

PAKSITAN STANDARD SPECIFICATIONS FOR KNIFE SECTIONS OF HARVESTING MACHINES

1 SCOPE

- 1.1 This standard specifies material, dimensional and other requirements for knife sections used in harvesting machines.
- 1.2 This standard is related to trade and manufacturing practices prevailing in the country and therefore, permits the purchaser to use his option for selecting the implement to suit his requirements.

2 NORMATIVE REFERENCES

The following standard and handbook contain provisions which, through reference in this text, constitute provisions of PS ---/2018. At the time of publication, the edition indicated was valid. All the normative references listed below are subject to revision, and parties to agreement, based on this part of PS ---/2018 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below;

- i) IS 1650 (1982): Knife sections for harvesting machines.
- ii) Richey, C. B (1961): Agricultural Engineers Handbook – McGraw Hill Book Company, Inc. (Page 204 and 231).

3 DEFINITION

For the purpose of this Pakistan Standard, the following definitions shall apply.

- 3.1 **Knife section:** A triangular metallic piece with serrated edges used to harvest cereal crops and fodders. Knife sections are mounted on the cutter bar of combine harvesters, reapers or fodder harvesters, which oscillate to accomplish harvesting operation. Good design and material quality can ensure its longevity and lower harvest losses.

4 DIMENSIONAL, MATERIAL AND MANUFACTURING REQUIREMENTS

Note: All dimensions are in mm and minimum, except where tolerances are specified.

4.1 Dimensional Requirements

- 4.1.1 The dimensions of knife sections when read in conjunction with Figure 2 shall be as given in Table 1.
- 4.1.2 The serrations if provided may be at the top or at bottom. The dimensions of serrations shall be as given in Figure.3.

Table 1: Dimensions of knife sections

Sr. No.	DESIGNATION	DIMENSION	TOLERANCE
(1)	(2)	(3)	(4)
i)	A	76.2	- 0.2 -0.4
ii)	B	50.8	±0.1
iii)	C	12.7	±0.1
iv)	D	5.5	+ 0.2 - 0.0
v)	E	9.5 minimum	-
vi)	F	9 minimum	-
vii)	G	0.8 minimum	-
viii)	H	11.0	±0.5
ix)	J	12.5 minimum	-
x)	K	31.8	±0.25
xi)	L	65.0	±0.5
xii)	T	2.0 minimum	-
xiii)	α	19°	±1°

4.2 Material Requirements

4.2.1 The knife section shall be manufactured from steel having the following chemical composition or such other composition as shall be agreed to between the supplier and purchaser:

- i) Carbon 0.70 (0.30) to 0.95 percent
- ii) Manganese 0.3 to 0.5 percent or ≥ 1.12
- iii) SAE 1080
- iv) SAE 4150.

4.3 Manufacturing requirements

4.3.1 The knife section shall be straight and ground on the underside.

4.3.2 The cutting face of the knife sections shall be flat or not more than 0.3 mm concave.

4.3.3 The section shall have two holes. The holes may be plain or countersunk.

4.3.4 The blade shall be manufactured by using new material. The hardened zone (see hatched portion in Figure 1) shall have hardness in the range of 48 to 58 HRC (28 HRC for core and 55 HRC for tip) or in other equivalent hardness number.

5 OTHER REQUIREMENTS

5.1 Overall weight of the knife shall be declared by the manufacturer.

6 WORKMANSHIP AND FINISH

6.1 Plain sections shall be ground to a sharp edge and shall be free from burrs. The edges formed by the teeth of serrated sections shall be sharp.

6.2 After heat treatment, the sections shall be cleaned and polish.

6.3 The sections may be given a coat of thin anticorrosive varnish.

6.4 The blade shall be free from cracks, seam, pits, burrs and other visual defects.

7 MARKING AND PACKING

7.1 **Marking**-Each section shall be marked with the following particulars on the upper side of the sections, in the space between two holes:

7.1.1 Manufacturer's name or recognized trade-mark,

7.1.2 Batch or code number, and

7.1.3 Type and thickness.

7.2 **Packing**- The knife section of a particular type and thickness shall be packed for safe handling in transit, as agreed to between the purchaser and the supplier.

