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भारतीय मानक मसौदा
खानों में वाइंडिंग के लिए केज सस्पेंशन गियर
भाग 8 क्लाइवे हुक निलम्बन व्यवस्था
[आई एस 7587 (भाग 8) का प्रथम पुनरीक्षण]

DRAFT Indian Standard

CAGE SUSPENSION GEAR FOR WINDING IN MINES
PART 8 CLIVEY HOOK SUSPENSION ARRANGEMENTS

[First Revision of IS 7587 (Part 8)]

ICS 73.100.40

Mining Techniques and Equipment
Sectional Committee, MED 08

Last date for receipt comments:
12 April 2025

FOREWORD

(Formal clause will be added later)

This standard has been formulated to keep pace with the latest technological developments and international practices. Also, the standard has been brought into the latest style and format of Indian Standards. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act, 2016*.

This standard was first published in 1993. The standard is being revised to keep pace with the latest technological developments and international practices. This revision has been brought into the latest style and format incorporating the latest version of the referred standard. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act, 2016*.

The winding operations in mines require suspension arrangements to be used for connecting the winding rope with the mode of conveyance of men and materials in mining shafts. Mode of conveyance vary considerably depending on design considerations and applications. Most common mode of conveyance is cage.

Doc: MED 08 (27545) WC
February 2025

This Indian Standard (Part 8) is being processed to standardize the suspension arrangement for winding in shaft sinking operations in mines. Clivey hook is an important component in such arrangements for connecting sinking bucket (*See IS 12526 : 2023 'Bucket for shaft sinking operations in mines'*) with non-roating winding rope. It is provided with a lock to prevent inadvertent detachment of sinking bucket. This Indian Standard may provide a uniform practice for the manufacture and use .of clivey hooks used during sinking.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

DRAFT Indian Standard

CAGE SUSPENSION GEAR FOR WINDING IN MINES

PART 8 CLIVEY HOOK SUSPENSION ARRANGEMENTS

[*First Revision of IS 7587 (Part 8)*]

1 SCOPE

This standard covers general requirements of clivey hook suspension arrangement provided between a rope cappel and bucket in shaft sinking operations in mines.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards:

<i>IS No.</i>	<i>Title</i>
IS 4454	Steel wire for mechanical springs — Specification
(Part 1) : 2001	Cold drawn unalloyed steel wire (<i>third revision</i>)
(Part 2) : 2001	Oil hardened and tempered steel wire (<i>second revision</i>)
(Part 4) : 2001	Stainless steel wire (<i>second revision</i>)
IS 7587 (Part 1) : 2020	Cage Suspension Gear for Winding in Mines Part 1 General Requirements (<i>second revision</i>)

3 TYPES

Clivey hooks shall be of two types as follows:

- a) Type A: Clivey hook with trapezoidal section; and
- b) Type B: Clivey hook with rectangular section

4 MATERIAL

The components of the clivey hook suspension arrangement except split bearing, pipe cover and spring shall be manufactured from material specified in IS 7587 (Part 1). The material used for manufacture of spring shall conform to IS 4454 (Part 1, Part 2 and Part 4).

5 SAFE WORKING LOAD

The components of the clivey hook suspension arrangement shall be designed for safe working load of 20 kN, 40 kN, 60 kN, 80 kN or 100 kN for clivey hook of Type A and 50 kN or 80 kN for clivey hook of Type B.

6 DIMENSIONS

6.1 Dimensions of components for clivey hook suspension arrangement of Type A shall be as given in Fig. 1 and Table 1 to Table 5.

6.2 Dimensions of components for clivey hook suspension arrangement of Type B shall be as given in Fig. 2.

7 DESIGNATION

7.1 A clivey hook suspension arrangement of Type A with 80 kN safe working load and conforming to this standard shall be designated as:

Suspension arrangement, Clivey Hook, 80 A IS 7587 (Part 8)

7.2 A clivey hook with 50 kN safe working load of Type B conforming to this standard shall be designated as:

Clivey Hook 50 B IS 7587 (Part 8)

8 GENERAL REQUIREMENTS

8.1 Clivey hook suspension arrangement shall conform in all respect with the requirements laid down in IS 7587 (Part 1). For threaded portion of the clivey hook, the factor of safety shall be minimum 15.

8.2 Lock

Clivey hook shall be provided with a suitable lock to prevent inadvertent detachment of bucket.

9 MANUFACTURE

Each component of the clivey hook suspension arrangement shall be manufactured by forging process and shall be free from forging defects.

10 TESTING AND EXAMINATION

10.1 Each component of clivey hook suspension arrangement shall be tested and examined in accordance with requirements of IS 7587 (Part 1). A proof load of three times safe working load shall be applied during the proof load test.

