भारतीय मानक

Indian Standard

IS 6202 : 2024

तेल भंडारण टैंकों के लिए फ्लैट ग्लास तेल लेवल गेज — विशिष्टि

(पहला पुनरीक्षण)

Flat Glass Oil Level Gauges for Oil Storage Tanks — Specification

(First Revision)

ICS 75.180

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

May 2024 **Price Group 7**

Chemical Engineering Plants and Related Equipment Sectional Committee, MED 17

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Chemical Engineering Plants and Related Equipment Sectional Committee had been approved by the Mechanical Engineering Divisional Council.

This standard was first published in 1971. This revision has been taken up with a view incorporating the modification found necessary as a result of experience gained in the use of this standard. Also, in this revision, the standard has been brought into the latest style and format of Indian Standards, and references to Indian Standards, wherever applicable have been updated.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

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.

Indian Standard

FLAT GLASS OIL LEVEL GAUGES FOR OIL STORAGE TANKS — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies the requirements for flat glass oil level gauges for use on fuel tanks storing fuel of a flashpoint over 65 °C.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions 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.

3 CLASS AND TYPE

The oil gauges shall be of six types as given in Table 1.

4 DIMENSIONS AND OTHER CONSTRUCTION DETAILS

4.1 Dimensions, shape and assembled weight (calculated) shall be as given in Table 2 to Table 4 read with Fig. 1 to Fig. 3.

4.2 Dimensions not given are left to the discretion of the manufacturer.

5 MATERIAL

5.1 Materials used in the construction of the various components of the gauge glass shall be of a quality not less than those specified in **5.2** to **5.4**.

5.2 The upper and lower block of the gauge shall conform to Grade FG 200 of IS 210 and the cover shall conform to Grade E 250 Quality A as per IS 2062.

5.3 The gauge glass shall conform to the dimensions given in Fig. 2 and shall be of the flat through-vision type Gauge glass or the flat reflex type Gauge glass given in IS 5428 (Part 1).

5.4 Material used for the other parts shall conform to the requirements given in part list (*see* Table 5 and Fig. 4).

6 DESIGNATION

Oil level gauges shall be designated by the name, type, number, and length of Gauge glass or the mark and the number of this specification as given below:

Examples:

a) Oil level gauge having lower block of Type L2L, upper block of Type U2 and 4 flat through-vision type gauge glasses of length 320 mm shall be designated as:

   Flat glass oil level gauge, L2L × U2 (4 × FA320) or FG — L2L × U2 (4 × FA320); and

   NOTES

   1 L2L → To show the type of lower block.
   2 U2 → To show the type of upper block.
   3 FA320 → To show number and designation of gauge glass.

b) Oil level gauge having lower block of Type L2L, upper block of Type U2 and 4 flat reflex type gauge glasses of length 320 mm shall be designated as:

   Flat glass oil level gauge, L2L × U2 (4 × FR320) or FG — L2L × U2 (4 × FR320).

7 INSPECTION

7.1 The gauges shall be subjected to the following inspection and test and shall satisfy all the requirements specified.

7.1.1 *Visual Inspection*

The products shall be free from external visual defects.

7.1.2 *Dimensional Inspection*

The dimensions of each component shall be suitable for insertion of the Gauge glass.

7.1.3 *Hydraulic Test*

After completion of assembly, the gauge shall be subjected to a hydraulic pressure of 5 kgf/cm^2 without showing any defect or other signs of failure.

