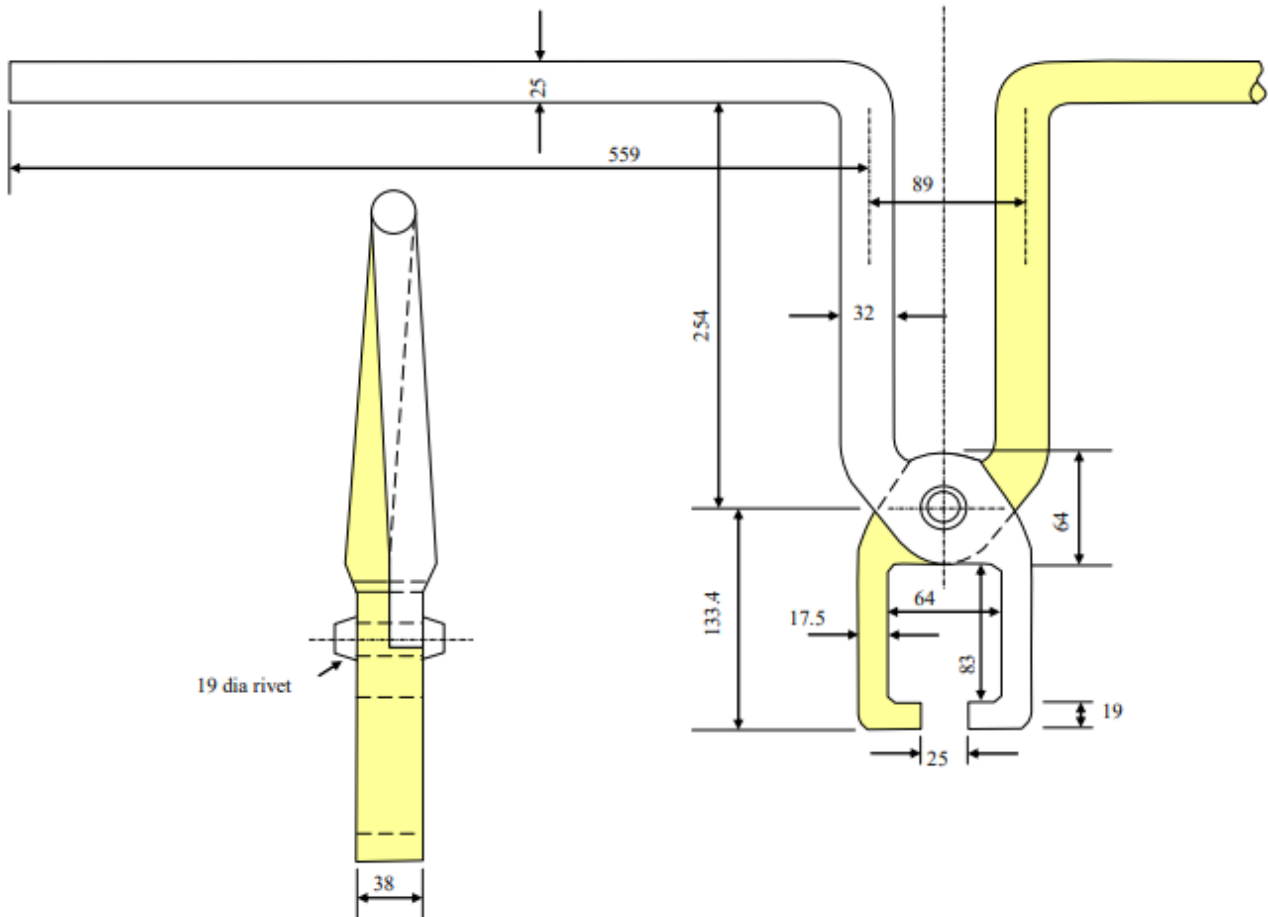


Figure 2 – Rail Tong

3.3 Rail Podgers

This section details the manufacturing specification for rail podgers for 45 kg/m to 53 kg/m rails.

3.3.1 Material

AS1448, K1055

3.3.2 Manufacture

Podgers shall be cleanly forged. All fins and flashes shall be dressed to surface level.

Bend podger from straight cone 267mm long.

3.3.3 Heat Treatment

Heat Treatment: Fine Grain normalise

3.3.4 Dimensions

The dimensions are detailed in Figure 3.

