

Chapter 14:08 Factories and Works (Boiler) Regulations, 1976

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[Rhodesia Government Notice No. 279 of 1976](#)

*Amended by **S.I.s 289/82**, 24/07 and 28/2009.*

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IT is hereby notified that the Minister of Labour and Social Welfare has, in terms of [subsection \(1\) of section 34 of the Factories and Works Act \[Chapter 14:08\]](#), made the following regulations:—

PRELIMINARY

Title

1 (1) These regulations may be cited as the Factories and Works (Boiler) Regulations, 1976.

(2) These regulations shall come into operation on the **1st May, 1976**.

Interpretation of terms

2 In these regulations—

“**authorized working gauge pressure**” means the pressure fixed from time to time in terms of [section fourteen](#);

“**Standard**” means a publication—

(a) embodying a standard laid down by British Standards Institution or equivalent; and
[amended by SI 289/82 with effect from 14 May, 1982]

(b) copies of which are held at Occupational Safety Offices where they may be inspected free of charge;

“**Chief Inspector**” means the Chief Inspector of Factories appointed in terms of [section 4 of the Act](#);

“**fee**” means a fee prescribed by [section six](#) ;

“**form**” means a form set out in the *Schedule*;

“**gauge pressure**” means the pressure in excess of that due to the atmosphere;

“**hydraulic test pressure**” means the pressure mentioned in [section thirteen](#);

“**inspector**” means an inspector register furnished in terms of [subsection \(1\) of section eight](#);

“**user**” means—

(a) a builder or occupier, or
(b) a person owning, leasing or otherwise using a boiler;

(2) Subject to the provisions of [subsection \(3\)](#)—

“**boiler**” means—

(a) any apparatus adapted to convert continuously any liquid into steam, vapour or gas at a pressure higher than that due to the atmosphere, where the heat is derived from a source other than steam or the ambient temperature of the atmosphere, which apparatus shall be deemed to include any—

(i) superheater; or
(ii) economizer;

which is an integral part thereof;

(b) any—

- (i) superheater; or
- (ii) economizer;

which is not an integral part of such apparatus; and includes any fittings and appurtenances thereof:

Provided that where any apparatus consists of a combination of 2 or more parts, each of which is capable of adaptation for use as a separate boiler by the closing of 1 or more stop-valves or stop-cocks, each such part shall be deemed to be a separate boiler.

(3) Notwithstanding the provisions of [subsection \(2\)](#), "boiler" does not include any steam generator fitted with a stand-pipe or riser vented directly to the atmosphere, if—

- (a) the cross-sectional dimensions of the vent are such as to prevent the development of any pressure within the vessel in excess of that caused by the vertical height of the vent as allowed in paragraph (b) and in any event shall not exceed 50 kilopascals;
- (b) the vertical height or equivalent vertical height of the vent above the lowest part of the vessel does not exceed 3,5 mtrs.; and
- (c) no valve or other obstruction is inserted in the standpipe or riser so as to prevent the vessel from freely venting to the atmosphere.

PART I BOILERS

Erection and use of boilers without permission prohibited

3 (1) No person shall commence the erection of a boiler until he has received the written permission of an inspector to do so.

(2) No person shall use a boiler, unless he is in possession of—

- (a) a valid Provisional Certificate of Permission, in his name, issued by an inspector in **Form No. F.B. 1**; or
- (b) a valid Certificate of Permission in his name, issued by an inspector in **Form No. F.B. 2**; in respect of the boiler.

(3) No person shall use a boiler otherwise than in accordance with the terms of a Provisional Certificate of Permission or Certificate of Permission, as the case may be. issued in respect thereof by an inspector.

(4) The provisions of this section shall not apply to the erection or use of any stationary boiler owned by the Zimbabwe National Railways in respect of which a boiler inspector employed by the Zimbabwe National Railways has issued a certificate to the effect that the boiler complies with these regulations so far as they are applicable.

Construction maintenance and operation of boilers

4 (1) No user shall use a boiler or cause or permit a boiler to be used unless—

- (a) it is constructed in accordance with the relevant British Standard or equivalent specification approved by the Chief Inspector; and
- (b) it was manufactured under the supervision of an inspection authority approved by the Chief Inspector; and
- (c) it complies with the provisions of these regulations; and
- (d) it is at all times maintained in a safe working condition.

