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(2) यह सरकारी राज्य में प्रस्तावना की नारियल में 
अनुसार होगा।

2. इंदिरा गांधी रॉय, 1950 (जिन्होंने नवजनता 
उपर रस्तेदार कहा गया) में रस्तेदारन 215 नं.——

(2) उप रस्तेदार (डी) के स्थान पर, लिखित भन्ने 
उप रस्तेदार प्रश्नपत्र के ग्रामीणों, घरूल—

(डी) (१) इस राज्य के लागू नियम वैदिक नयन 
हो सके क्योंकि त्योहार के मुख्य नागरिकीय शस्त्र में कृतीय 
रेखा पर बालाव द्वारा डी, संपर्क निवास या क्षेत्र (रेखा) 
प्रकटित समय 14 के अनुसार होगा योग्य विषय 
उप-श्रेणी डी
-- ग्रामीण व अन्य ग्रामीण बी—
-- पैरामीटर होगा, या, 2Qए ए 

हो, और बी प्रकटित 13भ और 13ब के प्रणाली माने 
जाने हो।
हो—समय मुद्रवे का यथार्थ 
निर्देश निर्देश—

1. माव ढी की भारी चीज़ पर रोलिंग जैसे उज़ी 
मार्गित नामित पर रोलिंग के वाह माना जाना चाहिए।

2. प्रकटित समय 14 में दिया गया सामान निम्नलिखित 
सूत्र पर प्रकटित होगा—

\[ \text{डी} = \sqrt{\frac{g}{1 + \frac{2}{\kappa}} + \sqrt{\left(\frac{g}{1 + \frac{2}{\kappa}}\right)^2 + \frac{4}{\kappa^2}}} \]

जहा—

\[ g = \frac{\text{कर्मवर्ध + 1}}{2} \]

\[ \kappa = \text{है} \]

\[ \text{डी} = \frac{1}{2} \left( 1 - \frac{1}{2} \text{कर्मवर्ध} \right) \]

\[ \text{डी} = \sqrt{1 + \frac{2}{\kappa^2}} \]

380 GI/95—2.
शाखाएं 13वी - हृदरोप का क्षेत्रफल विस्तार

शाखाएं 13वी - करी रेखा पर हृदरोप का अंतरण

शाखाएं 13वी - हृदरोप की दक्षिण-पूर्व अंशत्व अभिव्यक्ति
अग्रवाल के तात्क्रेत के लिए तेम मैट्रिक के का ग्राफ़
अल्पविशेष दशा में श्राप पर रेडियो दशा
3. इस्लाम इदीज़ में—

(०) इस्लाम इदीज़ २७५ के त्त्वान पर, निम्न लिखित रूप से स्पष्ट प्रतिस्पर्धान का आयाम, प्रयोजन—

"२७५ द्वारा एक इदीज़ का विचार"

उन पहले इदीज़ पर धारण किया गया था, जो व्यक्ति निम्न लिखित के प्रमाण का आयाम (ग्राह्य सूची २४१-२५० और २८० इंग्रजी)

(२) विशेष रूप से दानवृतांकरण है कि पू- नीति

(३) प्राचीन ग्राह्यांक नीति निम्न लिखित सभी मानी जाती को इतना दर्शाता है—

"पार ० व"—

"पार ३ "व"

"पार"<"व"

"पू"<"व"

उन पहले इदीज़ के लिए प्रकट "पू"/"व" के प्रमाण ०.१८ में ०.२ के बीच निम्न का "पार"<१.२ इंग्रजी प्रमाण है।

ग्राह्य सूची २४१, २४२ और २५० के प्रयोजन—

"व"—देश का बहुत प्रयोग.