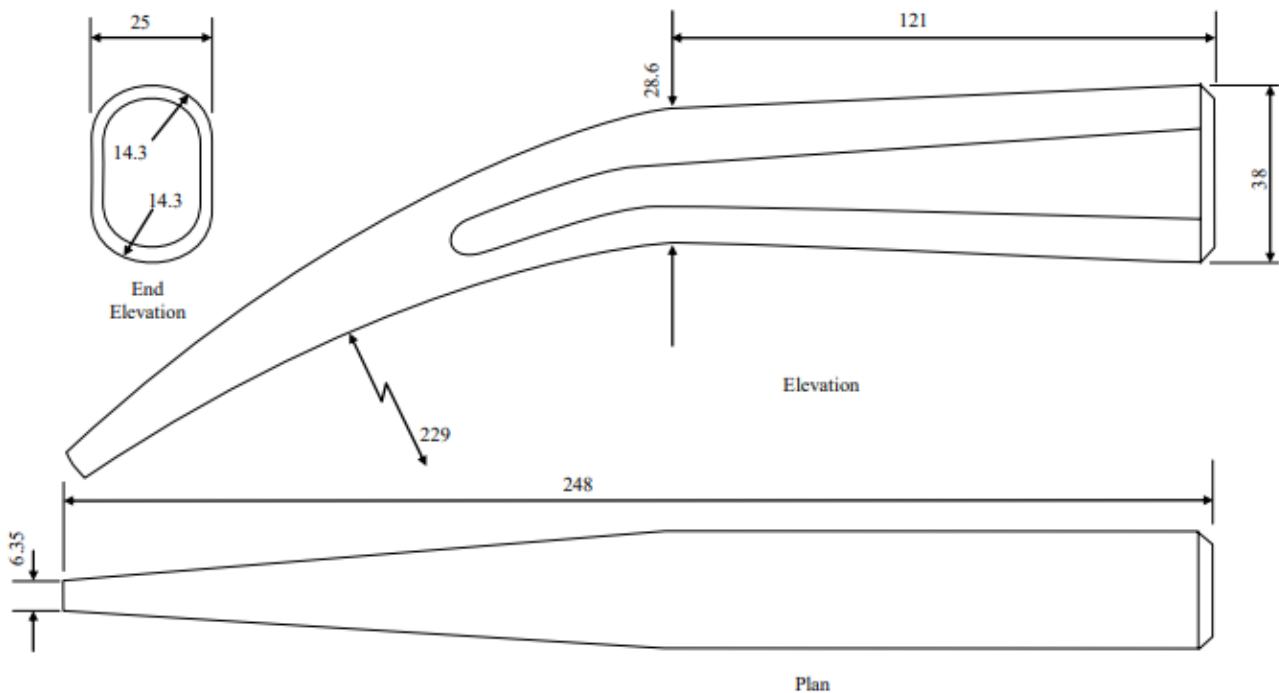


Figure 3 – Rail Podger

3.4 Cold Set

This section details the manufacturing specification for a Cold Set.

3.4.1 Material

AS1448, K1055

3.4.2 Manufacture

Cold sets shall be cleanly forged. All fins and flashes shall be dressed to surface level.

3.4.3 Heat Treatment

Heat treated to 470 to 570 HV (Vickers) on cutting edge extending 70mm towards top.

Striking face to be 200 to 230 HV.

3.4.4 Dimensions

The dimensions are detailed in Figure 4.

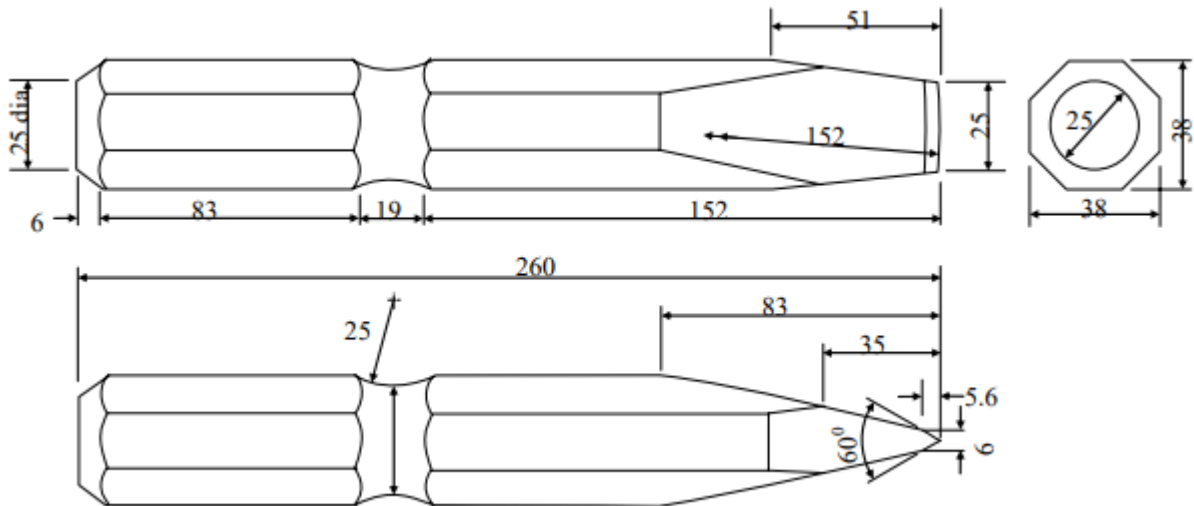


Figure 4 – Cold Set

3.5 Rail Centre Punch

This section details the manufacturing specification for a Centre Punch.

3.5.1 Material

AS 1448, K 1055.

3.5.2 Manufacture

Centre punch shall be cleanly forged. All fins and flashes shall be dressed to surface level.

3.5.3 Heat Treatment

Heat treated to 470 to 570 HV (Vickers) on cutting edge extending 70mm towards top.

Striking face to be 200 to 230 HV.

3.5.4 Dimensions

The dimensions are detailed in Figure 5.

