1952 No. 1689

The Factories (Testing of Aircraft Engines and Accessories) Special Regulations, 1952

Made - - - -	15*th September*, 1952
Laid before Parliament	16*th September*, 1952
Coming into Operation	1*st November*, 1952

The Minister of Labour and National Service, by virtue of the powers conferred upon him by section 60 of the Factories Act, 1937(**a**), section 8 of the Factories Act, 1948(**b**), and the Transfer of Functions (Factories, &c., Acts) Order, 1946(**c**) and of all other powers him enabling, hereby makes the following Special Regulations.

Short title and commencement

1. These Regulations may be cited as the Factories (Testing of Aircraft Engines and Accessories) Special Regulations, 1952, and shall come into operation on the 1st day of November, 1952.

Interpretation

2.—(1) The Interpretation Act, 1889(**d**) applies to the interpretation of these Regulations as it applies to the interpretation of an Act of Parliament.

(2) In these Regulations, unless the context otherwise requires, the following expressions have the meanings hereby assigned to them respectively, that is to say:—

" Accessory " means any carburettor or fuel pump for aircraft.

" Aircraft engine " means any aircraft engine in which petroleum spirit is used.

" Control room " means any room, compartment, gallery, corridor or other enclosure in which testing is controlled.

" Earthed " means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without danger.

" Engine room " means any room, compartment or other enclosure in which aircraft engines are placed for testing.

" Fire-resisting material " means

(*a*) properly constructed brickwork not less than four and one-half inches in thickness ; or

(*b*) concrete not less than three inches in thickness ; or

(*c*) efficiently jointed breeze slabbing not less than three inches in thickness ; or

(*d*) oak or teak not less than one and three-quarter inches in finished thickness ; or

(*e*) glass not less than one-quarter of an inch in thickness in the centre of which wire mesh is embedded ; or

(**a**) 1 Edw. 8 & 1 Geo. 6. c. 67.
(**b**) 11 & 12 Geo. 6. c. 55.
(**c**) S.R. & O. 1946/376; Rev. VII, p. 88; 1946 I, p. 1006.
(**d**) 52 & 53 Vict. c. 63.

(*f*) structural material completely and securely covered, on all sides from which there is a risk of fire, with compressed asbestos not less than three-sixteenths of an inch in thickness, or other protective covering approved in writing by the Chief Inspector for any of the purposes of these Regulations ; or

(*g*) other material approved in writing by the Chief Inspector for any of the purposes of these Regulations.

" Flameproof " in relation to electrical apparatus means apparatus conforming with the appropriate British Standard Specification or of a type approved in writing by the Chief Inspector for the purposes of this definition.

" Intrinsically safe " in relation to electrical apparatus means electrical apparatus of a type approved in writing by the Chief Inspector for the purposes of this definition.

" The Minister " means the Minister of Labour and National Service.

" Petroleum-spirit " means petroleum-spirit as defined in section 23 of the Petroleum (Consolidation) Act, 1928(**a**), and any other inflammable liquid or mixture or substance which, when tested in the manner set forth in Part II of the Second Schedule to that Act, gives off an inflammable vapour at a temperature of less than seventy-three degrees Fahrenheit.

" Test room " means a control room or an engine room or any room, compartment or other enclosure in which testing is carried out.

" Testing " means the various operations and processes carried out to determine the performance or condition of aircraft engines or accessories or incidental to such determination, being operations or processes in which petroleum-spirit is used and carried out when such aircraft engines or accessories are not mounted in aircraft.

" Testing equipment " means all apparatus, appliances, pipework and other equipment used for or incidental to testing.

Application of Regulations

3. Save as hereinafter provided, these Regulations shall apply to all factories in which the testing of aircraft engines or of carburettors or fuel pumps for aircraft is carried on.

Saving

4. Nothing in these Regulations shall be deemed to relieve the occupier of a factory or any other person of any obligation imposed by the Electricity (Factories Act) Special Regulations, 1908 and 1944.

