
STATUTORY INSTRUMENTS

1998 No. 2884

ROAD TRAFFIC

The Motor Vehicles (Authorisation of Special Types) (Amendment) (No. 2) Order 1998

Made - - - - *21st November 1998*

Coming into force - - *1st December 1998*

The Secretary of State for the Environment, Transport and the Regions, in exercise of the powers conferred by section 44 of the Road Traffic Act 1988(1), and of all other powers enabling him in that behalf, hereby makes the following Order:—

Citation and commencement

1. This Order may be cited as the Motor Vehicles (Authorisation of Special Types) (Amendment) (No. 2) Order 1998 and shall come into force on 1st December 1998.

Vehicles propelled by natural gas

2.—(1) The Motor Vehicles (Authorisation of Special Types) General Order 1979(2) shall be amended as follows.

(2) After Article 17 there shall be inserted the following Article—

“17A. The Secretary of State authorises the use on roads of vehicles propelled by compressed natural gas notwithstanding that they do not comply with the requirements of regulations 40, 94(2) and (3) and 96 of, or of Schedule 4 or 5 to, the Road Vehicles (Construction and Use) Regulations 1986(3) subject to the following conditions:—

- (a) all other relevant requirements of the Road Vehicles (Construction and Use) Regulations 1986 shall be complied with;
- (b) the compressed natural gas system shall comply with Schedule 5A; and
- (c) Schedule 5B shall be complied with.”

(3) After Schedule 5 there shall be inserted the Schedules set out in the Schedule to this Order.

(1) 1988 c. 52; section 44 was amended by the Road Traffic Act 1991 (c. 40), Schedule 4, paragraph 51.
(2) S.I. 1979/1198, to which there are amendments not relevant to these Regulations.
(3) S.I. 1986/1078, to which there are amendments not relevant to these Regulations.

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Signed by authority of the Secretary of State

21 November 1998

Larry Whitty
Parliamentary Under Secretary of State,
Department of the Environment, Transport and
the Regions

SCHEDULE

Article 2

SCHEDULES TO BE INSERTED AFTER SCHEDULE 5 TO THE MOTOR VEHICLES (AUTHORISATION OF SPECIAL TYPES) GENERAL ORDER 1979

“SCHEDULE 5A

Article 17A

CONSTRUCTIONAL REQUIREMENTS FOR COMPRESSED NATURAL GAS SYSTEMS FOR VEHICLE PROPULSION

Definitions

1. In this Schedule—

“articulating connector” means a connector bridging the space between two separate and rigid vehicle structures;

“bar” means bar gauge;

“compressed natural gas” means natural gas stored at a pressure above 30 bar;

“design pressure” means the pressure which a part of a gas propulsion system has been designed to withstand;

“gas container” means a container fitted to a motor vehicle or a trailer and intended for the storage of natural gas for the purpose of the propulsion of the vehicle or of the drawing vehicle as the case may be;

“g” means gravity;

“high pressure” means designed to withstand a pressure exceeding 7 bar;

“large bus” means a vehicle constructed or adapted to carry more than 16 seated passengers in addition to the driver;

“medium pressure” means designed to withstand a pressure not exceeding 7 bar but exceeding 75 millibars;

“millibars” means millibars gauge;

“mm” means millimetres;

“mm²” means square millimetres;

“N” means newtons;

“°C” means degrees Celsius;

“pipeline” means any pipe or passage connecting any two parts of a gas propulsion system;

“pressure relief device” means a device to protect a gas container against over-pressure, and

“regulator” means a device which automatically reduces and controls the pressure of the gas flowing through it.