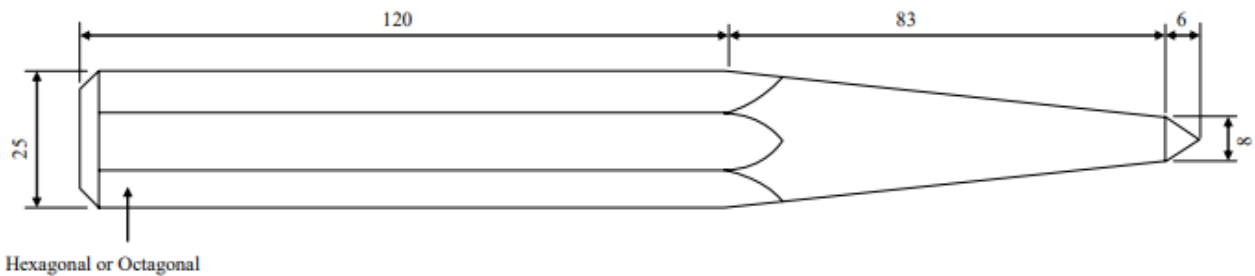


Figure 5 – Centre Punch

3.6 Welders' Hot Set

This section details the manufacturing specification for a Welders' Hot Set.

3.6.1 Material

Steel to AS 1442 K1055.

3.6.2 Manufacture

Hot set shall be cleanly forged. All fins and flashed shall be dressed to surface level.

3.6.3 Heat Treatment

Heat treated to 470 to 570 HV (Vickers) on cutting edge, extending 70mm towards Handle Eye.

Striking face to be 200 to 230 HV.

3.6.4 Dimensions

The dimensions are detailed in Figure 6.

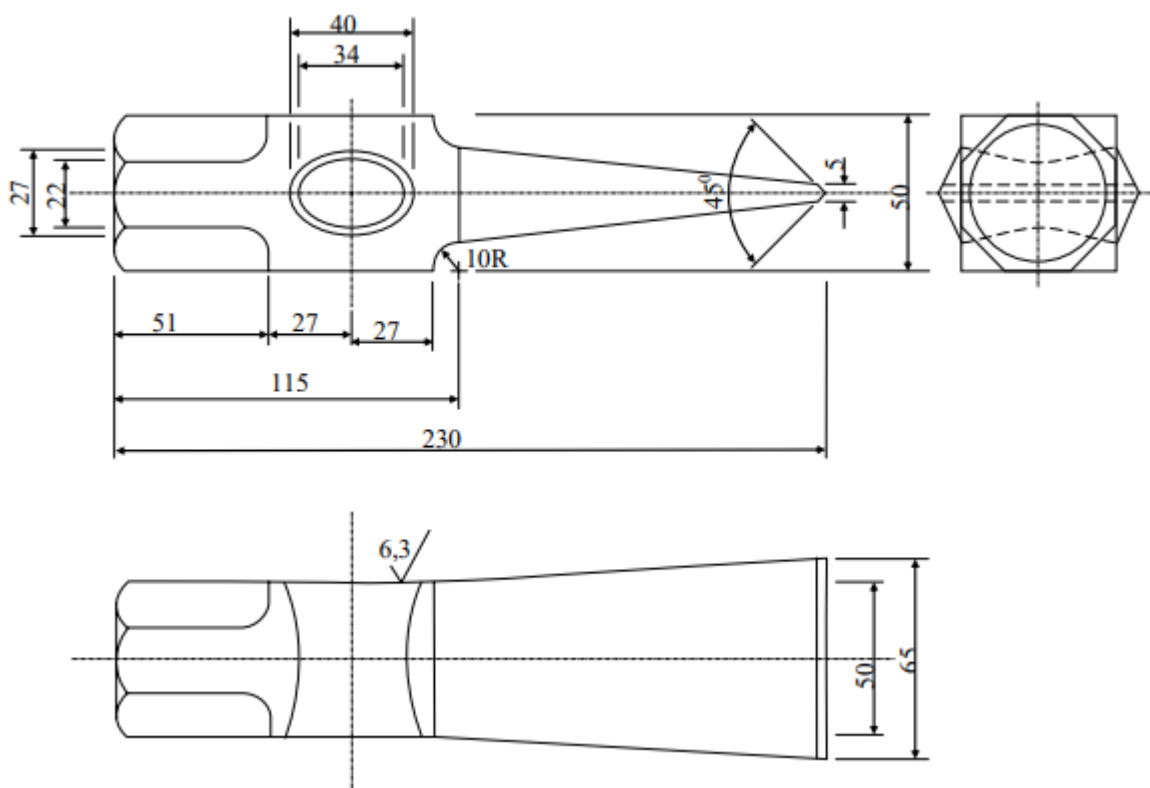


Figure 6 – Welder's Hot Set

3.7 Spiking Hammer

This section details the manufacturing specification for Spiking Hammers.

3.7.1 Material

Steel to AS 1442, K1055B, K1045 or BHP – XK15B35.

3.7.2 Manufacture

Spiking hammers shall be cleanly forged to conform to AS 3797.1. All fins and flashes shall be dressed to surface level.

3.7.3 Heat Treatment

Hardness on faces to be 470 TO 560 HV on striking face, extending 70mm towards Handle Eye.