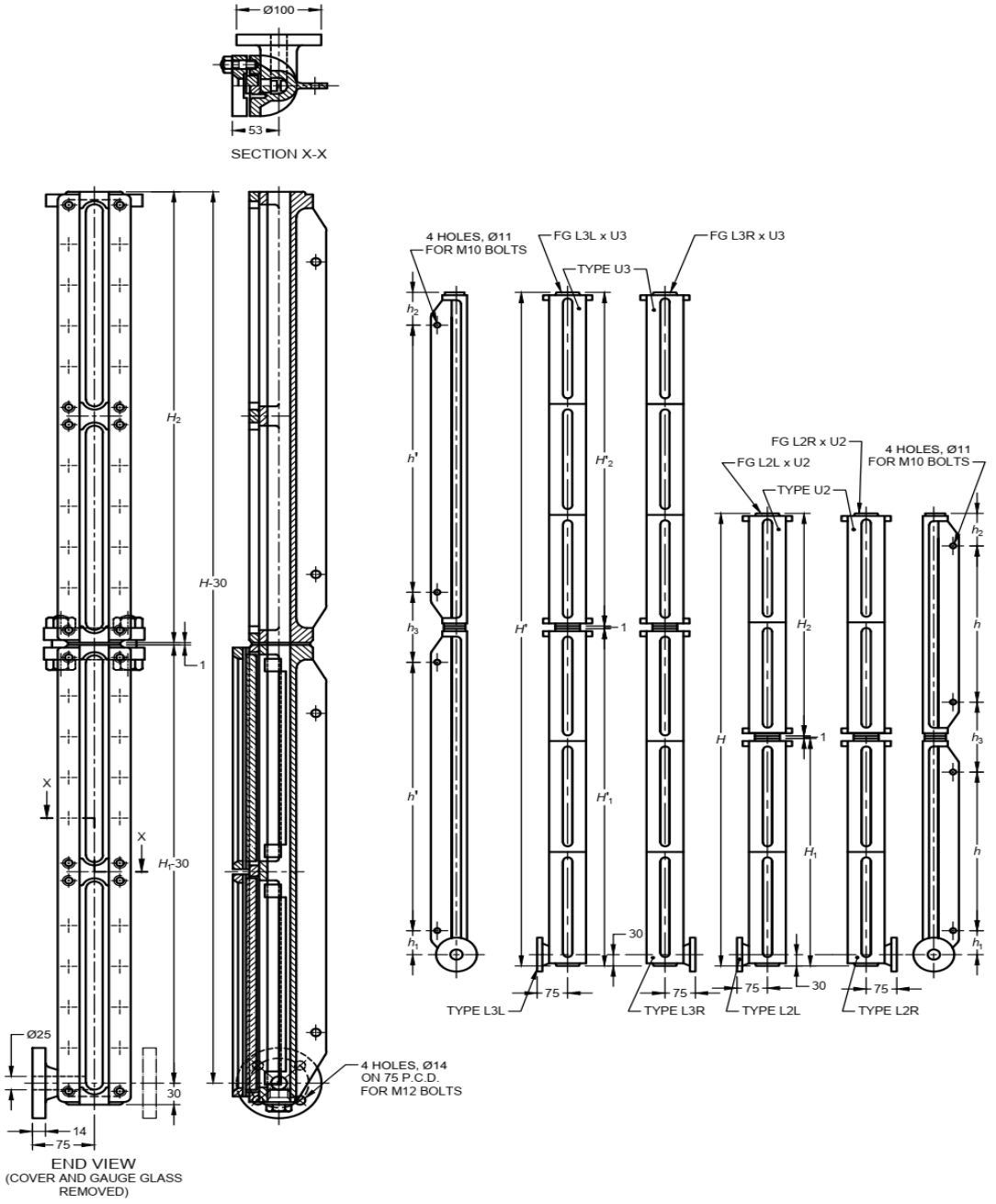
8 MARKING

8.1 The following information shall be stamped on the surface of the block rib of the oil level gauge:

a) Type of oil level gauge;
b) Manufacturer's name or mark or other identification; and
c) Any other marking required by the purchaser.

