

3 3009 00700 0974

STATE OF NEW JERSEY  
DEPARTMENT OF LABOR

**Mechanical Engineering Bureau**  
TRENTON, NEW JERSEY

Engineers' and Firemen's License Rules and Regulations.

Steam Boiler Construction and Inspection Rules and Regulations.

Pressure Vessel Rules and Regulations.

Refrigeration Plant Inspection Rules and Regulations.

(In accordance with Title 34, Chapters 1 and 7 of the Revised Statutes.)

Percy A. Miller, Jr.

HARRY C. HANDEK  
COMMISSIONER OF LABOR

MacCrellish & Quigley Co  
Printers  
Trenton, New Jersey

1948

NJ/KAB  
L1/M4  
1948  
C.2

New Jersey State Library

## GUIDE RULES

---

1. Address all communications to the Mechanical Engineering Bureau, Dept. of Labor, Trenton, N. J.
2. All engineers, builders, owners, operators and inspectors should be conversant with the New Jersey Standard Boiler, Unfired Pressure Vessel Construction and Inspection Laws.
3. Manufacturer's data reports (and blueprints when necessary) on boilers and unfired pressure vessels coming into this State must be filed with the Mechanical Engineering Bureau, Boiler Inspection Division, Department of Labor, State House, Trenton, N. J.
4. When writing this Department in reference to a boiler or unfired pressure vessel, always give New Jersey State boiler inspection number, manufacturer's serial number, A. S. M. E. or National Board number and name of manufacturer.
5. When writing in reference to A. S. M. E. boiler or unfired pressure vessel code always refer to section, page and paragraph.
6. When contracting for or purchasing new or second hand boilers, unfired pressure vessels, or boiler appliances, always specify A. S. M. E. Standard, which is New Jersey Standard. This will save expense and time.
7. Always have boiler and refrigeration plant certificates posted in a conspicuous place in boiler or engine room.
8. In writing relative to refrigerating plants which are under inspection and operation regulations, always refer to the refrigeration plant inspection registration number.
9. The operating engineers and firemen in a steam power generating plant are issued licenses in accordance with their qualifications to operate such plants. It is the duty of engineers and firemen on watch to give constant attention to their

plant to the extent that they know at all times it is operating with safety, and the time they can be away from the plant varies according to the nature and size of the plant and the load it carries. Under no circumstances should an engineer or fireman be required by the owner or management to stay away from the plant to the detriment of its safe operation.

The regulations under the State law require that a licensed operator should not leave his boilers or power plant longer than twenty minutes at any period.

This, however, depends on the manner in which the plant is run; that is, whether under full load, light load, or banked.

It is the responsibility of the licensed operator to be able to determine how long he can stay away from his plant with safety and not jeopardize the safe operation of the boilers or engines or compressors, or whatever the plant may consist of.

10. The Mechanical Engineering Bureau, Division of Engineers' License, Steam Boiler, Pressure Vessel and Refrigeration Inspection and New Jersey Board of Boiler Rules were instituted to insure safety and efficiency in steam boiler construction and inspection and steam engineering practice in general throughout the State, for the protection of life and property, and with that end in view, engineers, firemen, boiler inspectors and others where it comes to their notice, should advise this Department of any existing dangerous hazards or law violations. Such reports will be considered confidential.

11. A steam boiler or steam power generator over six horsepower must be under the care of a licensed operator.

#### BOARD OF EXAMINING ENGINEERS

JOSEPH F. SCOTT, *Deputy Commissioner*  
EDWARD WALKER  
A. GEORGE ERHOLM

## LICENSE REGULATIONS

### Operating Engineers' and Firemen's License Rules and Regulations

#### RULES

1

Applicant "foreign born" must have full citizenship papers and present them at time of examination.

2

The fee for original issue of all licenses is stated on application form, and must, in every instance, be accompanied with application.

3

The execution of an affidavit, verifying statements that are not facts, will be taken as grounds for either prosecution, or the immediate revoking of any license issued upon such information.