Exemptions

5. If the Chief Inspector is satisfied in respect of any factory to which these Regulations apply or in respect of any class or description of such factories that by reason of special circumstances in that factory or in such class or description of factories, or by reason of the small extent of the testing carried on therein, or for any other reason, all or any of the requirements of Regulations 6 to 24 hereof are not necessary for the protection of the persons employed, he may by certificate in writing (which he may at his discretion revoke at any time) exempt such factory or any part or parts thereof or such class or description of such factories or any part or parts thereof from the operation of any such requirements, subject to such conditions as may be specified in the certificate, and where such exemption is granted a legible copy of the certificate showing the conditions subject to

(a) 18 & 19 Geo. 5. c. 32.

which it has been granted shall be kept posted up in any factory to which the exemption applies in a position where it may be conveniently read by the persons employed.

Construction of rooms

6. Every test room and every other room or enclosure in which testing equipment is installed or used shall be constructed of fire-resisting materials. All cable or pipe trenches or other apertures between one test room and another and between test rooms and other parts of the premises shall (except in the case of apertures provided for ventilation or other air-conveying purposes between a test room and the open air or a part of the premises other than another test room) be sealed so far as is practicable by such materials and in such manner as are specified in Part V and Appendix D of British Standard Specification No. 1043 of 1942, or by such materials and in such manner as may be approved in writing by the Chief Inspector of Factories. All doors of test rooms and of other rooms in which testing equipment is installed or used shall be constructed of fire-resisting materials and closely fitting:

Provided that:—

(i) iron or steel may be used in the construction of any part of any such room (including a door) if the part is so situated that there is no danger of fire spreading from that part to any other building or to any highly inflammable material outside such a room ;

(ii) glass not being fire-resisting material may be used in the construction of windows in outside walls or roofs of such rooms if the window is so situated that there is no danger of fire spreading from the window to any other building or to any highly inflammable material outside the room ;

(iii) glass of the category known as heat-treated safety glass and not less than one-quarter of an inch in thickness may, notwithstanding that it may not be fire-resisting material, be used in the construction of windows, so, however, that in the case of windows between engine rooms and control rooms there shall be two such thicknesses of such glass with an air space between them ;

(iv) doors may be constructed of wood not less than one and a half inches in finished thickness and completely sheathed in iron or steel not less than 0.018 inches in thickness or may be of such other type of fire-resisting construction as may be approved in writing by the Chief Inspector.

Separation of work

7. Testing shall not be carried out in any room or other enclosure in which work other than testing or work directly incidental to testing is being carried out.

Drainage of tanks and pipework

8.—(1) Suitable means, controlled if reasonably practicable from a position immediately outside the control room, shall be provided to effect the rapid drainage of tanks and pipes from or through which petroleum-spirit can reach testing equipment by gravity so that, after the operation of such means of drainage, not more than two gallons of petroleum-spirit can reach any testing equipment by gravity, and arrangements shall be made to ensure that when the means of drainage are brought into operation the supply of petroleum-spirit to such tanks or pipes shall be automatically cut off. Where the only such means as aforesaid are electrically controlled they shall be such as to be effective in the event of a failure of the electrical supply.

(2) The requirements of paragraph (1) of this Regulation shall not apply as respects testing equipment in connection with which the arrangements are such that petroleum-spirit cannot flow into the equipment except when pumping is in operation, but in any such case means of promptly stopping the pumping shall be provided in the control room.

Drainage where leakage is liable to occur from testing equipment

9. Where leakage or escape of petroleum-spirit is liable to occur, whether in ordinary working or through accidental damage to the equipment, from or from the vents of a float chamber, metering tube, Venturi chamber, flowmeter or other part of the testing equipment, there shall be provided adequate and suitable overflow or drainage arrangements for preventing such leakage or escape or for draining away any leaking or escaping spirit as near as is reasonably practicable to the point of leakage or escape, and unless such leakage or escape can be directly observed there shall be provided an easily visible indicator in such a position as to show readily when a leakage or escape is occurring.