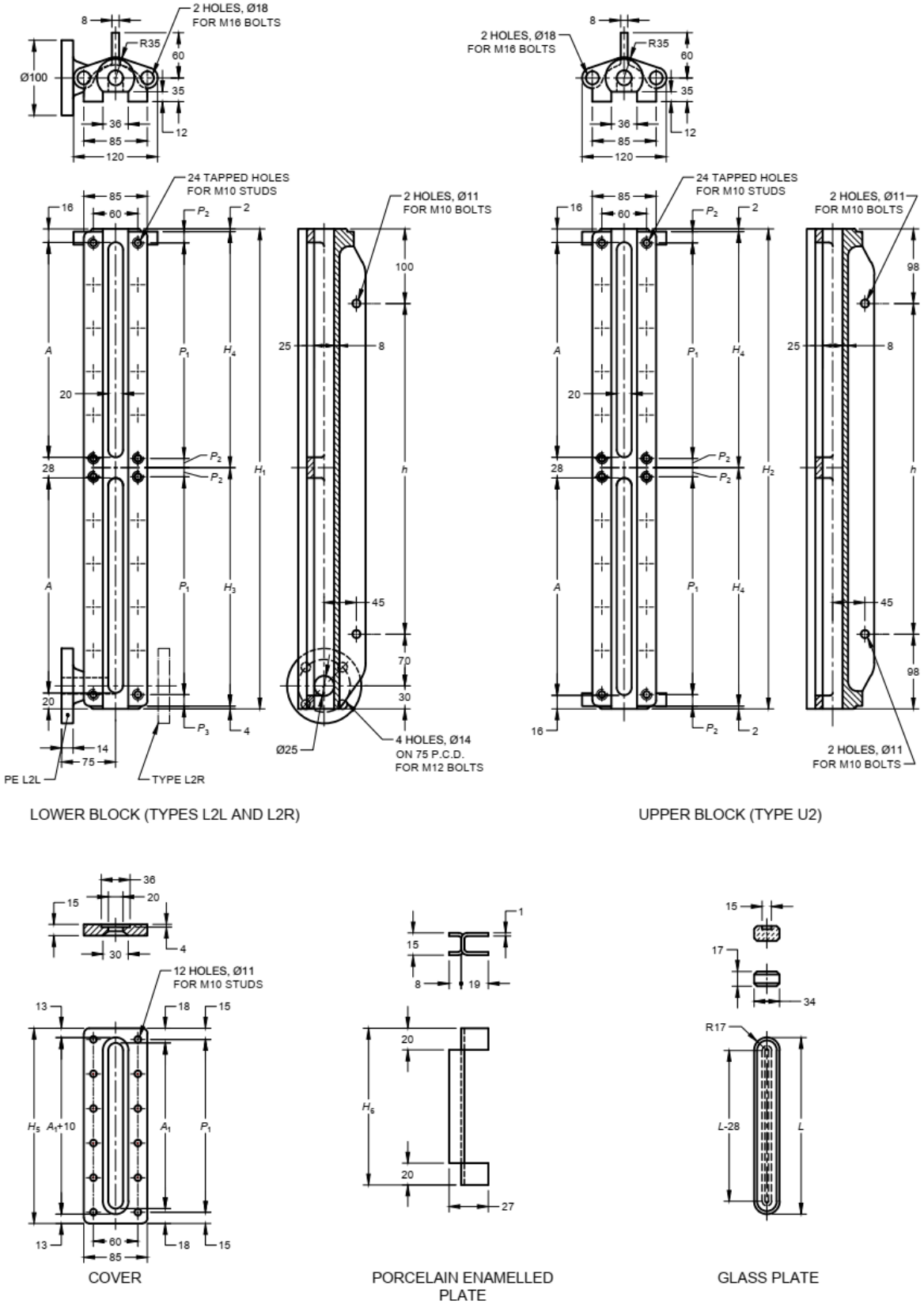
8.2 BIS Certification Marking

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 product(s) may be marked with the Standard Mark.