7.3 Each knife section may also carry the PSQCA Certification Mark subject to verification by the competent authority.

7.4 The knife section should be packed in bundles of 10-12 pieces to ensure safety during storage and transportation as agreed to between the purchaser and the manufacturer/supplier.

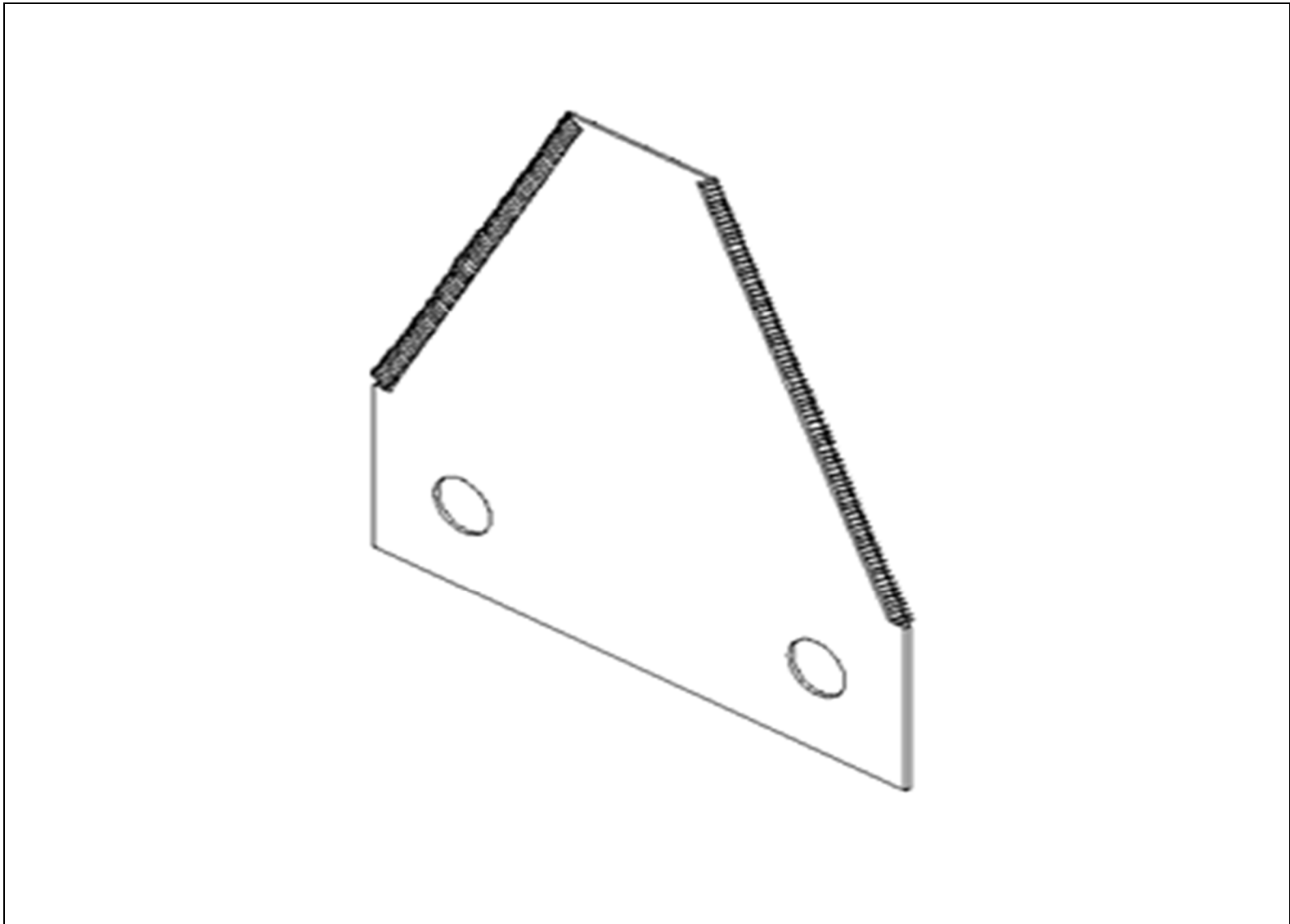


Figure 1: Knife section hardened area (hashed portion)