"पू"—निम्नेंतम ग्राह्य के सिद्धांत के साथ जों में भारत नस्ल हर सारी ही द्रुत है कि आबाद;

"पार"—प्राचीन ग्राह्यांक देश के ग्राह्यांक नीति का प्राचीन भाषण या प्राचीन भाषण।

(३) प्राचीन सूची २३ के त्त्वान पर, निम्न लिखित प्राचीन ग्राह्यांक नीति की जाती; प्रयोजन—

अन्वेषण २३वीं - टॉरिक स्वामि देह

अन्वेषण २३वीं - टॉरिक स्वामि देह
शालाला ईश्वर - दिवस दिन के लिए स्वेच्छा फैक्टर के लिए ग्राफ़
अण्वेषण 23ई - हे हे में पुराता

(प) अण्वेषण काले हैदः-(i) हे हे में काले गांव मुरादा (मैंटेन या झुक स्त्री) गोल मा दीया- वर्षीय ठोसे पारित।  

(iii) उप रेखाशित (तीर) की कत्ता के काले कोटि अपेक्षा का भविष्यकाल समेतित नहीं है।  

(iii) यह माप के अण्वेषण के लिए एक उप रेखाशित (तीर) के समाया का उप रेखाशित (तीर) के विषयार्थ अपेक्षा के प्रविष्टन के लिए हेड की पारित में बूढ़ फिटित है।
(ii) the paramountcy of the ornamental dance, that is for, and it" — he said, "to the dance forms, and this is the situation.

The Gazette of India: March 4, 1995

Phalgun 13, 1916 [Part II—Sec. 3(i)]

192 THE GAZETTE OF INDIA: MARCH 4, 1995

Phalgun 13, 1916 [Part II—Sec. 3(i)]
G.S.R. 93.—Whereas a draft of certain regulations further to amend the Indian Boiler Regulations, 1950, was published as required by sub-section (1) of section 31 of the Indian Boilers Act, 1923 (5 of 1923) at pages 694 to 710 of the Gazette of India, Part-III, Section 3, Sub-section (1), dated the 30th April, 1994 under the notification of the Government of India in the Ministry of Industry (Department of Industrial Development) (Central Boilers Board) number GSR 210 dated the 13th April, 1994 inviting objections and suggestions from those persons likely to be affected thereby till the expiry of forty-five days from the date on which copies of the Gazette containing the said notification were made available to the public;

And whereas the said Gazette was made available to the public on the 27th May, 1994;

And whereas no objections or suggestions have been received;

Now therefore, in exercise of the powers conferred by section 28 of the Indian Boilers Act, 1923 (5 of 1923), the Central Boilers Board hereby makes the following regulations further to amend the Indian Boiler Regulations, 1950, namely:—

1. These regulations may be called the Indian Boiler (Amendment) Regulations, 1995.

2. They shall come into force on the date of their publication in the Official Gazette.

2. In the Indian Boiler Regulations, 1950 (hereinafter referred to as the said regulations), in regulation 215,—

(i) for the sub-regulation (d), the following sub-regulations shall be substituted, namely:—

"(d) When bending stresses due to weight are negligible and the tube holes are arranged along a diagonal line with respect to the longitudinal axis, the efficiency f of corresponding ligaments is given in Figure 14, with the ratio b/a on the abscissa and the ratio 2a – d or a – d/2 as a parameter.

\[ f = \frac{2a}{a + \frac{d}{2}} \]

where,

- a and b are measured as shown in Figures 13A and 13B.
- d = diameter of the tube holes.

NOTES:

1. The dimension should be measured either on the front plate before rolling or on the medium line after rolling.
2. The data given on Figure 14 are based on the following formulae:

\[ Z = \frac{2}{A + B + \sqrt{(A-B)^2 + 4C^2}}, \]

where,

\[
A = \frac{\cos a + 1}{2 \left\{ \frac{d \cos a}{\alpha} \right\}},
\]

\[
B = \frac{1}{2} \left( 1 - \frac{d \cos a}{\alpha} \right) \left( \sin^2 a + 1 \right),
\]

\[
C = \left\{ \frac{1 - \frac{d \cos a}{\alpha}}{1 - \frac{d \cos a}{\alpha}} \right\},
\]

\[
\cos a = \frac{1}{\sqrt{1 + \frac{b^2}{\alpha^2}}},
\]

\[
\sin a = \frac{1}{\sqrt{1 + \frac{a^2}{b^2}}},
\]

\[ (\alpha = \text{angle of centre line of cylinder to centre line of diagonal holes}) \]

(iii) In the case of a regular staggered spacing of tube holes, (see Figure 13A), the smallest value of the efficiency \(z\) of all the ligaments, longitudinal, circumferential and diagonal, is given in Figure 15 by the ratio \(P_c\) on the abscissa, and the ratio

\[
\frac{P_L}{P_c} \quad \text{or} \quad \frac{P_L}{a}
\]

where,

\[ d = \text{diameter of the tube holes}; \]

\[ P_c = 2b = \text{twice the distance between circumferential rows of holes}; \]

\[ P_L = 2a = \text{twice the distance between axial rows of holes}. \]

**NOTE:** The dimension \(P_c\) should be measured on the flat plate before rolling or on the median line after rolling. The data on Figure 15 are based on the same formulae as shown in Figure 13A.