3.7.4 Dimensions

The dimensions are detailed in Figure 7.

Tolerances – eye dimensions: ± 1 mm, length and width ± 3 mm.

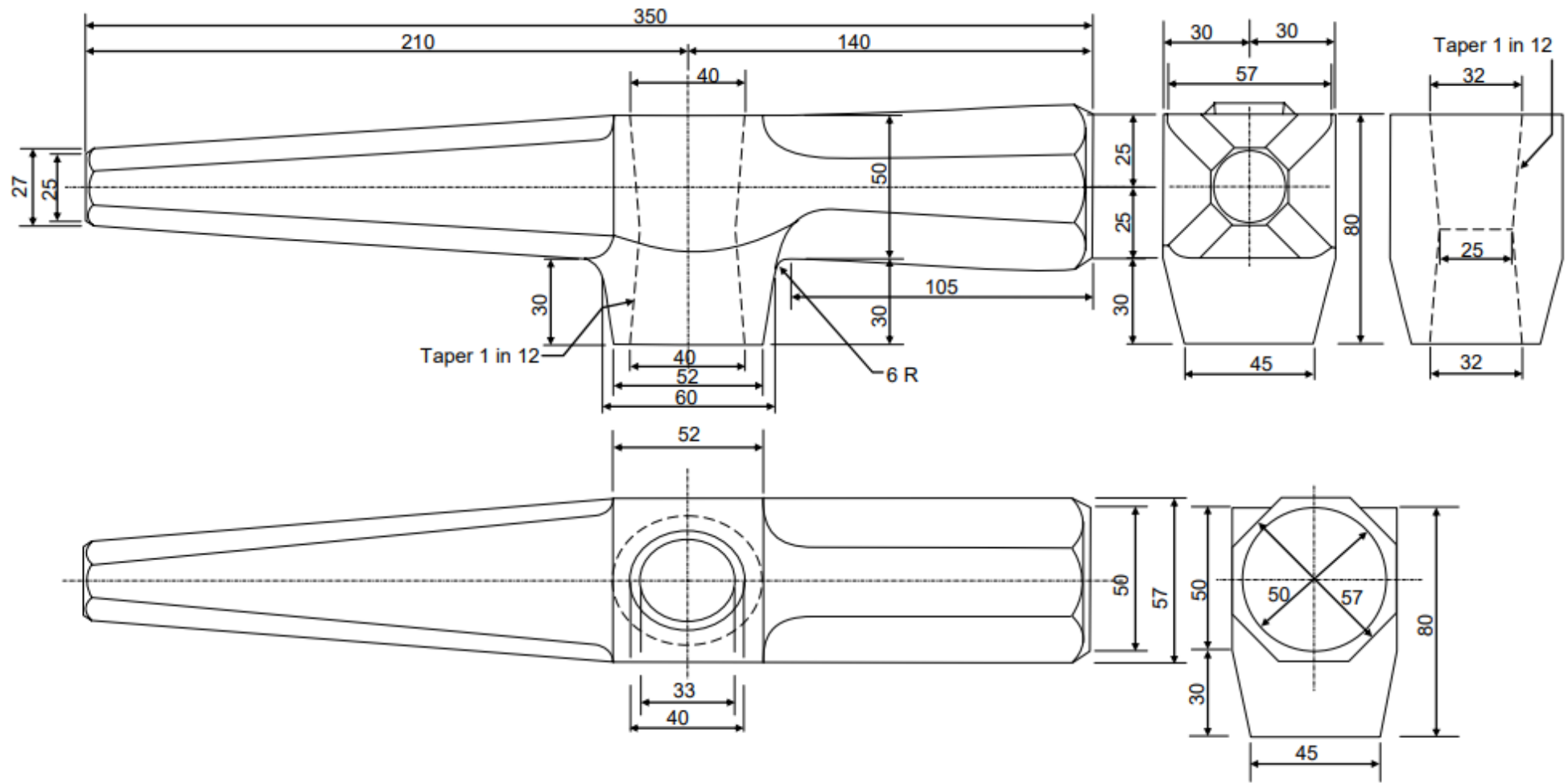


Figure 7 – Spiking Hammer

3.8 Sleeper Tongs

This section details the manufacturing specification for Sleeper Tongs.

3.8.1 Material

Tongs shall be cleanly forged. All fins and flashes shall be dressed to surface level.

3.8.2 Heat Treatment

Fine grain normalise.

3.8.3 Dimensions

The dimensions are detailed in Figure 9.