(2) For the purpose of deciding whether or not to approve an inspection authority for the purposes of [paragraph \(b\) of subsection \(1\)](#), the Chief Inspector may require the person seeking such approval to submit such particulars as he may consider necessary in respect of the technical equipment and resources of the inspection authority, the extent and qualifications of its personnel and other relevant matters specified by the Chief Inspector.

(3) Any approval granted by the Chief Inspector for the purposes of [subsection \(1\)](#) may be withdrawn at any time.

Chapter 14:08 Factories and Works (Boiler) Regulations, 1976

Application for permission to erect or use a boiler

5 (1) Any person who wishes—

- (a) to erect and use a boiler; or
- b) use a boiler;

whether or not a Certificate of Permission or a Provisional Certificate of Permission has been granted to any previous user of the boiler, shall submit to an inspector a written application on Form No. F.B. 3, together with the appropriate fee :

Provided that the provisions of this subsection shall not apply to the re-erection of a boiler by the same user on the same premises as those on which the said boiler was previously erected and used.

(2) In the case of a new boiler, the application form shall be accompanied by—

- (a) the maker's complete specification; and
- (b) legible, dimensioned drawings setting out the complete boiler and the plating, riveting and/or welding details; and
- (c) drawings showing the boiler house, if any, in plan and elevation, and the position of the boiler; and
- (d) an inspection certificate issued by the inspection authority which shall certify—
 - (i) the standard specification to which the boiler was constructed; and
 - (ii) the results of the physical tests and chemical analysis carried out on the material used in construction; and
 - (iii) details of the hydraulic test; and
 - (iv) that the construction, heat treatment and hydraulic test were witnessed by the inspection authority; and
 - (v) details of any heat treatment, if required by the standard specification; and
 - (vi) results of any X-ray examination, if required by the standard specification ; and
 - (vii) results of any weld specimen tests if required by the standard specification.

Fees

6 (1) The following fees shall be paid by the user of a boiler to an inspector, in respect of—

(a) each Provisional Certificate of Permission to erect and use a steam boiler or each Certificate of Permission to erect and use a steam boiler—

(i) for a boiler with a heating surface of up to and including 4,5 sq. mtrs., the higher of \$2 000,000,000,000,00 (two trillion dollars) or US\$200,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(ii) for a boiler with a heating surface of over 4,5 sq. mtrs. and up to and including 25 sq. mtrs., the higher of \$4 000,000,000,000,00 (four trillion dollars) or US\$400,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(iii) for a boiler with a heating surface of over 25 sq. mtrs. and up to and including 75 sq. mtrs., the higher of \$6 000,000,000,000,00 (six trillion dollars) or US\$600,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(iv) for a boiler with a heating surface over 75 sq. mtrs. and up to and including 150 sq. mtrs., the higher of \$8 000,000,000,000,00 (eight trillion dollars) or US\$800,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(v) for a boiler with a heating surface over 150 sq. mtrs. and up to and including 500 sq. mtrs., the higher of \$10 000,000,000,000,00 (ten trillion dollars) or US\$1 000,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(vi) for a boiler with a heating surface over 500 sq. mtrs. the higher of \$12 000,000,000,000,00 (twelve trillion dollars) or US\$1200,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(vii) for an electrically heated or electrode boiler, the higher of \$1 000,000,000,000,00 (one trillion dollars) or US\$100,00 or Zimbabwean dollar equivalent;

[amended by SI 27/09 with effect from 20 March, 2009]]

(b) each completed internal inspection or hydraulic pressure test successfully completed, or an inspection in connexion with a dangerous condition due to damage and the need to inspect ensuing repairs subsequent to the issue of a Provisional Certificate or Certificate of Permission to Erect and Use a Steam Boiler, a fee equivalent to 50% of that shown in paragraph (a) of this subsection shall be paid by a user:

Provided that when an internal inspection and a hydraulic pressure test are undertaken on any 1 boiler during the course of any 1 visit only 1 fee shall be payable;

(c)

[para (c) repealed by SI 227/05 with effect from 16th December, 2005]]

(2) Where a user fails to comply with the provisions of [subsections \(2\)](#) and/or (6) of [section 11](#), he shall, nevertheless, be liable to payment of the fees prescribed in [paragraph \(b\) of subsection \(1\)](#).