4

A license received by request of employer as provided under a set time limit which expired January 1, 1915 (P. L. 1913, ch. 363), is not transferable. A holder of request license to transfer to another plant as engineer or fireman must undergo an examination. If license expires ten days it is automatically cancelled.

5

License Classifications:

1—A, B and C, Central Power Stations and Industrial Plants.

1—A, B and C, Dredges.

2—A, B and C, Refrigeration Plants.

3—A, B and C, Heating Plants.

4—A, B and C, Locomotives.

4—C, Bridges.

3

8—C, "Portable" Building Hoists, Road Roller,  
Pile Driving and Steam Shovels.

9—A and B, Locomotive Cranes.

10—A, B and C, Internal Combustion Engines.

Boiler Operator in Charge.

Boiler Operator.

Boiler Operator, Low Pressure.

6

The letters "A," "B" and "C" are used to designate GRADE or qualification of the person holding such license (as shown by examination) in the field of engineering covered by the classification indicated on such license. A, or Gold Seal, designates a first-grade license; B, or Red Seal, a second-grade license, and C, or Blue Seal, a third-grade license. A Black Seal designates Boiler Operator.

7

A license will be given a designation as Grade "A," when an average of 80% or more is obtained on examination of Grade "A" questions.

8

A license will be given a designation as Grade "B," when an average of 70% or more is obtained on examination of grade "B" questions.

9

A license will be given a designation as Grade "C," when an average of 60% or more is obtained on Grade "C" examination questions. No license will be granted on an average of less than 60%.

10

Grade "A" license received after examination may be used in charge of any plant to which it applies, as shown by classification.

4

11

Grade "B" license received after examination authorizes the holder to act as chief engineer in any plant to which it applies, not exceeding five hundred (500) horsepower, or as assistant or operating engineer under the direction of a Chief Engineer holding a first class license.

12

Grade "C" license received after examination authorizes the holder to act as chief engineer in any plant to which it applies, not exceeding one hundred (100) horsepower, or act as operator or assistant under the direction of a Chief Engineer holding a higher license and he covering the plant as chief.

13

Application for license must be made on form provided by the Mechanical Engineering Bureau. The first or original application must be certified to by two engineers each holding a New Jersey license which is renewed up to date. Substitution for the signatures of two N. J. Engineers may be made by presenting Marine Engineers' License, another State or City License, an honorable U. S. Navy discharge, or Merchant Marine discharge showing required engineering experience, or two letters from former or present employer showing required engineering experience.

14

A license issued after examination covering one or more classifications is valid in any plant where the class of engineering is within the scope of license issued.

15

To be eligible for examination for a license to operate a refrigerating plant where the refrigerant used is anhydrous ammonia, applicant must have at least one year's experience as an oiler, or assistant, or have six months' experience as operator.

5

15 (a)

A graduate of a technical school must have at least one year's experience in a steam generating power plant, such experience covering boilers, engines, etc.

15 (b)

A machinist who can show that he has served his term of apprenticeship must have at least one year's experience in a steam generating power plant, such experience covering boilers, engines, etc.

16

Examination for license for Boiler Operators shall include such questions as the Examiner shall see fit for the safe operation of boilers, boiler room appliances and boiler room machinery.

16 (a)

Licensed Boiler Operator in charge can operate boilers and boiler auxiliary machinery.

16 (b)

A licensed boiler operator may be an operator on a shift, providing he is under the jurisdiction of a licensed engineer or a licensed boiler operator in charge.

16 (c)

"Licensed Boiler Operator" is eligible for examination for "Licensed Boiler Operator in Charge" after three additional months actual service in boiler room.

17

All examinations for licenses shall be conducted in a written form, and shall consist of questions selected by the Examiner, and shall also consist of as many questions and of such nature as the Examiner shall consider appropriate for the license desired, and any further questions asked by the Examiner shall be in

written form and attached permanently to the record of the examination; *provided, however*, that the privilege of oral examination, to determine the experience of the applicants, his habits and apparent general fitness to perform the duties of an engineer or fireman, shall be allowed the Examiner.

18

Any license may be suspended or revoked for incompetence, negligence, intoxication, or other valid causes which render the plant dangerous to operate, when such cause is the fault of the licensee, or same was obtained by fraud.