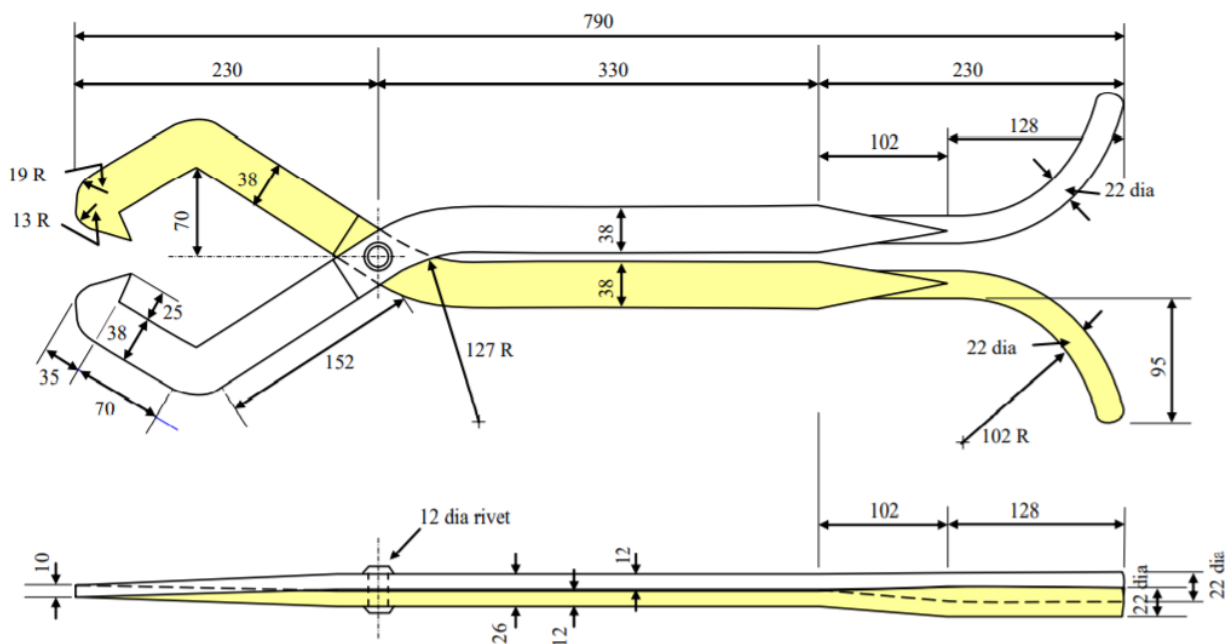


Figure 9 – Sleeper Tong

3.9 Beater Pick

This section details the manufacturing specification for Beater Picks.

3.9.1 Material

Steel to AS1442 or AS 1444, K1055B. Cast steel grade 4150/60.

3.9.2 Manufacture

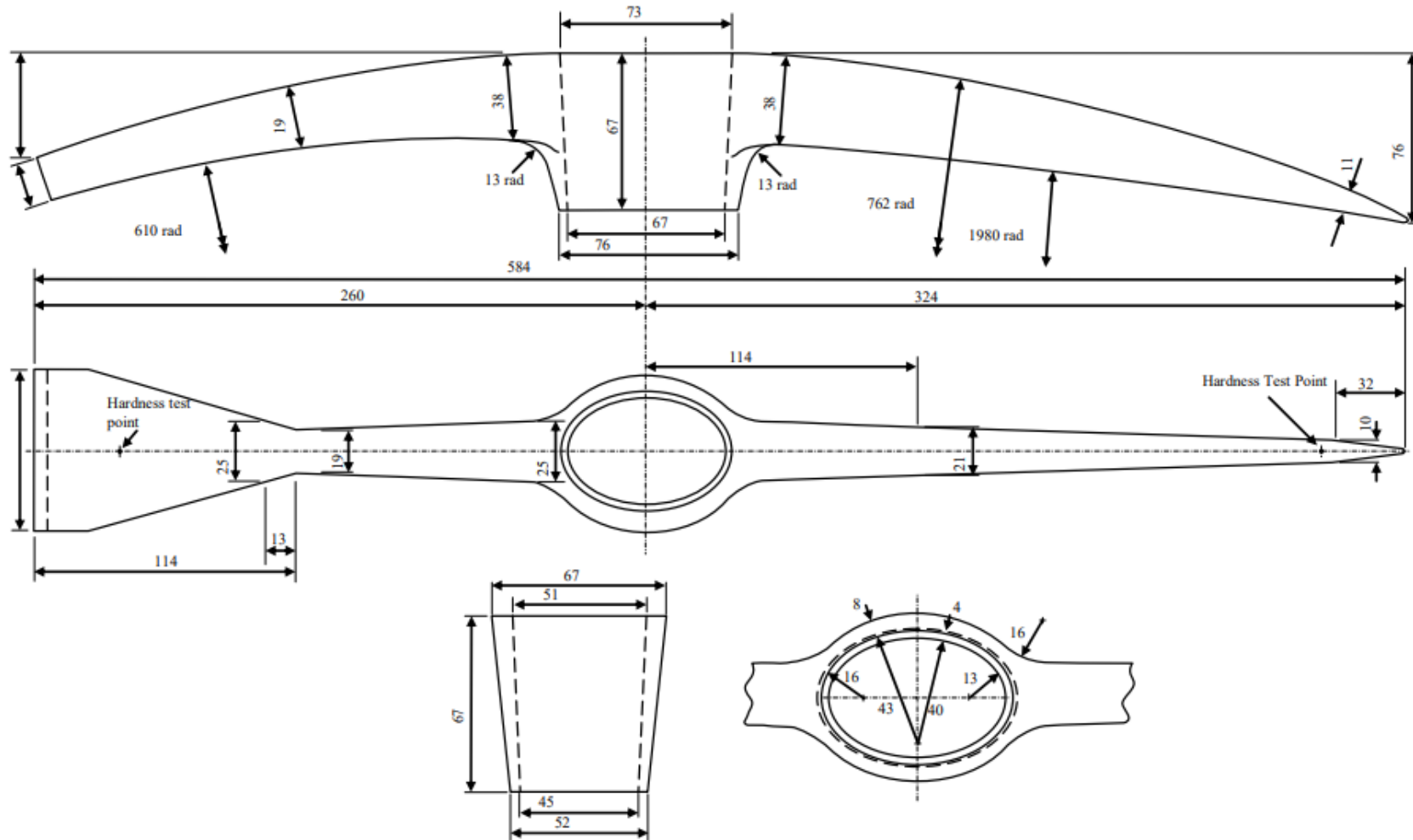
Picks shall be cleanly forged to conform to AS 3797.1. All fins and flashes shall be dress to surface level.