Issue of Permission to erect and use a boiler

7 (1) On receipt of an application to erect or use a boiler and the appropriate fee, an inspector may grant written permission to erect the boiler and may, after such inspection of the erected boiler as he may consider necessary for the purposes of these regulations—

(a) issue a Provisional Certificate in **Form No. FB. 1**. subject to such conditions and valid for such period as he may from time to time determine;

(b) if he is satisfied that—

(i) the boiler may safely be used; and

(ii) the provisions of these regulations have been complied with;

issue a Certificate of Permission in Form FB. 2, subject to such conditions as he may specify.

(2) An inspector may amend, suspend or cancel a Provisional Certificate of Permission or a Certificate of Permission issued in terms of [subsection \(1\)](#).

(3) A Provisional Certificate of Permission or a Certificate of Permission issued in terms of [subsection \(1\)](#) shall lapse—

(a) on transfer of the ownership, the lease or the use of a boiler; or

(b) when a stationary boiler is removed from the premises;

and the user shall in such a case return the Certificate to the inspector within 7 days thereof.

(4) If a Provisional Certificate of Permission or a Certificate of Permission is lost, defaced or destroyed, the user shall, within 7 days after the discovery of such occurrence, apply to an inspector, in writing, for the issue of a duplicate Certificate and shall pay to the inspector a fee of the higher of

\$400 000,000,000,00 (four hundred billion dollars) or US\$40,00 or Zimbabwean dollar equivalent in respect thereof.

[amended by SI 27/09 with effect from 20 March, 2009]

Boiler inspection register and log-book

8 (1) The user of a boiler shall be furnished, free of charge, with a boiler inspection register in **Form No. F.B. 4**, in which reports of all examinations and tests shall be entered by the inspector conducting such examinations and tests.

(2) No entry shall be made in any register by any person other than an inspector.

(3) A user to whom a register has been issued shall—

- (a) keep the register in a safe place or in such place as an inspector may direct; and
- (b) keep in the register the provisional Certificate of Permission or Certificate of Permission issued to him in terms of [section seven](#), in respect of the boiler concerned; and
- (c) produce the register when required to do so by an inspector.

(4) If a register is lost, defaced or destroyed, the user shall within 7 days after the discovery thereof, make written application to an inspector for the issue of a duplicate register and shall pay to the inspector a fee of zw\$5 000 in respect thereof.

[amended by SI 24/07 with effect from 2 February, 2007:]

[since when no increase in US\$ has been gazetted- in which case 25 zeros are to be removed from this figure i.t.o. [SI 6/2009](#)- Editor.]

(5) If a user transfers the ownership, the lease or the use of a boiler he shall return the register to the inspector within 7 days thereof.

(6) In addition to a register, every user shall, in respect of each boiler, maintain a record of the working of the boiler in a logbook, in which shall be entered without delay the dates on which the boiler is cleaned or examined, together with a statement of the condition of the boiler at any such examination and a full report of any alterations or repairs carried out.

(7) Each entry in such log-book shall be signed—

- (a) by the user; and
- (b) by the person who carried out the cleaning, examination, alterations or repairs, as the case may be.

Particulars to be marked on boilers

9 (1) There shall be stamped on the shell or permanent drum, or on a place permanently affixed to the shell or permanent drum, in such a position that it can be seen at all times—

- (a) the name of the maker; and
- (b) the factory number; and
- (c) the year of construction; and
- (d) the intended maximum working pressure in kilopascals; and
- (e) the standard specification to which it was constructed.

(2) A soft copper plate, 100 mm. by 50 mm. by 3 mm., shall be fixed to every boiler in a place where it can easily be seen, by means of 4 copper rivets 9 mm. in diameter, placed in rivet-holes which shall be so countersunk that the rivets are flush with the copper plate.

(3) On such copper plate there shall be marked by an inspector in a clear manner—

- (a) the official number of the boiler; and
- (b) the year when the boiler was first examined; and
- (c) the authorized working gauge pressure.

(4) The heads of the rivets by which such copper plate is fixed to the boiler shell shall be stamped by the inspector with the official stamp.

(5) No person other than an inspector shall remove such copper plate or deface or alter the particulars marked thereon.