19

No license will be granted to a person less than eighteen years of age.

20

If a person making application for a license under any certain classification, fails to pass examination for same, the Examiner may assign him to the class to which his examination entitles him, and he cannot be re-examined again for a period of three months or more.

21

All licenses shall be exhibited under a framed glass visible both sides in a conspicuous place in the engine or boiler room. Revocation of license and penalty provision are applicable if the above is not observed.

22

Requests for application forms for engineers' or firemen's licenses, filed with this office, shall be accompanied by the name and address of the applicant desiring to make use of same, and address of employer, if employed.

Questions used in examination shall not be copied by any applicant, or retained by the applicant after examination, or be allowed to leave the presence of the Examiner during the examination. Violation of this rule will be sufficient cause for cancellation of application.

Upon making application for renewal, or additional classification of license, applicant's current license must be returned for cancellation before a new one will be issued, but the original license shall be returned to the applicant with the renewed issue.

#### NOTE

At times of examination applicants are not permitted to talk or make any notes, or take same from examination room.

SMOKING NOT ALLOWED IN EXAMINATION ROOM.

No license will be renewed that has been mutilated in any manner until after it has been passed upon by the Board of Examining Engineers.

A LICENSE THAT IS NOT RENEWED, IS AUTOMATICALLY CANCELED ON THE DATE OF ITS EXPIRATION, AND ANY OPERATING ENGINEER OR FIREMAN PERFORMING THE DUTIES OF A LICENSED OPERATOR UNDER AN EXPIRED LICENSE IS SUBJECT TO THE PENALTY PROVISIONS UNDER R. S. 34:7-6, AND ALSO HIS EMPLOYER. RENEWAL OF LICENSE CAN BE MADE THIRTY DAYS PREVIOUS TO THE DATE OF ITS EXPIRATION.

FOR THE PURPOSE OF EXAMINATION OR INSPECTION OF ANY POWER PLANT, THE COMMISSIONER OF LABOR OR ANY MEMBER OF THE MECHANICAL ENGINEERING BUREAU OR THE DEPARTMENT OF LABOR MAY ENTER SUCH PREMISES AT ALL REASONABLE HOURS.

Employers shall immediately notify the Mechanical Engineering Bureau, if for any reason of emergency it becomes necessary to employ an unlicensed engineer or boiler operator temporarily (not to exceed fifteen days), and to again notify the Bureau, when a licensed man is employed, giving the name, address, and license number of such employee.

FEE FOR APPLICATION FOR LICENSE SHALL BE IN THE FORM OF CERTIFIED CHECK, EXPRESS MONEY ORDER, OR POST OFFICE MONEY ORDER, MADE PAYABLE TO THE ORDER OF THE MECHANICAL ENGINEERING BUREAU. NO RISK WILL BE ASSUMED BY THIS OFFICE FOR LOSS IN TRANSMISSION OF FEE.

All licenses issued shall run for one year from date, unless sooner revoked, for cause. And the certifying of additional classifications by examination, shall not change the date of expiration.

All correspondence on the subject of license or license applications should be addressed to the MECHANICAL ENGINEERING BUREAU, DEPARTMENT OF LABOR, TRENTON, N. J., who should be kept informed of any change of residence address, and in all cases refer to license number.

32

Applications will not be received, or license given to persons not employed in this State, unless they are actual residents of the same, or furnish a letter from a firm or corporation of this State or General Contractors desiring to employ them.

33

Examinations will be held on the first Wednesday of each month, at the State House, Trenton, N. J., and at various centrally located points throughout the State, as often as the same may appear necessary.

34

Notice of time and place of examination will be given all having applications on file, from the section where examination is to be held. Satisfactory reasons must be given for any failure to appear for examination after notice has been duly given of same. Failure to appear will be considered sufficient cause to discard the application.

35

Applicants who cannot read or write, before given an oral examination, must sign a statement made out bearing these facts, with his affidavit attached thereto. The applicant who makes a false sworn statement in this case will be judged in accordance with Rule No. 20.