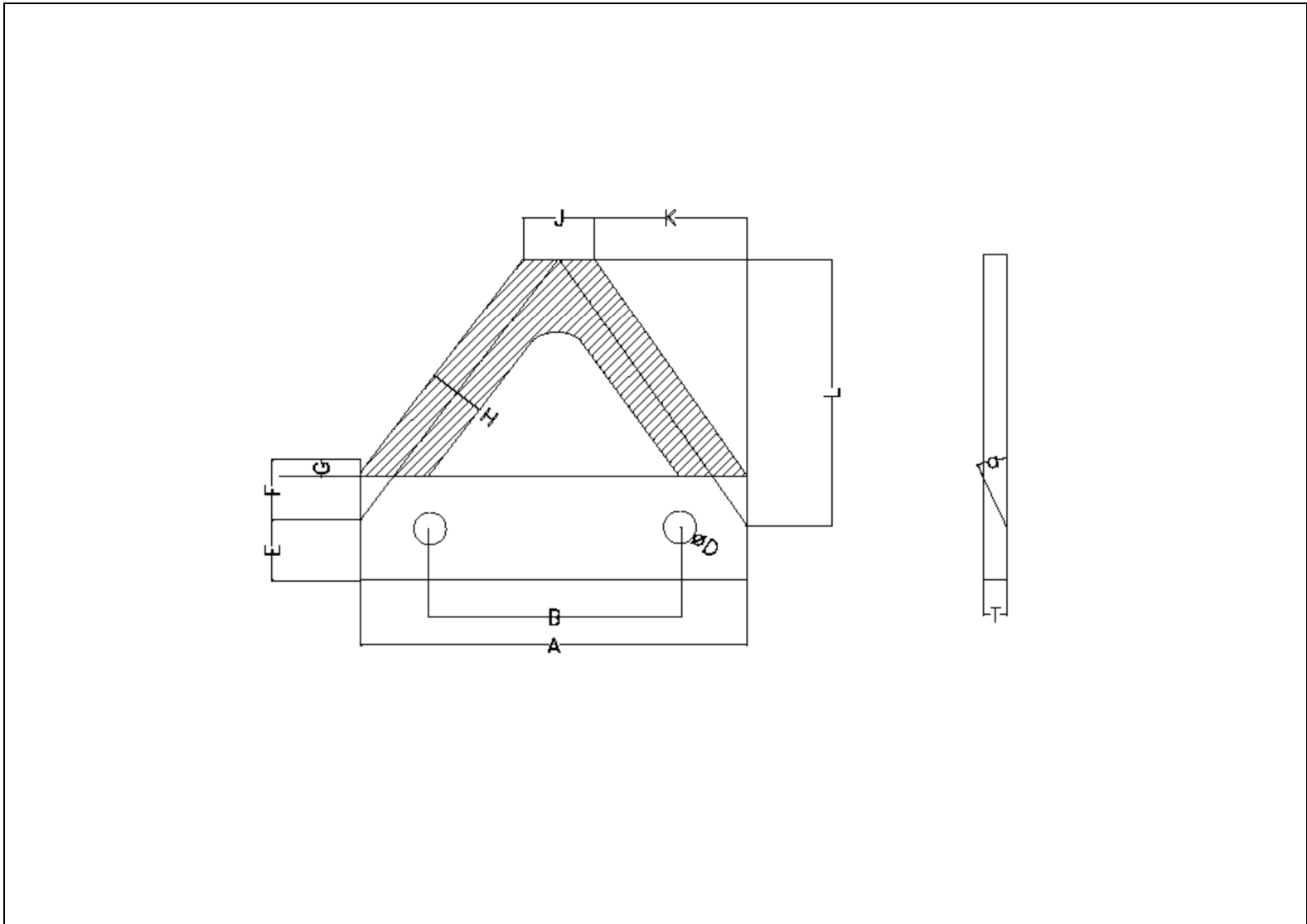


Figure 2: Knife section dimensions