Position of boilers

10 (1) Every boiler shall be so erected as to—

(a) facilitate access into all chambers, flues, drums, headers and apertures, where such access is possible, and

(b) leave clear space of not less than *2 mtrs. between any portion of the boiler and any wall or structure adjacent thereto:

[*space doubled by SI 289/82 with effect from 14 May, 1982]

Provided that—

(i) the provisions of this paragraph shall not apply to any boiler of which masonry forms an integral part; and

(ii) it shall be lawful for lagging or other encasement to occupy not more than 12 mm. of the said clear space.

(2) The highest point of any fitting on top of a boiler shall be at a distance of not less than 3 mtrs. from the ceiling or the lowest portion of the roof-structure above the boiler, and the roof-trusses or braces in the area of a boiler-chimney shall be of non-flammable material.

[amended by SI 289/82 with effect from 14 May, 1982]

(3) Access to the boiler shall be unobstructed.

(4) No user shall use or cause or permit a stationary boiler to be used in a position other than that in which it is situated when the Certificate of Permission was granted, without the written permission of an inspector.

(5) A user who intends to move a stationary boiler shall notify an inspector, in writing, of his intention.

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Inspection and test of boilers

11 (1) Whenever an inspector proposes to examine or test a boiler, he shall, after consultation with the user, determine the date and time of such examination or test, and notify the user thereof in writing and giving the said user at least 7 days' notice.

(2) Upon receipt of such notification the user shall cause all parts of the boiler to be thoroughly cleaned and prepared for examination or testing in accordance with the instructions contained in the notification.

[amended by SI 24/07 with effect from 2nd February, 2007.- See **Note** below]

(2a) The preparation of a boiler for testing in terms of [subsection \(2\)](#) shall be done by a person who, in the opinion of the Chief Inspector, is competent or qualified to undertake the preparation and is approved by the Chief Inspector for the purpose:

Provided that the Chief Inspector may in writing withdraw his or her approval at any time.

[amended by SI 24/07 with effect from 2nd February, 2007.]

[Editor's Note: This SI contains obvious errors which have been corrected for sense's sake, to **preserve** [subsection \(1\)](#), **substitute** [subsection \(2\)](#) and **insert** the new subsection(**2a**): all re-numbered accordingly.]

(3) When the examination of a boiler cannot otherwise be properly executed, parts of or the whole of the masonry or other casing shall, when so required by the inspector, be removed by the user.

(4) No user shall, except with the written permission of an inspector, require or permit a boiler to be encased, whether by masonry or otherwise, before it has been examined or tested under water pressure by an inspector.

(5) Whenever the masonry or other casing or any boiler in use has been removed, either for the purpose of renewal or for repairs to the boiler, and the stoppage of work occasioned thereby provides sufficient time for the external examination or hydraulic test of the boiler, the user shall not replace such masonry or other casing without the written permission of an inspector.

(6) The user of a boiler shall place at the disposal of the inspector, free of charge, workmen, light, tools or such other apparatus or equipment a may be required by an inspector for the purpose of an examination or test.

(7) Where an inspector has, through failure of the user to comply with [subsection \(2\)](#) or [\(6\)](#), been unable to examine or test a boiler on the date notified , the user shall within 7 days after that date make written application for a new date and time to be fixed for the examination or test and shall forward with such application the fee as prescribed in [section six](#) .

[**Note:** the words ' *in uncancelled revenue stamps* ' have also been deleted from the above subsection by the Editor in compliance with the intention in sections 7 and 8 of SI 252/02 and SI 306/02.]

(8) All boilers shall be inspected and pressure tested at intervals as specified, and in a manner approved by the Chief Inspector.

Precautions to be observed in working with boilers

12 (1) When a boiler is being emptied and opened for cleaning, repairs or any other purpose, the user shall take every precaution to ensure the safety of all persons employed in such work or in the vicinity of the boiler.

(2) No user shall require or permit any person to enter a boiler or its flues until he has satisfied himself that the boiler and flues are safe for persons to enter and that the steam-stop, feed, blow-off and all other valves or cocks which may be a source of danger are—

(a) blanked off; or

(b) if blanking-off is not practicable, closed and securely fastened by means of chains and locks;

and no person shall open or unfasten any such valves while any person is inside the boiler or flues.

(3) No person shall use water on hot flue-dust or ashes where danger may arise from such use.