10.2 A certificate of test as specified in IS 7587 (Part 1) shall be supplied with each set of clivey hook suspension arrangement.

11 MARKING

11.1 Identification and Inspection Marking

Each component of the clivey hook suspension arrangement shall be suitably marked with details in accordance with requirement specified in IS 7587 (Part 1).

11.2 Certification Marking

11.2.1 The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

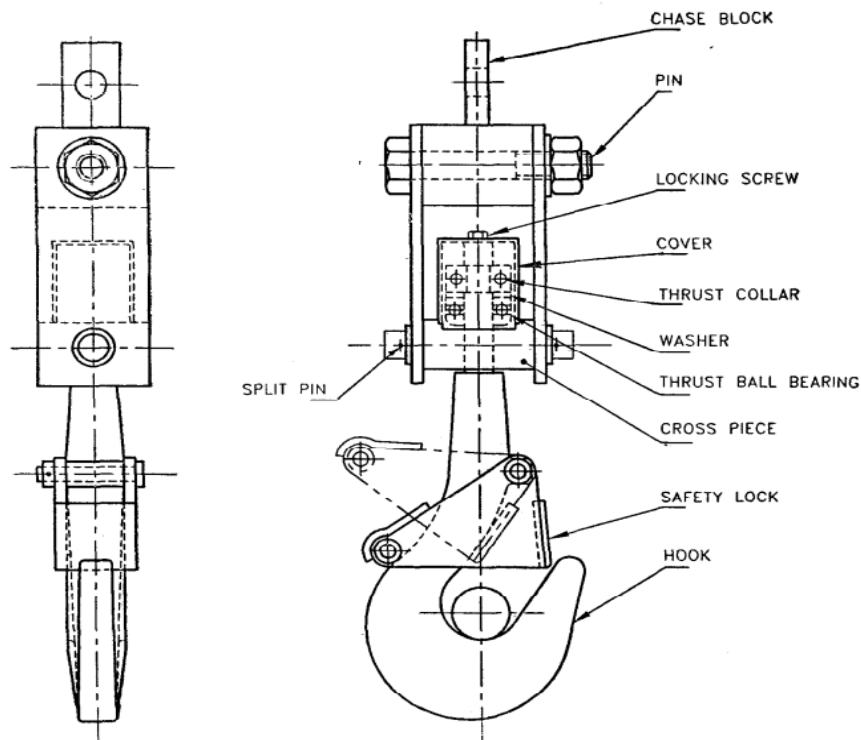
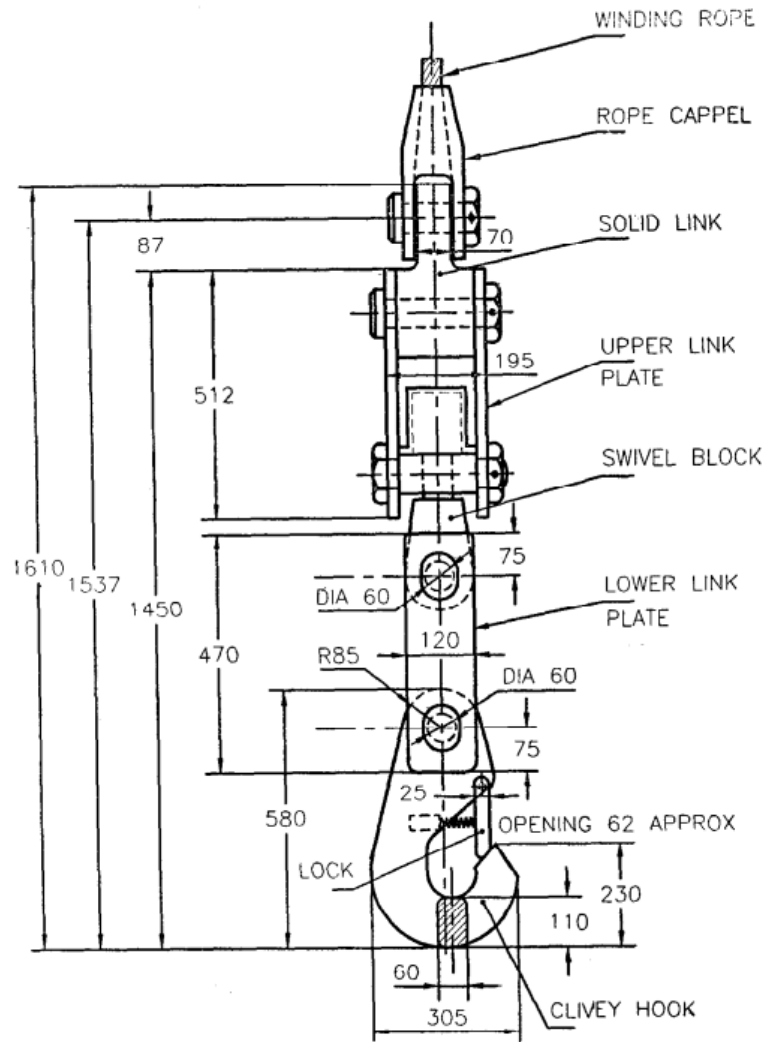