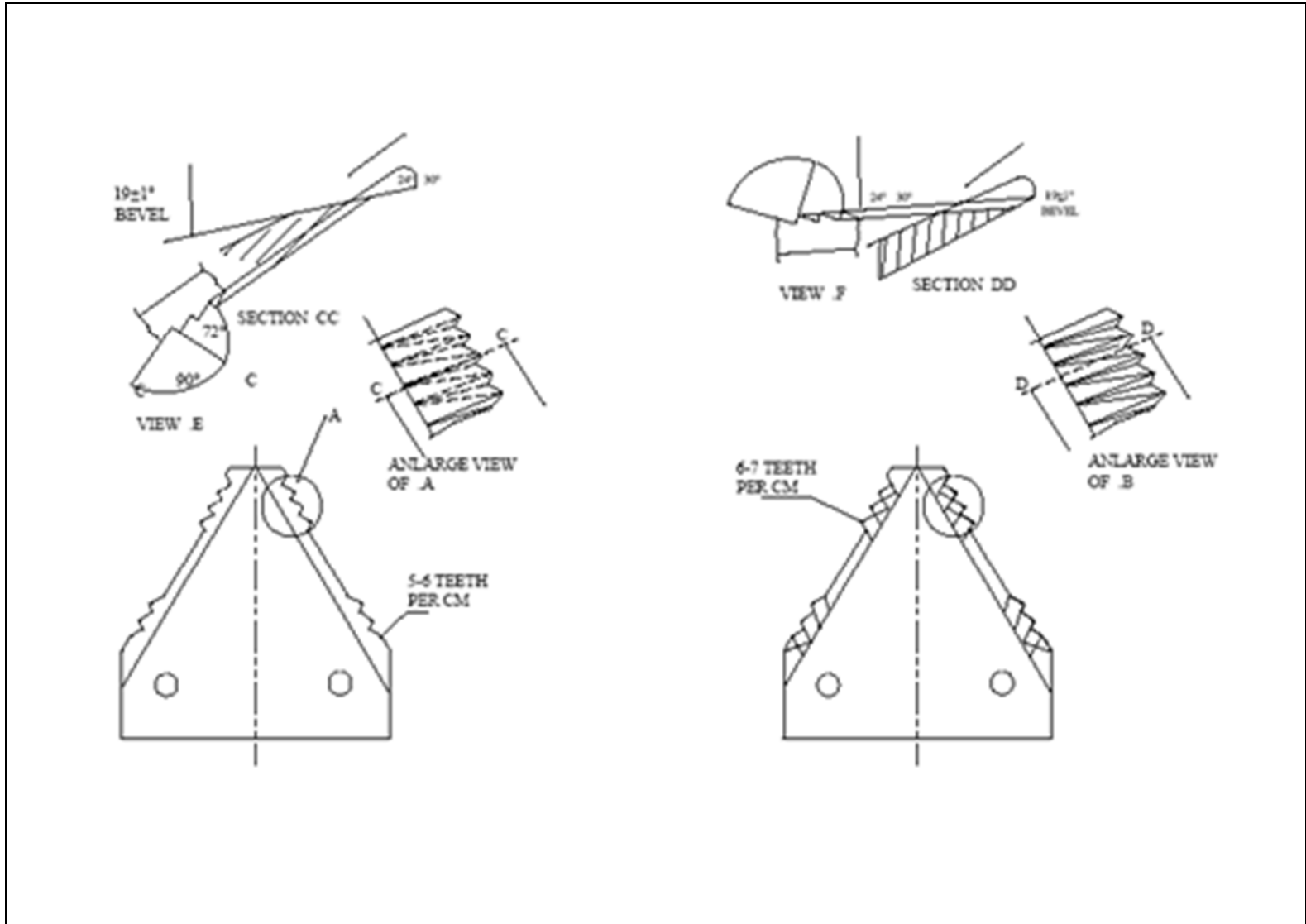


Figure 3: Dimensions of serrations on knife section