(4) Where portable electric lights are used during the cleaning, repair or inspection of a boiler, the user shall ensure that—

(a) the operating voltage of the lamp does not exceed 30 volts; and

(b) where the power-supply is derived from a transformer, such transformer has separate windings; and

(c) the lamp is fitted with a handle which is robust and made of a non-hygrosopic, non-conducting material; and

(d) all live metal parts and all parts which may become live due to a faulty circuit are completely protected against accidental contact; and

(e) the lamp is protected by means of a substantial guard firmly fixed to the insulated handle; and

(f) the cable lead-in is such that it is capable, as far as is practicable, of withstanding rough usage.

Hydraulic test pressure

13 (1) The hydraulic test pressure of a boiler—

(a) having an authorized working gauge pressure not exceeding 520 kilopascals, shall be double the authorized working gauge pressure; and

(b) having an authorized working gauge pressure exceeding 520 kilopascals, shall be 1,5 times the working-pressure.

[para (b) substituted by SI 289/82 with effect from 14 May,1982]

(2) No test of a boiler shall be regarded as satisfactory until the boiler has withstood the hydraulic test pressure to the satisfaction of an inspector.

Fixing of authorized working gauge pressure

14 (1) The authorized working gauge pressure for a boiler shall be that determined for the boiler by an inspector.

(2) When from an examination it appears to an inspector that a boiler can no longer be worked with safety at the authorized working gauge pressure unless renewals or repairs are effected and the user declines to have such renewals or repairs effected, the inspector may fix a new authorized working gauge pressure at which the boiler may continue to be worked and shall mark the new authorized working gauge pressure on the copper plate referred to in [subsection \(2\) of section nine](#).

(3) When from an examination it appears to an inspector that a boiler is in such a condition that immediate danger may arise from its continued use, the inspector may order the use of the boiler to be suspended and the boiler shall not thereafter be used until repairs have been effected to the satisfaction of the inspector, and his permission to use the boiler has been granted.

(4) No user shall use or cause or permit a boiler to be used at a pressure exceeding the authorized working gauge pressure.

Returns

15 (1) The user of a boiler shall forthwith notify any inspector, in writing, when—

(a) he ceases permanently to use a boiler;

(b) he transfers the ownership, lease or use of a boiler to any other person, in which case he shall advise the inspector of the name and address of such person.

(2) Any person who acquires the ownership, lease or use of a boiler shall forthwith notify an inspector, in writing, thereof and shall state his intentions in regard thereto.

(3) A user of a boiler shall forthwith notify an inspector, in writing, whenever a boiler is damaged.

(4) A user who proposes to execute repairs to a boiler, including general retubing, renewal of furnaces or flues, fixing of new plates or patches and changing of stays, shall forthwith notify an inspector thereof, in writing, and shall furnish to the inspector details of the proposed repairs and such drawings as may be required by the inspector.

(5) No user shall require or permit and no person shall execute repairs to the pressure parts of a boiler without the prior approval of an inspector.

PART II

BOILER APPURTENANCES

Water level

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16 (1) The lowest working water-level for—

(a) a stationery shell boiler, shall be at least 75 mm. above the highest part of the flues passing around or through the boiler;

(b) a portable boiler or a boiler of a locomotive or locomobile, shall be of such a height above the fire line that, even in the case of oscillation of the boiler, the highest part of the surface reached by the fire and heated gases remains sufficiently covered by water.

(c) a water tube boiler, shall be to the satisfaction of an inspector having due regard to the design of the boiler:

Provided that where it is impossible for plating to become over-heated an inspector may approve of portions of the steam space of the boiler being overlapped by the flues.

(2) Every shell boiler shall be fitted with at least 2 reliable devices for ascertaining the true level of the water in the boiler, 1 of which shall be a glass water gauge with proper blow through cocks or valves:

Provided that 1 such device shall be sufficient for a boiler with a total internal capacity of less than 100 litres.

(3) A water tube boiler shall be fitted with at least 2 efficient means of ascertaining the true level of water in the boiler and such devices shall be designed and constructed to the satisfaction of an inspector.

(4) When the device other than the glass water gauge referred to in [subsection \(2\)](#) consists of test cocks, the test cocks shall each be separately connected to the boiler and the lowest test cock shall be at the height of the lowest working water level referred to in [subsection \(1\)](#).

(5) All blow-through cocks and valves shall be fitted with tail pipes, so arranged as to discharge at a point where the safety of persons will not be jeopardized.