3.9.3 Heat Treatment

Hardness 425 to 500 HV. Test points 38mm from each end.

3.9.4 Dimensions

The dimensions are detailed in Figure 10. Tolerance 2% on length, 5% on cross section.



3.10 Draw Wedge

This section details the manufacturing specification for Draw Wedges.

3.10.1 Material

Steel to AS1442, K1055B.

3.10.2 Manufacture

Wedges shall be cleanly forged. All fins and flashes shall be dressed to surface level.

3.10.3 Heat Treatment

Hardness 250HB \pm 20.

3.10.4 Dimension

The dimensions are detailed in Figure 11.

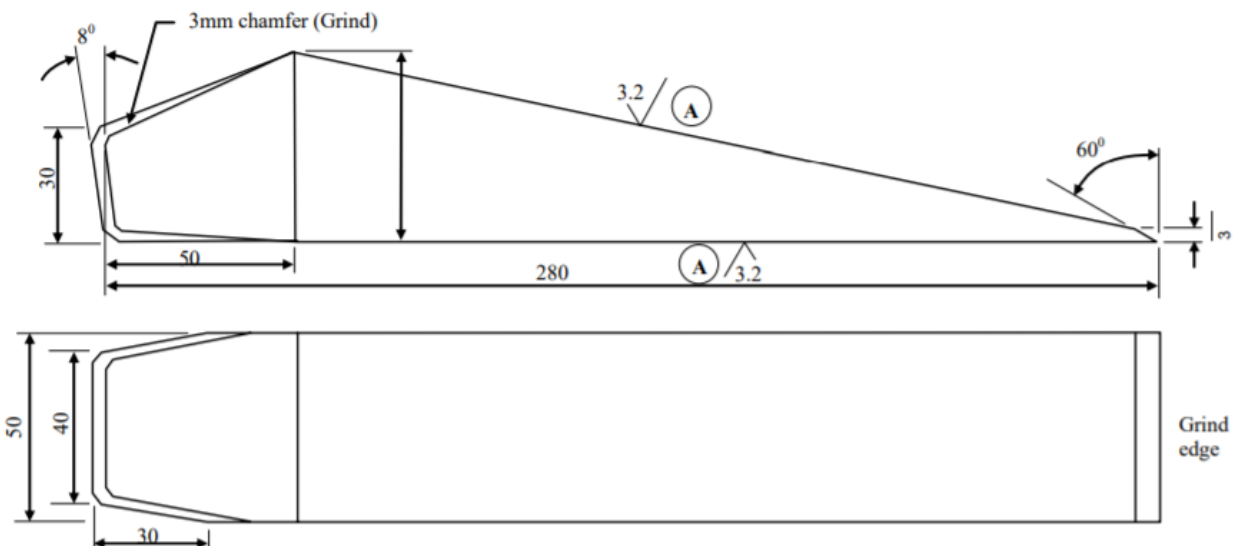


Figure 11 Draw Wedge

3.11 Claw Bar

This section details the manufacturing specification for Claw Bars.

3.11.1 Material

AS1448 K1060, K1055 or K1045.

3.11.2 Manufacture

Utility claw bars shall be cleanly forged as a single unit. All fins and flashes shall be dressed to surface level.

3.11.3 Heat Treatment

Utility claw bars shall be hardened and tempered. Hardness at ends shall be 300 – 340 HV.

3.11.4 Weight

10kg.

3.11.5 Dimensions

The dimensions are detailed in Figure 12.