36

Identification cards are issued to all engineers who hold licenses under classification 8 and 9 of rule 5.

37

Any license or identification card granted to an engineer, or boiler operator, shall be immediately revoked if, for any purpose, the holder thereof voluntarily parts with its possession or places it beyond his personal control by pledging or depositing it with another.

10

34:7-6. PENALTY VIOLATIONS. Any person who shall violate any of the provisions of this article shall be liable to a penalty of not less than ten dollars (\$10.00) nor more than one hundred dollars (\$100.00), to be collected by suit or compromise. An officer of a corporation violating any of the provisions of this article shall be personally liable for the violation by such corporation. Any manager, superintendent or other person in charge of any building or other places in which this article is violated shall be liable for such violation.

## STEAM BOILER CONSTRUCTION AND INSPECTION RULES

1

All steam boilers must be constructed to meet New Jersey rules and must be stamped either:

New Jersey Standard  
A. S. M. E. or  
National Board

R. S. 34:7-23.1 provides a penalty of fifty dollars (\$50.00) to one hundred dollars (\$100.00) for violation of the steam boiler construction rules.

2

All steam boilers "having ten or more square feet of heating surface and carrying a pressure of more than 15 lbs. p.s.i."; must be inspected internally and externally, at least once each year. (R. S. 34:7-14.)

3

The steam boiler to be inspected must be: empty, cleaned, cooled and ready for the inspector. The inspector's orders relative to repairs of the boiler, valves or other auxiliaries effecting the safety of the boiler, must be given attention without delay.

4

a. When an insurance company inspects the steam boiler, the owner, lessee or operator of the steam boiler is required to pay to the insurance company inspector or to the insurance company a fee of \$2.00 for each boiler inspected, which in turn is payable to the State.

b. When the State inspects the steam boiler, the State inspection fees are as follows:

10 and not over 60 sq. ft. of heating surface ..... \$3.00

12

Over 60 and not over 1,000 sq. ft. of heating surface ..... 6.00  
Over 1,000 sq. ft. of heating surface.. 12.00

In addition: the actual cost of travel incurred by the State inspector in going to and returning from the place of inspection.

c. State inspection is not required where there is insurance inspection.

5

R. S. 34:7-23 and 23.1 provides that all steam boilers shall conform to such regulations and standards as are from time to time adopted by the New Jersey Board of Boiler Rules.

6

New Jersey State Registration Inspection Number must be stamped on the boiler at or near the manufacturer's identifying number and should be as follows:

N. J. 00000 (letters and figures should be not less than  $\frac{1}{4}$  inch in height)

The New Jersey State Registration Number must be attached to the front of the boiler in figures not less than 1 inch or over 2 inches in height.

7

The State Boiler Inspection Certificate must be framed and posted in the boiler or engine room; engineers' or plant office, whichever is suitable to the management, providing the certificate is available for check-up when authoritatively required.

8

Steam boiler and all pipe welding repairs up to the outlet valve of any pipe lines from the boiler and where the pressure is over 15 lbs. p.s.i. must be done by qualified welders. (Note: Qualified welders are those approved by this Bureau or an authorized insurance company.)

13

All steam boiler blow down tanks, whether of the closed or vented type, should be of the following dimensions in relation to boiler rating:

<i>Boiler Rating</i>	<i>Minimum Size Tank</i>
2 to 20 H.P.....	18 in. diam. x 24 in.
21 to 50 H.P.....	24 in. diam. x 30 in.
51 to 100 H.P.....	30 in. diam. x 36 in.
101 to 200 H.P.....	36 in. diam. x 36 in.
201 to 400 H.P.....	36 in. diam. x 42 in.
401 to 800 H.P.....	42 in. diam. x 48 in.
801 to 1000 H.P.....	48 in. diam. x 60 in.

## 10

R. S. 34:7-26 provides a penalty of fifty dollars (\$50.00) to one hundred dollars (\$100.00) for violation of steam boiler inspection rules and regulations.