(6) The lowest working level referred to in subsection (1) of a boiler shall be indicated by a conspicuous remark—

- (a) on the water gauge; and
- (b) on the boiler shell or masonry.

(7) All water gauges of the glass tubular type of water gauge shall be fitted with an efficient guard which shall be so constructed as not to obstruct the reading of the gauge.

(8) All water gauges shall be so situated and illuminated that the water level in the boiler can at all times be readily observed from the operating floor of the boiler.

Feeding apparatus

17 (1) For the purpose of this [section. 2](#) or more boilers combined for joint working shall be deemed to be 1 boiler.

(2) Subject to the provisions of this section, every boiler shall be fitted with not less than 2 reliable feeding apparatus, of which 1—

- (a) shall be capable of supplying the full feed requirements of the boiler, under all operating conditions:

Provided that, where more than 2 feeding apparatus are provided, they shall be of sufficient size in the aggregate to ensure that, in the event of 1 apparatus failing to operate, the remaining apparatus are capable of fully supplying the feed requirements as aforesaid; and

- (b) shall be either—
 - (i) a power pump; or
 - (ii) an injector

(3) Each such feeding apparatus shall be entirely independent of every other feeding apparatus.

[proviso repealed by SI 289/82 with effect from 14 May, 1982]

(4) Where feeding apparatus consists of a steam-driven pump, the steam supplied to the pump shall be by means of a separate steam supply pipe from the boiler which shall be fitted with—

- (a) a stop-valve as close as practicable to the boiler; and
- (b) where the steam supply can come from more than 1 boiler, a non-return valve which shall be placed adjacent to the stop-valve and between the stop-valve and the feeding apparatus.

(5) No boiler or feeding apparatus shall be connected directly to the source of feed supply without the inter-position of pressure break feed tank.

(6) Notwithstanding the provisions of [subsections \(2\), \(3\),](#) and (4), in the case of—

- (a) a boiler with a total internal capacity of less than 100 litres, 1 feeding apparatus shall be sufficient;

(b) an oil, gas or electrically heated boiler fitted with at least 2 independent means of automatically isolating the source of heat in the event of a deficiency of water, 1 feeding apparatus shall be sufficient;

(c) a boiler in which the product of the authorized working gauge pressure in kilopascals and the evaporative capacity in kgms. per hour does not exceed 130,000, one feeding apparatus may consist of a hand-operated feed pump which is capable of amply supplying the boiler with water;

[capacity increased from 13 000 by SI 289/82 with effect from 14 May,1982]

(d) a boiler in which the product of the authorized working gauge pressure in kilopascals and the evaporative capacity in kgms. per hour does not exceed 6,500, one feeding apparatus which is capable of fully supplying the boiler with water shall be sufficient.

(7) The place where the feed delivery pipe enters the boiler shall be fitted with—

(a) a self-acting non-return or check valve; and

(b) a plug cock or wheel valve which shall be placed between the non-return or check valve and the boiler:

Provided that where the feed delivery pipes are duplicated and fitted with an inter-connecting valve arrangement, an inspector may authorize the use of a combined stop and non-return valve on each feed delivery pipe.

(8) The provisions of [subsections \(2\), \(3\), \(4\), \(5\) and \(6\)](#) shall not apply to separately fired super-heaters.

Economizers

18 Where the feed water-supply to a boiler is through an economizer which is not an integral part of the boiler—

(a) the economizer flue shall be fitted with a by-pass flue; and

(b) an alternative direct-feed supply from the pump shall be fitted to each such boiler.

Low-water alarms

19 (1) Subject to the provisions of [subsection \(2\)](#), every boiler other than an economizer or a separately fired super-heater shall be fitted with a device which shall be—

(a) a steam whistle operated by a float or other means; or

(b) any other device approved by an inspector, by which any deficiency of water is automatically made known independently of any personal observation:

Provided that an oil, gas or electrically heated boiler shall not be fitted with a fusible plug.

(2) The provisions of [subsection \(1\)](#) shall not apply to an oil, gas or electrically heated boiler which is fitted with a device that automatically isolates the source of heat in the event of a deficiency of water in the boiler.