Drainage in engine rooms and where accessories are tested

10. In every test room there shall be provided adequate drainage arrangements, in conjunction where necessary with pumping arrangements, for draining or pumping away from a point as near as is reasonably practicable to the point of leakage or escape any petroleum-spirit leaking or escaping from an aircraft engine or an accessory or from connections thereto:

Provided that draining or pumping away from an engine bed shall not be required where not reasonably practicable but in any such case portable receptacles of suitable design shall be provided and used to catch any leaking or escaping spirit as near as is reasonably practicable to the point of leakage or escape and to convey the spirit away.

Drains

11. Every drain for petroleum-spirit shall lead to a closed tank which shall be fitted with a contents gauge and with a suitable trap to prevent the return of vapour and shall not be situated in or under any building. Where it is impracticable to comply with the last foregoing requirement, the drain may lead to a closed receptacle so fitted and situated in or under a building if it is installed within an adequately ventilated and readily accessible space. Arrangements shall be made for frequent inspection and frequent emptying of such a receptacle.

Ventilation of test rooms

12. Exhaust ventilation, suitably arranged having regard to the part or parts of the room where leakage or escape of petroleum-spirit is liable to occur, shall be maintained by mechanical means in every test room at all times when any aircraft engine, accessory, testing equipment or vessel in the room contains petroleum-spirit or when vapour from petroleum-spirit may be present:

Provided that, in the case of an engine room, exhaust ventilation maintained by mechanical means shall not be required if there is substantial ventilation of the room by other means and if there is installed fixed fire-extinguishing equipment suitably arranged having regard to the part or parts of the room where a fire due to leakage or escape of petroleum-spirit is liable to occur.

Control valves

13.—(1) In the case of each control room one or more quick acting valves shall be provided by means of which there can be cut off the supply of petroleum-spirit to all the testing equipment controlled from that room and, unless the control room contains no testing equipment used for containing or carrying petroleum-spirit and vapour from petroleum-spirit is not liable to be present, arrangements shall be made so that any such valve can be operated both from within and from a position immediately outside the control room.

(2) In any case where there is mechanical exhaust ventilation in a control room for the purposes of Regulation 14, arrangements shall be made by means of a valve or valves interlocked with the control of the mechanical exhaust so that petroleum-spirit cannot be supplied to any testing equipment in the room until the ventilation is in operation, and the arrangements for cutting off supplies of petroleum-spirit shall not be such as to prevent such exhaust ventilation from being maintained when the supply is cut off.

Flame-proof electrical apparatus

14. Electrical apparatus which is neither flameproof nor intrinsically safe shall not be installed or used in the vicinity of testing equipment used for containing or carrying petroleum-spirit, except (i) where vapour from petroleum-spirit is not liable to be present or (ii) where there is mechanical exhaust ventilation adequate to prevent an inflammable concentration of vapour from petroleum-spirit from reaching such electrical apparatus and such apparatus is placed as far as is reasonably practicable from such testing equipment.

Earthing of magnetos

15. The metal cases of magnetos installed or used in test rooms shall be effectively earthed.

Earthing of aircraft engines

16. Every aircraft engine and any metallic stand or mounting to which it is attached for testing shall be effectively earthed.

Further requirements as to earthing, tests and protective devices

17.—(1) Where any metal testing equipment used for containing or carrying petroleum-spirit is installed in such proximity to metal sheathing of an electrical conductor as to give rise to danger from any difference of electrical potential arising between such equipment and such sheathing, the equipment and sheathing shall be effectively bonded together and earthed in such a manner and at such intervals as to prevent such danger.

(2) Tests by a competent person shall be made not less frequently than once in every three months to ascertain that the insulation resistance of any electrical circuit installed in test rooms, or in any place in dangerous proximity to testing equipment used for containing or carrying petroleum-spirit, and the conductivity to earth of any metal sheathing of any such electrical circuit, are adequate to prevent danger, and the results of such tests shall be recorded and kept available for inspection.

(3) There shall be provided for each main circuit and sub-circuit installed in test rooms or in any place in dangerous proximity to testing equipment used for containing or carrying petroleum-spirit earth-leakage protective devices which on the occurrence of an earth fault will disconnect the whole installation in such room or place or at least the defective circuit:

Provided that this requirement shall not apply where the maximum possible earth fault leakage current from the circuit is greater than that required to operate the circuit overload protective devices.