FIG. 1 NOMENCLATURE FOR TYPE A CLIVEY HOOK SUSPENSION ARRANGEMENT



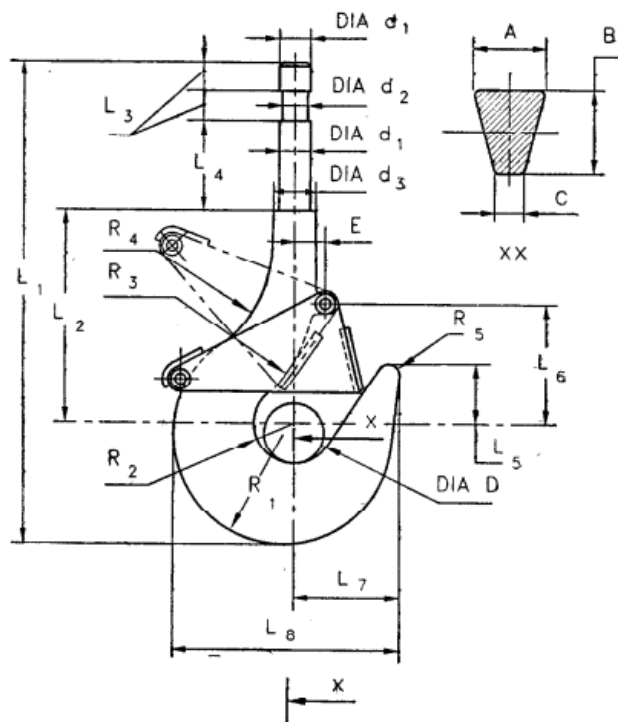
All dimensions in millimetres

FIG. 2 NOMENCLATURE AND DIMENSIONS FOR TYPE B CLIVEY HOOK SUSPENSION ARRANGEMENT

Table 1 Dimensions for Clivey Hooks, Type A Suspension Arrangement

(Clause 6.1)

All dimensions in millimetres.

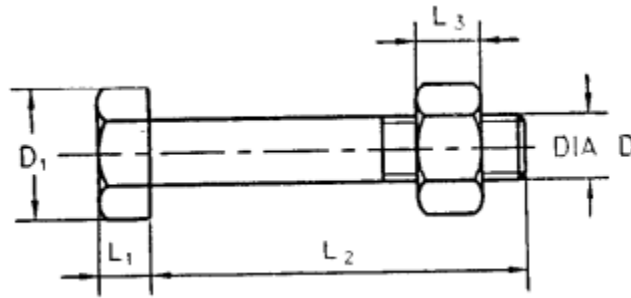


SI No.	Safe Working Load kN	A	B	C	D	E	d1	d2	d3	L1	L2	L3	L4	L5	L6	L7	L8	R1	R2	R3	R4	R5
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
i)	20	50	70	30	50	36	25	20	40	440	220	25	75	50	130	90	185	85	35	150	100	12
ii)	40	85	95	35	70	36	35	30	50	565	250	35	105	70	142	122	262	128	45	200	150	12
iii)	60	105	110	45	90	36	45	40	60	670	290	45	135	80	172	122	288	144	60	200	150	12
iv)	80	110	130	50	100	36	50	45	70	755	320	50	150	90	183	148	348	174	75	200	150	20
v)	100	110	130	50	110	36	55	50	70	780	320	55	165	90	183	148	348	174	75	220	150	20

Table 2 Dimensions of Pins, Type A Suspension Arrangement

(Clause 6.1)