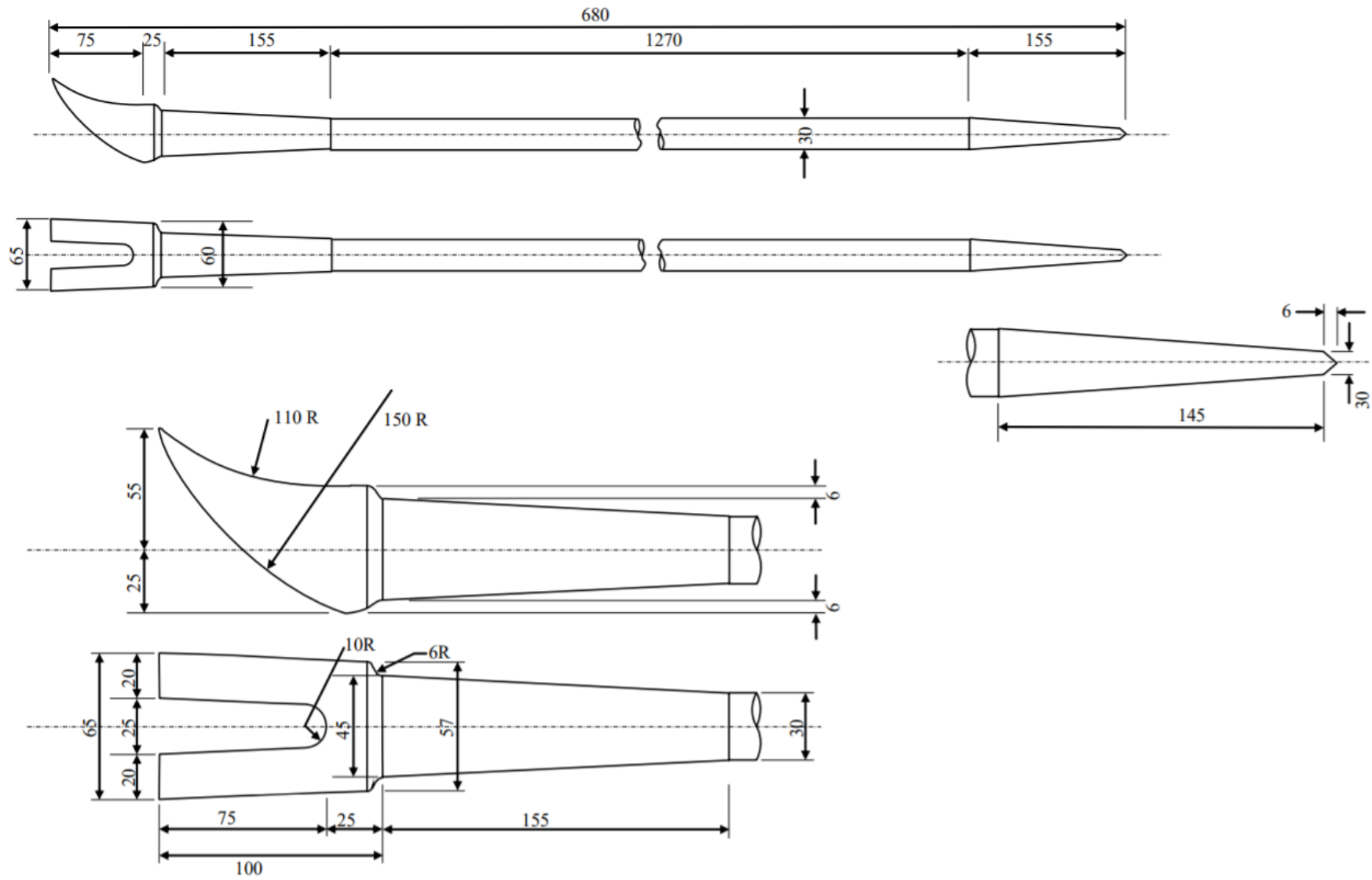


Figure 12 – Claw Bar

3.12 Sledge Hammers

This section details the manufacturing specification for a Sledge Hammer.

3.12.1 Material

Hammer Head

Hammers will be required to be normalised through heat treatment to a maximum of 20HRC (217HV).

Normalising is a process of heat-treating steel to lower the hardness of a product. Normalising refines the grain structure and produces more uniform mechanical properties. This design will lead to a hammer that will mushroom and distort with use.

Handles

Handles may be fibreglass or timber.

3.12.2 Manufacture

Hammers are to be manufactured using specifications in Table 1.

All hammers are to be stamped with manufacturer and batch number. Hammers are to be stamped with SOFT to identify the normalised hammer. Hammer heads are to be stamped with the weight of the head.

3.12.3 Dimensions

Figures 13, 14 and 15 show the hammer head drawings. Specific dimensions for each weight of hammer head are given in Table 1.