Safety valves

20 (1) Subject to the provisions of [subsection \(5\)](#), every boiler shall be fitted with not less than 2 reliable safety valves, which shall be so loaded that each will lift at or before reaching the authorized working gauge pressure, and the area of opening for the discharge of steam shall be sufficient in the aggregate to prevent the steam pressure rising more than 10% above the authorized working gauge pressure in the event of 1 of the safety valves failing to operate.

(2) Each safety valve shall be attached directly to the boiler without the intervention of a stop-valve.

(3) At least 1 safety valve on every boiler shall be locked securely and shall be capable of being adjusted only by the user.

(4) The valve to be locked in terms of [subsection \(3\)](#) shall have an area of not less and a load not greater than any valves which are not locked.

(5) Notwithstanding the provisions of [subsection \(1\)](#), in the case of—

(a) a boiler with a total internal capacity of less than 100 litres; or

(b) a boiler in which the product of the authorized working gauge pressure in kilopascals and the evaporative capacity in kgs. per hour does not exceed 65,000; or

[capacity increased from 6,500 by SI 289/82 with effect from 14 May, 1982]]

(c) an oil, gas or electrically heater boiler which is fitted with a device which automatically isolates the fuel or power supply, as the case may be, in the event of the steam pressure reaching the authorized working gauge pressure;

1 safety valve which shall be locked securely and shall be capable of being opened only by the user shall be sufficient.

(6) No person shall place any undue mass on a safety valve or increase the load of a safety valve so as to prevent the valve from lifting at the authorized working gauge pressure.

Construction of safety valves

21 (1) A safety valve shall be so constructed that it can be freed easily from its seat at any time, and satisfactory provision shall be made to prevent the valve from flying off in the event of the spring or lever breaking of the mass being removed suddenly by accident or other cause.

(2) A safety valve loaded by a mass or spring acting on a lever shall be so constructed that the load—

(a) acts only upon the extreme end of the lever at the maximum authorized pressure;

(b) is securely fastened to the lever.

(3) Where a safety valve is loaded directly by a spring, the compressing screws shall abut against metal stops, washers or collars at the working load compression,

(4) A safety valve and its components and connections to a boiler shall be constructed of metal of a type approved by an inspector:

Provided that an inspector may not approve cast-iron for this purpose in respect of a valve, component or connection fitted to a boiler with an authorized working gauge pressure of more than 1,000 kilopascals.

(5) On each boiler, at least 1 safety valve shall be fitted with an easing gear so designed as to enable the valve to be lifted and held off its seat from the operating floor of the boiler.

Steam stop-valve

22 (1) Every boiler shall be provided with a main steam stop valve as close as practicable to the boiler.

(2) If more than 1 boiler is connected to the same steam range, a non-return valve which may be of the screw-down type and combined with the main steam stop-valve, shall be placed between the boiler and the steam range.

(3) All steam-valves and components and connexions to a boiler shall be constructed of metal of a type approved by an inspector:

Provided that an inspector may not approve cast-iron, except in respect of valves, components and connexions fitted to a boiler with an authorized working gauge pressure of not more than 1,000 kilopascals.

(4) No person shall draw steam from a boiler for any purpose other than the operation of the boiler auxiliary apparatus, other than through or by means of the main steam stop-valve.

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Blow-off cocks and pipes

23 (1) Every boiler shall be fitted with at least 1 blow-off cock or valve placed at the lowest point and connected either directly by flanges or by means of a flanged pipe.

(2) Every blow-off cock or valve and all the fillings connected therewith shall be constructed of metal of a type approved by an inspector:

Provided that an inspector may not approve cast iron for this purpose.

(3) Where a connecting pipe is lifted, the pipe shall —

- (a) not come into contact with any masonry; and
- (b) be adjoined by flanges; and
- (c) if a flange is not solid with the pipe—
 - (i) be welded to the flange;
 - (ii) be passed through the flange and riveted over on the inside, in addition to any screw threads, riveting or any other connection between the flange and the pipe;

and in a case where the authorized working gauge pressure is more than 3,500 kilopascals, all flanges shall be welded on, whenever practicable, and stress relieved.

(4) The discharge from every blow-off cock or valve shall be conducted into an open or suitably vented tank, drain or sump which is so situated and guarded as to prevent danger to any person by means of a blow-down pipe which shall be graded so that the water will flow freely to the tank.