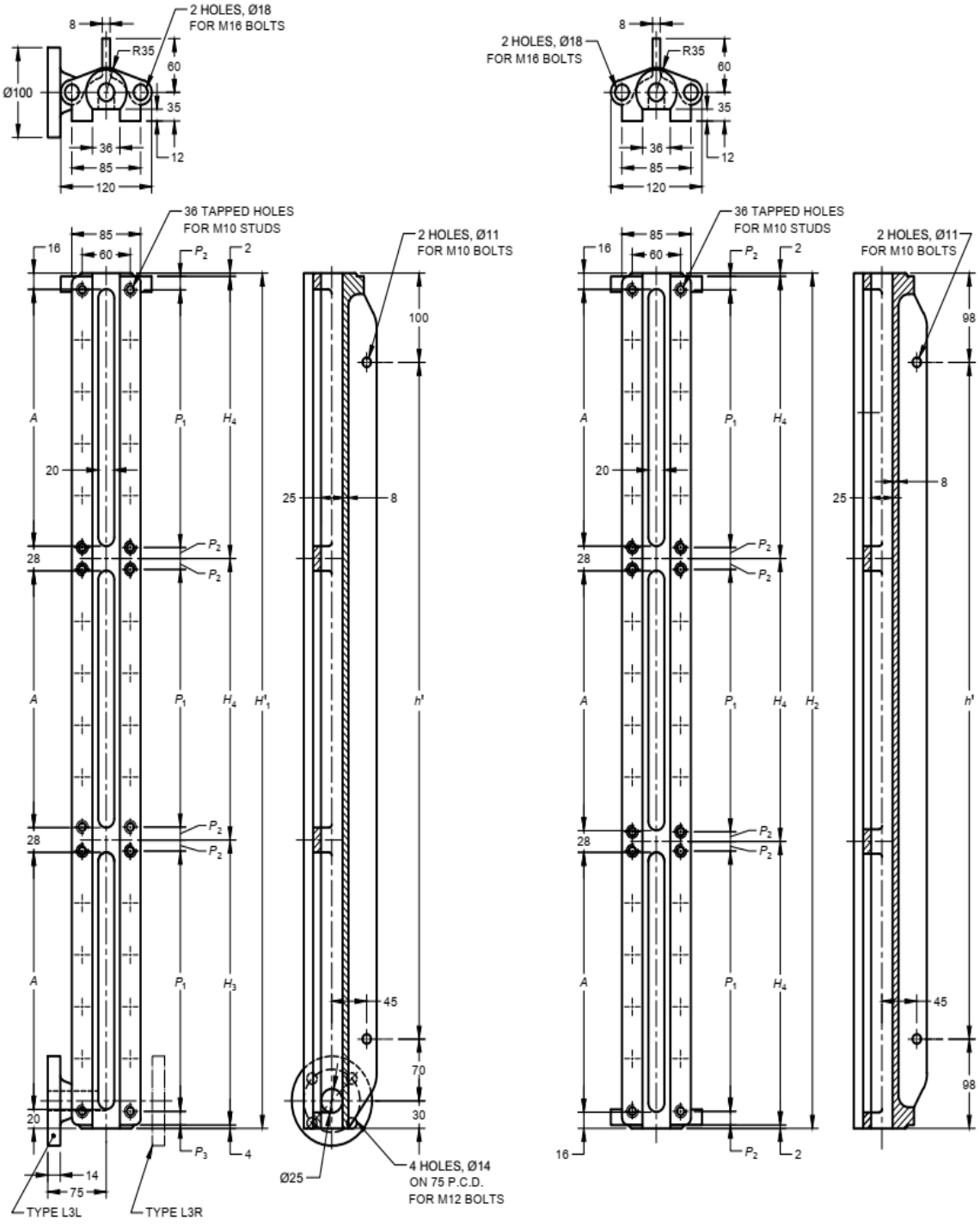
All dimensions in millimetres.

FIG. 1 LENGTH OF FITTED DIMENSIONS OF FLAT GLASS OIL LEVEL GAUGES



All dimensions in millimetres.

FIG. 2 DETAIL DIMENSIONS FOR COMPONENTS OF FLAT GLASS OIL LEVEL GAUGES



All dimensions in millimetres.