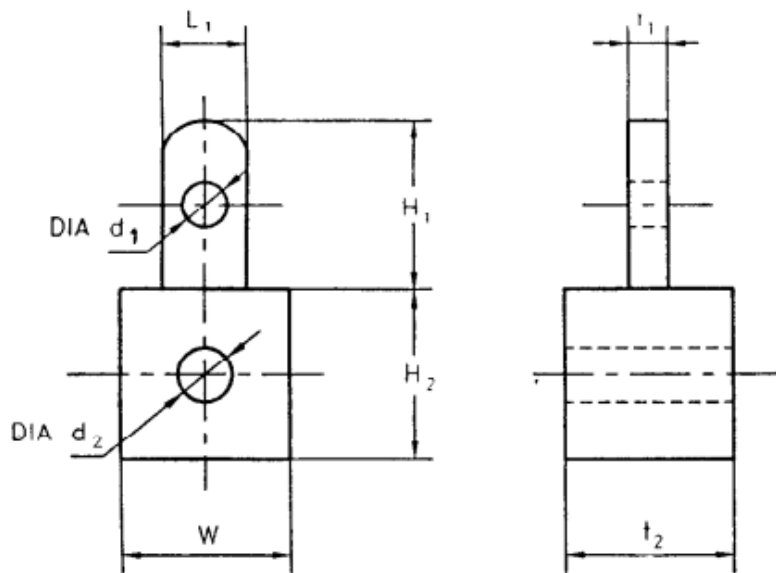
All dimensions in millimetres.



Sl No.	Safe Working Load kN	L_1	L_2	L_3	D	D_1	Mass kg
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	20	20	140	25	25	50	1.2
ii)	40	28	170	35	35	70	3.2
iii)	60	36	205	45	45	90	6.6
iv)	80	40	230	50	50	100	9.2
v)	100	44	265	55	55	110	12.4

Table 3 Dimensions of Chase Block, Type A Suspension Arrangement
(Clause 6.1)

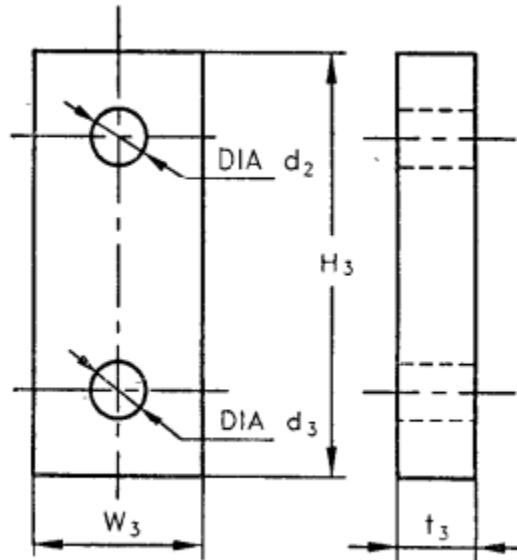
All dimensions in millimetres.



Sl No.	Safe Working Load kN	H_1	L_1	t_1	d_1	W	H_2	t_2	d_2	Mass kg
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	20	80	50	20	25	95	75	85	25	5.5
ii)	40	120	70	30	35	105	105	105	35	10.0
iii)	60	160	90	40	45	120	120	120	45	16.0
iv)	80	200	100	50	50	130	130	130	50	22.0
v)	100	220	110	60	55	150	150	150	55	34.0

Table 4 Dimensions of Shackle, Type A Suspension Arrangement
(Clause 6.1)

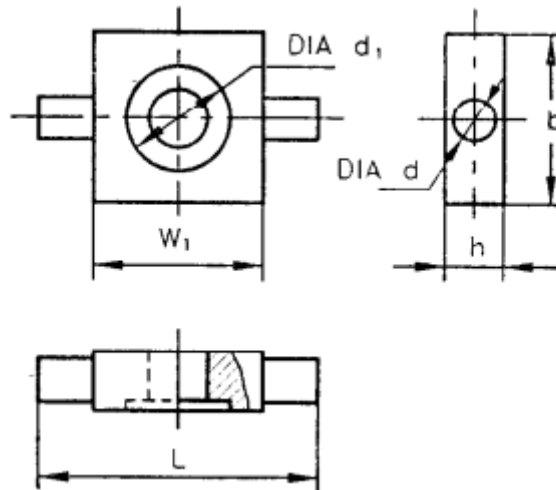
All dimensions in millimetres.



Sl No.	Safe Working Load kN	H_3	W_3	t_3	d_2	d_3	Mass kg
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	20	240	95	10	25	25	1.7
ii)	40	345	105	15	35	35	4.0
iii)	60	440	120	20	45	45	7.8
iv)	80	480	130	25	50	50	11.2
v)	100	535	150	30	55	55	17.8

Table 5 Dimensions of Cross-Piece, Type A Suspension Arrangement
(Clause 6.1)

All dimensions in millimetres.



Sl No.	Safe Working Load kN	<i>b</i>	<i>d</i>	<i>Wl</i>	<i>dI</i>	<i>h</i>	<i>L</i>	Mass kg
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	20	95	25	95	62	45	160	3.4
ii)	40	105	35	105	85	55	150	4.3
iii)	60	120	45	120	105	80	180	8.0
iv)	80	130	50	130	115	100	205	12.0
v)	100	150	55	150	125	100	240	16.2