(c) When holes spaced longitudinally along a drum are not in a straight line, the equivalent longitudinal pitch for each spacing may be used in the application of the above rules. The equivalent pitch is obtained by multiplying the actual longitudinal pitch by the equivalent efficiency obtained from Figure 14 for each spacing.

(ii) For figures 13, 14 and 15, the following figures shall be substituted, namely:

(Figures 13A, 13B, 13C, 14 and 15 to be printed here).
Figure 13A - Regular staggering of holes

Figure 13B - Spacing of holes on a diagonal line

Figure 13C - Regular saw-tooth pattern of holes
Figure 15: Efficiency of ligaments between holes
3. In the said regulations,—

(i) for regulation 275, the following regulation shall be substituted, namely:

"275. Shape of dished end plate:

When the end plate is dished to semi-ellipsoidal, partial-spherical or hemispherical form, it shall comply with the following (see Figure 23A, 23B and 23C):

(a) hemispherical heads without limitation;

(b) elliptical heads sufficiently dished so that

\[ H > 0.2D \]

(c) partial spherical heads satisfying all the following requirements:

\[ \begin{align*}
  r &> 0.1D \\
r &> 3T \\
R &< D \\
H &> 0.18D
\end{align*} \]

A value of \( R < 1.2 \) \( D \) is permitted for ends in which the ratio \( H/D \) falls between 0.18–0.2.

In accordance with Figures 23A, 23B and 23C,—

\( D \) = outside diameter of the head;

\( H \) = height of the head measured on its outside surface from the junction of the dished part with the cylindrical shell;

\( R \) = inside radius of the spherical part of partial spherical heads;

\( r \) = inside knuckle radius of partial spherical heads.

(ii) for Figure 23, the following figures shall be substituted, namely:

(See Figures 23A, 23B, 23C, 23D, 23E and 23F on page Nos. 399 to 401)

4. In the said regulations, for regulation 277, the following regulation shall be substituted, namely:

"277. Dished end with opening:

(a) Heads with openings:—(i) Holes cut in the heads (main holes or tube holes) should be round or elliptical.

(ii) Small size openings complying with conditions of sub-regulation (a) do not require any additional thickness of head or reinforcement of opening.

(iii) Large size openings require an increase in thickness of the head, according to sub-regulation (b) or a reinforcement of the opening according to sub-regulation (d).

(b) Shape factor \( K \) for heads with large unreinforced openings:—The shape factor \( K \) to be used in calculating the thickness of heads varies depending on the height of the head \( H \) and on the dimensions of the largest opening. The value of \( K \) is indicated in Figure 23D, by means of curves, each of which corresponds to a value of the ratio:

\[ d = \frac{r}{\sqrt{D^2 + 2D^4}} \]

where—

\( d \) = diameter of the largest opening in the head (in the case of an elliptical opening, the larger diameter of the ellipse);

\( D \) = outside diameter of the head; and

\( T = \text{thickness after dishing.} \)

In addition, the following conditions shall be satisfied:

\[ \frac{T}{D} \leq 0.1 \]

\[ \frac{d}{D} \leq 0.5 \]

The same condition and the same curves apply for openings simply cut in the plate of the head as well as to those which are flanged inwards. In the latter case, the radius \( r \) of the flanging (see Figure 23C) should not be smaller than 25mm (1 inch). The thickness of the flanged portion may be smaller than the calculated thickness \( T \).

Unreinforced openings and flanged-in openings in dished heads shall be arranged so that the distance from the edge of the head is not less than as shown in Figure 23E.