FIG. 3 DETAIL DIMENSIONS FOR COMPONENTS OF FLAT GLASS OIL LEVEL GAUGES

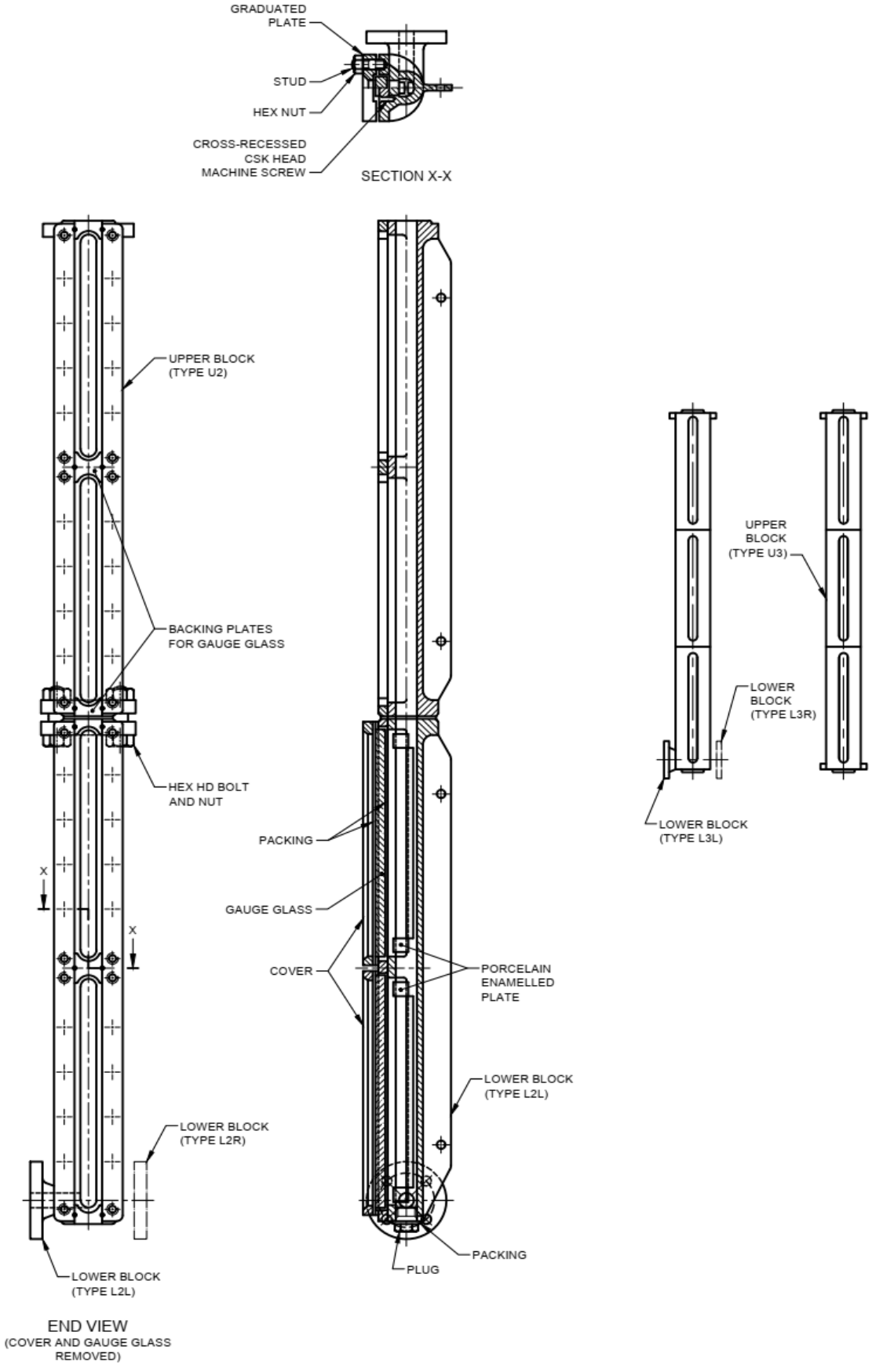


FIG. 4 NOMENCLATURE FOR FLAT GLASS OIL LEVEL GAUGES

Table 1 Types of Oil Level Gauges

(*Clause* 3)

Sl No.	Class	Type	Number of Glass	Remarks
(1)	(2)	(3)	(4)	(5)
i)	Lower block	L2L L3L	2 3	Flange of the left-hand direction for facing the tank
ii)		L2R L3R	2 3	Flange of the right-hand direction for facing the tank
iii)	Upper block	U2 U3	2 3	____

Table 2 Length of Fitted Dimensions of Flat Glass Oil Level Gauges

(*Clause* 4.1)

All dimensions in millimetres.

Sl No.	Length of Gauge Glass	FGL2L × U2 or FGL2R × U2				FGL3L × U3 or FGl3R × U3				h_1	h_2	h_3
		H	H_1	H_2	*h*	*H'*	H_1'	*H2'*	*h'*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
i)	320	1 337	670	666	470	1 999	1 001	997	801	70	98	199
ii)	340	1 417	710	706	510	2 119	1 061	1 057	861	70	98	199

NOTE — Lower block and upper block may be used in suitable combination to meet specific requirement.