(5) The discharge from the blow-off cocks or valves of a boiler shall not lead into a blow-down pipe connected to another boiler:

Provided that an inspector may, where—

- (i) each blow-off cock or valve is operated by a key which can be removed only when the blow-off cock or valve is closed and is the only key available for all the blow-off cocks or valves connected to the same pipe; or
- (ii) such other safety measures as he may specify in writing are fitted;

give written authority for such an arrangement.

Pressure gauges

24 (1) Every boiler shall be fitted with at least 1 reliable pressure gauge which shall be—

- (a) designed to show at all times the correct internal pressure of the boiler; and
- (b) connected to that part of the boiler where the highest vapour pressure occurs; and
- (c) fitted with a dial graduated to show pressure in kilopascals, on which the graduation corresponding to the highest authorized working gauge pressure shall be clearly marked with a red line; and
- (d) so situated, and the dial thereof so illuminated, that the working pressure shown thereby can be distinctly read at all times from the operating floor of the boiler; and
- (e) capable of being shut off from the boiler by means of a clearly visible stop-cock or valve.

(2) The maximum pressure capable of being registered by the pressure gauge shall be—

- (a) not less than the hydraulic test pressure of the boiler; and
- (b) not more than double the authorized working gauge pressure.

(3) Every pressure gauge shall have a separate direct connexion with the boiler, and where the pressure gauge is attached directly to the shell or drum of the boiler it shall be attached by means of a syphon or other suitable device whereby steam or vapour does not come into direct contact with the working parts of the instrument.

Test-gauge connexions

25 (1) Every boiler, the authorized working gauge pressure of which is 2,800 kilopascals or less, shall be fitted with a device consisting of a cock with a flange 40 mm. in diameter by 5 mm. thick, for the attachment of the inspector's test-gauge.

[amended by SI 289/82 with effect from 14 May,1982]]

(2) Every boiler, the authorized working meter pressure of which is in excess of 2800 kilopascals, shall be fitted with a device consisting of a valve or cock carrying in a vertical position a receiving socket for the attachment of the inspector's test-gauge, which receiving socket shall be tapped with a metric fine pipe-thread and shall be fitted with an easily removable screw cap or plug.

(3) The devices referred to in [subsections \(1\)](#) and [\(2\)](#) shall be so placed as to enable the inspector's test-gauge and the boiler's pressure-gauge to be read from 1 place.

Access to valves and fittings

26 Suitable railed walks, runways, platforms and stairs or ladders constructed of steel or other fire-resisting material and fitted with non-slip surfaces shall be installed for access to manholes and overhead valves and fittings where directed by an inspector.

Access and inspection openings

27 (1) A user shall ensure that a boiler is fitted with—

(a) where necessary, suitable inspection openings, so situated that all internal surfaces, longitudinal seams and circumferential seams may be conveniently inspected and cleaned; and

(b) where the dimensions of the boiler are such as to permit entry into the boiler, not less than 1 manhole which shall be not less than—

(i) in the case of an elliptical hole, 380 mm. by 280 mm.; or

(ii) in the case of a circular hole, 380 mm. in diameter:

Provided that the provisions of this paragraph shall not apply to a boiler fitted with removable ends or cover-plates which are of sufficient size to permit entry into the boiler.

(2) An inspector may, if he considers that insufficient inspection openings have been fitted, require a user to provide such additional inspection openings as he may specify.

Requirements for boiler mountings and fittings

28 (1) All boiler mountings and fittings shall be constructed to an accepted standard specification.

(2) Pipework, flanges and valves shall be constructed to a standard for the relevant pressure or service.

[inserted by SI 289/82 with effect from 14 May,1982]

(3) All steam-reticulation pipework shall be insulated to a minimum height of 2,5 mtrs. from ground-level or grating.

[inserted by SI 289/82 with effect from 14 May,1982]

PART III

MISCELLANEOUS

Savings

29 A Provisional Certificate of Permission or Certificate of Permission issued under the Factories and Works (Boiler) Regulations, 1968, or the Factories and Works Regulations, 1963, which was still in force immediately before the date of commencement of these Regulations shall be deemed to be a Provisional Certificate of Permission or Certificate of Permission issued in terms of these Regulations.

Repeals

30 The Factories and Works (Boiler) Regulations, 1968, published in Government Notice No. 954 of 1968, are repealed.

SCHEDULE

FORMS