In all cases the width of the band separating two adjacent openings should, in projection, be at least equal to the diameter of the smallest opening as shown in Figure 23E.
Figure 23A - Elliptical Head

Figure 23B - Torispherical head

Figure 23C - Head with manhole (elliptical or torispherical)
Figure 23D-Graph of shape factor $K$ for dished heads.
**Figure 23E - Opening in heads**

**Figure 23F - Reinforced opening**
(c) Small openings which do not require any reinforcement: Figure 23D indicates that, for a given ratio of H/D, the shape factor K of a plain head corresponds to a certain value of the ratio,

$$\frac{d}{\sqrt{\text{D}T}}$$

Piercing of holes with a diameter smaller than or equal to that which corresponds to this value can thus be made without any reinforcement in a head, the thickness of which is equal to the minimum required for a plain head.

The position of those openings shall however comply with the conditions stated in sub-regulation (b).

(d) Reinforcement of large openings:—Large holes may be cut without increasing the thickness of the head, provided they are sufficiently reinforced.

The reinforcement may consist either of a welded nozzle or one or two reinforcing welded plates, or of a combination of these two procedures.

To determine the strength of the construction, one shall proceed as follows (see Figure 23F): Let the imaginary diameter d' of the opening be given by the formula

$$d' = d - \frac{\text{d}}{\sqrt{\text{T}}}$$

where,

- d = actual diameter of the opening in the head (outside diameter of the nozzle);
- T = minimum thickness of the head; and
- A = effective cross-section of reinforcement.

This effective area A corresponds, within the limits given below, with the actual cross-section of the reinforcing plates and with the cross-section of the nozzle decreased by the cross-section necessary to support the pressure, for those parts of the nozzle situated outside the internal surface of the head.

The shape factor K can then be read from Figure 23D, corresponding to the ratio

$$d' = \frac{\text{d}}{\sqrt{\text{D}T}}$$

The maximum limits for the area of reinforcement that should be taken into account are

(a) L1 = \sqrt{\text{D}T}R for the width of a reinforcing plate;
(b) L2 = \sqrt{\text{D}T}T for the length of a nozzle

where,

- R = internal radius of the spherical part of the head (or for elliptical heads the internal radius of curvature of the meridian at the centre of the opening);
- T = actual thickness of the nozzle,
- L1 and L2 = dimensions given in Figure 23F

The position of the outer edges of the reinforcement shall comply with the provisions of sub-regulation (b) and Figure 23E.

In cases where the allowable stress of a part of the reinforcement is lower than that of the head, the corresponding area A should be multiplied by the ratio:

allowable stress of the reinforcement material

allowable stress of the head material.

5. In the said regulations,—

(i) for regulation 278, the following regulation shall be substituted, namely:

"278. End plate subject to pressure on the concave side:—"

Dished ends subjected to pressure on the concave side shall be determined by the following formula:

$$2 f \ (T - C)$$

where,

- P = Minimum thickness;
- D = Maximum working pressure, Design pressure;
- f = Permissible stress;
- K = Shape factor as defined in sub-regulation (a) of regulation 277 and Figure 23D; and
- C = an additive thickness equal to 0.75 mm.

The minimum head thickness should not, however, be less than 5 mm."

(ii) For regulation 278, the following regulation shall be substituted, namely:

"278. End plate subject to pressure on the concave side:—"

Dished ends subjected to pressure on the concave side shall be determined by the following formula:

$$2 f \ (T - C)$$

where,

- P = Minimum thickness;
- D = Maximum working pressure, Design pressure;
- f = Permissible stress;
- K = Shape factor as defined in sub-regulation (a) of regulation 277 and Figure 23D; and
- C = an additive thickness equal to 0.75 mm.

The minimum head thickness should not, however, be less than 5 mm."

Footnote:—The principal regulations were published in the Gazette of India as S.R.O. No. 600 dated 15th September, 1950 and last amended vide Gazette notifications numbers—

(i) GSR 178 dated 24th March, 1990
(ii) GSR 179 dated 24th March, 1990
(iii) GSR 488 dated 9th October, 1993
(iv) GSR 516 dated 23rd October, 1993
(v) GSR 634 dated 25th December, 1993
(vi) GSR 107 dated 26th February, 1994
(vii) GSR 223 dated 14th May, 1994
(viii) GSR 250 dated 4th June, 1994
(ix) GSR 402 dated 12th August, 1994
(x) GSR 562 dated 12th November, 1994.
(xii) GSR 607 dated 16th December, 1994.