Table 3 Assembled Weight of Flat Glass Oil Level Gauges

(*Clause* 4.1)

Sl No.	Length of Gauge Glass	Weight for Types kg					
	mm	FGL2L × U2 FGL2R × U2	FGL3L × U3 FGL3R × U3	Type L2L Type L2R	Type L3L Type L3R	Type U2	Type U3
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	320	35.12	51.45	17.95	26.10	17.17	25.35
ii)	340	37.11	54.03	18.90	27.36	18.21	26.67

Table 4 Detail Dimensions for Components of Flat Glass Oil Level Gauges

(*Clause* 4.1)

All dimensions in millimetres.

Sl No.	Gauge Glass Designation	l	Lower and Upper Blocks									Cover		Porcelain Enameled plate	Stud						
			Types L2L, L2R and U2			Types L3L, L3R and U3												Number			Size
			H_1	H_2	h	H'_1	H'_2	h'	H_3	H_4	A	H_5	A_1	H_6	P_1	P_2	P_3	Types L2L, L2R and U2	Types L3L, L3R and U3	Cover	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
i)	FA320 FR320	320	670	666	470	1 001	997	801	333	331	303	330	294	293	300	15.5	17.5	24	36	12	M10
ii)	FA340 FR340	340	710	706	510	1 061	1 057	861	355	351	323	350	314	313	320	15.5	17.5	24	36	12	M10

Table 5 Part List and the Applicable Specification for the Materials forthe Oil Level Gauge (*see* Fig. 4)

(*Clause* 5.1.3)

Sl No.	Name of Parts	Material Grade/ Property Class	Applicable Standard
(1)	(2)	(3)	(4)
i)	Lower block (Type L2L)	Grade FG 200	IS 210
ii)	Lower block (Type L2R)	Grade FG 200	IS 210
iii)	Lower block (Type L3L)	Grade FG 200	IS 210
iv)	Lower block (Type L3R)	Grade FG 200	IS 210
v)	Upper block (Type U2)	Grade FG 200	IS 210
vi)	Upper block (Type U3)	Grade FG 200	IS 210
vii)	Cover	Grade E 250 A	IS 2062
viii)	Backing plate for glass	Grade E 250 A	IS 2062
ix)	Porcelain enameled plate	Grade E 250 A	IS 2062
x)	Stud	Class 4.6	IS 1862
xi)	Hexagon nut	Class 4	IS 1364
xii)	Cross-recessed countersunk head machine screw	Class 4.6	IS 1365
xiii)	Hexagon bolt	Class 4.6	IS 1364
xiv)	Plug	—	—
xv)	Graduated plate	—	—
xvi)	Flat gauge glass	—	IS 5428 (Part 1)
xvii)	Packing	—	IS 4687

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 210 : 2009	Grey iron castings — Specification (*fifth revision*)
IS 1364	Hexagon head bolts, screws and nuts of product grades A and B:
(Part 1) : 2018/ ISO 4014 : 2011	Hexagon head bolts (size range M 1.6 to M 64) (*fifth revision*)
(Part 2) : 2018/ ISO 4017 : 2014	Hexagon head screws (size range M 1.6 to M 64) (*fifth revision*)
(Part 3) : 2018/ ISO 4032 : 2012	Hexagon nuts, style 1 (size range M 1.6 to M 64) (*fifth revision*)
(Part 4) : 2003/ ISO 4035 : 1999	Hexagon thin nuts (chamfered) (size range M 1.6 to M 64) (*fourth revision*)
(Part 5) : 2002/ ISO 4036 : 1999	Hexagon thin nuts — Product grade B (unchamfered) (size range M 1.6 to M 10) (*fourth revision*)
(Part 6) : 2018/ ISO 4033 : 2012	Hexagon nuts, style 2 (*first revision*)
IS 1365 : 2022/ISO 2009 : 2011	Slotted countersunk flat head screws — Product grade A (*fifth revision*)
IS 1862 : 1975	Specification for studs (*second revision*)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (*seventh revision*)
IS 4687 : 1995	Gaskets and packings — Gland packings asbestos — Specification (*second revision*)
IS 5428 (Part 1) : 2023	Gauge glasses — Specification: Part 1 Tubular glasses for level gauges (*second revision*)

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Chemical Engineering Plants and Related Equipment Sectional Committee, MED 17

Organization	*Representative(s)*
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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	2323 7617
Eastern	: 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	2367 0012 2320 9474
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