## PRESSURE VESSEL CONSTRUCTION RULES

## 1

All pressure vessels used in this State as containers of air, steam, volatile liquid or lethal gases or liquids when or before installed, must be approved by the Steam Boiler Inspection Division in accordance with rules adopted.

## 2

Pressure vessels to meet New Jersey rules must be stamped either:

New Jersey Standard  
A. S. M. E. or  
National Board

## 3

R. S. 34:7-23 and 23.1 provides that all pressure vessels shall conform to such regulations and standards as are from time to time adopted by New Jersey Board of Boiler Rules.

## 4

Manufacturer's data report covering each pressure vessel constructed for use in New Jersey must be filed in this Bureau.

## 5

Pressure vessel exemptions:

- a. Pressure vessels which are subject to Federal inspection and control.
- b. Vessels under 6 in. in diameter or having a volume of less than 5 cubic feet.
- c. Vessels, non-lethal, carrying a pressure of less than 15 lbs. p.s.i.

## 6

Pressure vessels of the fired and unfired class and all pipe welding repairs up to the outlet valve of any pipe lines from the vessel and where the pressure is

over 15 lbs. p.s.i. or the temperature exceeds 250° F. must be done by qualified welders. (Note: Qualified welders are those approved by this Bureau or an authorized insurance company.)

7

Annual inspection of pressure vessels is not required. Intermittent inspections may be conducted when found warranted.

8

R. S. 34:7-23.1 provides a penalty of fifty dollars (\$50.00) to one hundred dollars (\$100.00) for violation of the Pressure Vessel Construction Rules.

## REFRIGERATION PLANT RULES

1

Refrigerating plants or systems, using ammonia or ethyl chloride, of over three-ton refrigerating capacity, must be inspected annually by an authorized State or insurance company inspector. (R. S. 34:7-25.)

2

Liquid receivers, shell and tube condensers, high pressure liquid lines shut off and safety valves on the high and low side must be inspected for external corrosion, plugged safety valves, and inoperative shut-off valves.

3

The inspector must check operators' licenses where such are required, also State refrigeration certificate. The inspector should check with the operator, average head pressure, method of purging system, to prevent abnormal head pressure.

4

A safety valve of the necessary size must be installed on the compressor discharge line, located between the compressor and outlet port and the discharge shut-off valve; this can discharge in the low pressure side.

5

A safety valve must be installed on the gas space of the liquid receiver, likewise on the shell, multiple type, or other type condenser where such are used as a combination condenser and liquid receiver.

6

The discharge from said receiver, or condenser, or both, must be to the atmosphere at a safe point and through a diffuser. Where the discharge to the atmosphere is impracticable and dangerous to the immediate neighborhood said discharge can be into a water tank of proper proportions so that said tank can drain to the sewer with safety.

Table of safety valve sizes for ammonia refrigeration equipment:

For equipment up to 30 tons capacity, use at least.....	30 to 60 tons capacity, use at least	1/2 in.	Safety Valves
	60 to 100 tons capacity, use at least	3/4 in.	Safety Valves
	100 to 175 tons capacity, use at least	1 in.	Safety Valves
	175 to 250 tons capacity, use at least	1 1/4 in.	Safety Valves
	250 to 450 tons capacity, use at least	1 1/2 in.	Safety Valves
For equipment of from	450 to 900 tons capacity, use at least	2 in.	Safety Valves

R. S. 34:7-26 provides a penalty of fifty dollars (\$50.00) to one hundred dollars (\$100.00) for violation of the refrigeration plant inspection law, rules and regulations.

<i>Pounds of Refrigerant in System</i>		<i>Size</i>	<i>Valves</i>
Up to 1,000 lbs.	.....	1/2 in.	Safety Valves
1,000 to 1,800 lbs.	.....	3/4 in.	Safety Valves
1,800 to 3,000 lbs.	.....	1 in.	Safety Valves
3,000 to 5,250 lbs.	.....	1 1/4 in.	Safety Valves
5,250 to 7,500 lbs.	.....	1 1/2 in.	Safety Valves
7,500 to 13,500 lbs.	.....	2 in.	Safety Valves
13,500 to 27,000 lbs.	.....	2 in.	Safety Valves