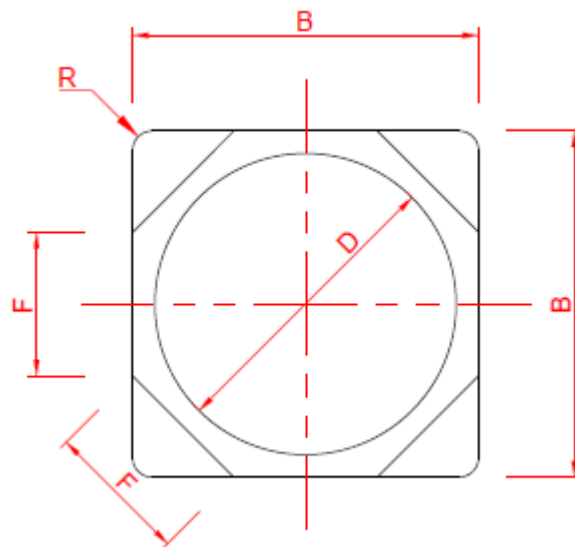


Figure 13 – Face of hammer head

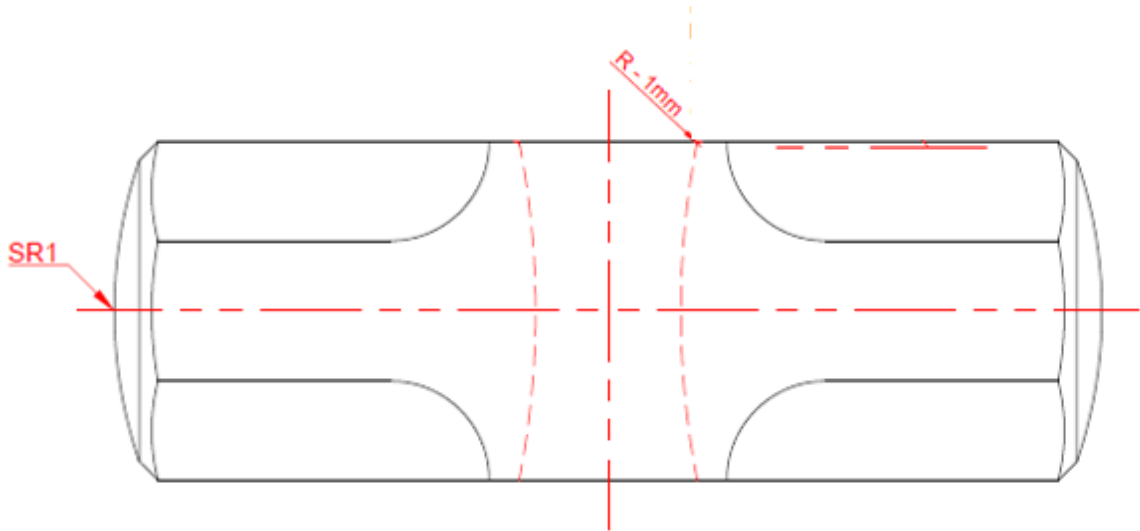


Figure 14 – Side view of hammer

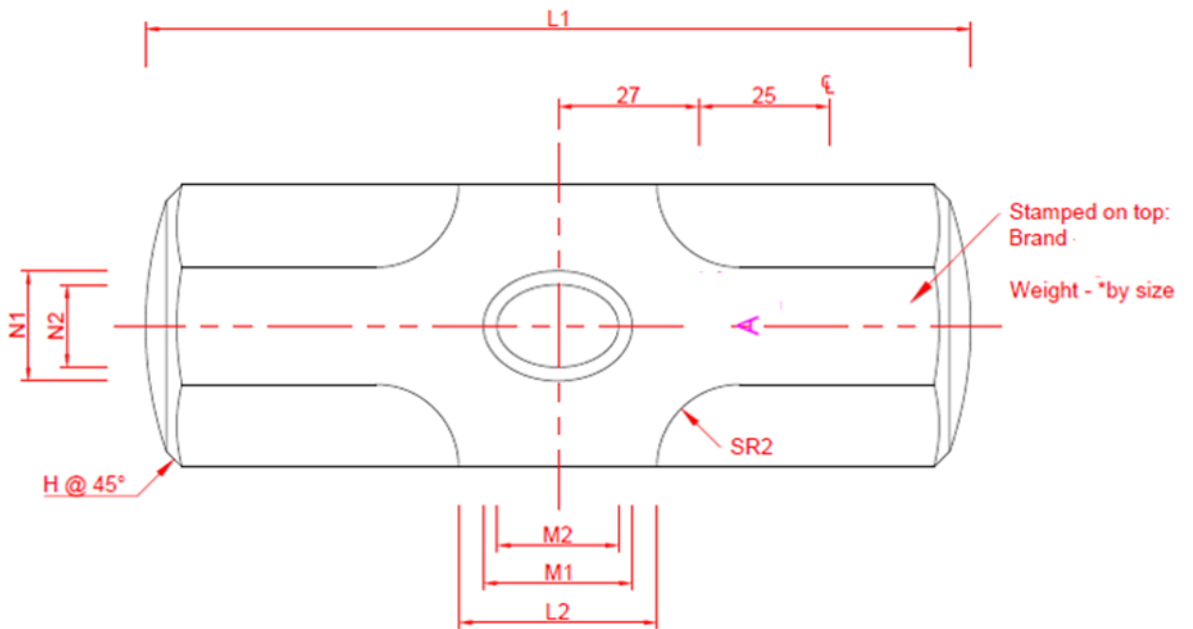


Figure 15 – Top view of hammer which connects to handle

Table 1. Dimensions for normalised hammer heads

Head Weight (lb's)	L1	L2	H	B	F	M1	M2	N1	N2	SR1	SR2	R	D
7	156 – 160	36 – 40	45° (±1°)	52 – 55	21 – 24	32 – 39	35	22 – 29	25	158	16	3	46 – 48
10	178 – 182	52 – 56	45° (±1°)	62 – 65	25 – 28	32 – 44	39	22 - 33	28	180	18	4	56 - 58
14	196 – 200	56 - 60	45° (±1°)	70 - 73	28 - 31	32 – 44	39	22 - 33	28	198	21	5	62 – 64

Note: All dimensions in millimetres unless otherwise specified.