Portable lamps

18. All portable electrical inspection lamps used in test rooms or in any place where vapour from petroleum-spirit is liable to be present shall be flameproof or intrinsically safe.

Use of petroleum-spirit for purposes other than testing, etc.

19. No petroleum-spirit shall be used and no person shall use petroleum-spirit in test rooms for any purpose except testing or the cleaning of accessories or of testing equipment used for containing or carrying petroleum-spirit.

Naked flames and smoking

20.—(1) No naked flame shall be allowed or used, no smoking shall be allowed, and no person shall smoke in any room, department or place even in the open air where testing of aircraft engines or accessories is done, and no person shall strike a light or spark in or introduce a naked flame into any such room, department or place:

Provided that—

(*a*) electric arc or other welding or any other process involving the use of naked flame may be carried out if all testing equipment used for containing or carrying petroleum-spirit and situated in such room, department or place has been so far as possible emptied by drainage and if adequate ventilation is maintained whilst such process is being carried out; and

(*b*) the exhaust flame from a running engine shall not be deemed to be a naked flame for the purposes of this Regulation.

(2) Notices shall be kept prominently affixed, particularly in or immediately outside each test room, clearly stating that smoking is prohibited in such rooms, departments or places as aforesaid.

Escape from fire

21. There shall be adequate means of escape in case of fire from every position in which a person is employed in a test room or in any room or other enclosure containing testing equipment used for containing or carrying petroleum-spirit, and such means of escape shall be kept free from obstruction at all times.

Fire extinguishing equipment

22.—(1) There shall be available for every test room adequate fire extinguishing equipment, being fixed or portable equipment, capable of discharging carbon dioxide gas, foam, or other suitable substance, or fixed equipment which will automatically discharge water at high pressure in the form of a fine spray.

(2) Where there is fixed fire extinguishing equipment in a test room, means for operating it shall be arranged both within and outside the test room; and where such equipment is provided with arrangements for its automatic operation means shall also be provided for putting such arrangements out of operation and substituting hand control, such means to be so designed as

to prevent the equipment from being under both methods of control simultaneously; and an automatic indicator shall be installed near the entrance to the room to show whether the equipment is under automatic or under hand control. The equipment shall be under hand control at all times when persons are employed within the room:

Provided that the requirements of this paragraph shall not apply as respects fixed equipment which operates automatically and discharges only water.

(3) The means of operating fixed equipment shall be so arranged that when operated the mechanical ventilation system of the test room is put out of action, and so far as is practicable any ventilating apertures are closed.

(4) Not more than 50 per cent. of the total discharge capacity of the portable fire extinguishing equipment for a test room shall be installed within the room; the remainder shall be kept available for immediate use at a position as near as possible to but outside the room.

(5) Effective provision shall be made for giving warning to an appropriate fire control centre in the factory of an outbreak of fire in any room, department or place in which the testing of aircraft engines or accessories is carried out.

Reporting defects

23. Every person engaged in testing shall without delay report to the occupier of the factory or other responsible person any defect which he may find in any of the apparatus or appliances provided, or the arrangements made for the purposes of his work in pursuance of these Regulations.

Abstract to be posted

24. An Abstract of these Regulations in such form as may be approved by the Minister shall be kept posted up in legible characters in each control room and engine room in a position where it can be easily read by all persons employed in the room.

Dated this fifteenth day of September, 1952.

Walter Monckton,
Minister of Labour and National Service.

EXPLANATORY NOTE

(This Note is not part of the Regulations, but is intended to indicate their general purport.)

These Regulations, which apply to all factories in which the testing of aircraft engines or of carburettors or fuel pumps for aircraft is carried on, prescribe precautions to be taken to reduce the risk of fire and explosion. The provisions contained in the present Regulations, which are made under the Factories Acts, 1937 and 1948, replace the provisions contained in the Factories (Testing of Aircraft Engines, Carburettors and Other Accessories) Order, 1944(a), made under Regulation 60 of the Defence (General) Regulations, 1939.

(a) S.R. & O. 1944/495; 1944 II, p. 484.