Gas containers

2.—(1) Any gas container shall—

(a) be suitable to be fitted to the vehicle to which it is fitted and be constructed from suitable materials;

(b) be capable of containing natural gas operating at a working pressure of 200 bar settled at 15°C with a maximum filling pressure of 260 bar;

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- (c) be free from any visible damage or defect and not have been the subject of any alteration or repair subsequent to its manufacture;
 - (d) be fitted with a manually operable isolation valve and a pressure relief device (but may in addition be fitted with an electrically operable isolation valve);
 - (e) be used for no more than 30 years from the date of manufacture, and
 - (f) be marked as follows in characters 6mm high (unless otherwise stated)—
 - (i) ‘CNG ONLY’ in letters at least 25mm high;
 - (ii) the date of manufacture;
 - (iii) ‘DO NOT USE AFTER ’ in characters at least 25mm high, and specifying the month and year of expiry;
 - (iv) the design pressure at a temperature of 15°C;
 - (v) the date of the original pressure test, together with the identity of the testing station;
 - (vi) the date of any subsequent periodic pressure test carried out in accordance with paragraph 2 of Schedule 5B and the identity of the testing station, and
 - (vii) the design life of the gas container if less than 30 years.
- (2) Any gas container shall be so mounted that—
- (a) the effectiveness of any vehicle crumple zone is not impaired;
 - (b) it is securely attached to the vehicle by suitable mountings that will protect the gas container from displacement or damage due to vibration or other cause;
 - (c) the gas container and its mountings do not weaken the vehicle’s structure or affect the vehicle’s stability;
 - (d) it is placed in such a position that the risk of impact damage to the gas container and its isolation valve is, as far as practicable, reduced and it is placed or shielded so that the effects of any impact are, as far as practicable, reduced;
 - (e) it is placed in such a position or so shielded that the risk of damage from flying debris is minimised;
 - (f) it is placed in such a position or so insulated or shielded that the effects of any source of heat are minimised;
 - (g) it is suitably protected from external corrosion and abrasion; and
 - (h) subject to sub-paragraph (3), any leaking or vented gas will be directed safely to the atmosphere preventing as far as practicable the possibility of its entering the engine, passenger, or the driver or living compartment.
- (3) Where a gas container is to be located in the driver, passenger or living compartment or in the vehicle boot, or in any space which is not so ventilated as to prevent the accumulation of gas, the valves, connections and pipework shall be enclosed in order to contain any gas leakage, either by—
- (a) placing the gas container and its fittings within a durable enclosure which is sealed so that it is gas tight to the compartment, vehicle boot or space as the case may be and which is provided with permanent direct ventilation to the outside of the vehicle, or
 - (b) enclosing the neck and fittings of the gas container within a durable envelope which is gas tight to the compartment, vehicle boot or space as the case may be and which is provided with permanent direct ventilation to the outside of the vehicle.
- (4) Any enclosure or envelope required for the purposes of sub-paragraph (3) shall not contain any source of ignition.
- (5) Any ventilation opening required under sub-paragraph (3) shall—

- (a) have a free area of not less than 600mm², and
 - (b) be terminated away from any openings into any vehicle compartment, away from any source of ignition and in a position where it is not liable to blockage.
- (6) Any pressure relief device contained within any enclosure shall have a separate, dedicated vent line which may pass within the enclosure vent.
- (7) In relation to every gas container, there shall be provided, either on the gas container itself or in documents which are readily available, information concerning—
- (a) any particular installation requirements;
 - (b) details of any pressure relief devices fitted or required to be fitted to the gas container;
 - (c) recommended inspection intervals (which shall not be more than 3 years), and
 - (d) any recommended inspection procedure.

Gas container isolation

- 3.—(1) Any gas container shall be capable of being isolated from its supply pipework by means of an isolation valve connected directly to each gas container but not between the gas container and its pressure relief device.
- (2) Any isolation valve shall be capable of shutting off all the gas flow from the gas container, except through the pressure relief device.
- (3) Any isolation valve shall be marked clearly and permanently with the direction of operation.
- (4) Any isolation valve shall be so protected as to ensure that its operation is unaffected by the collection of moisture or other foreign matter.
- (5) Any gas container valve assembly shall be so placed as, so far as practicable, to be protected from damage.
- (6) In this paragraph “isolation valve” means a manually operable isolation valve.

Pressure relief devices

- 4.—(1) Every gas container shall be provided with a suitable pressure relief device which complies with sub-paragraphs (3) to (7).
- (2) Where a pressure regulator is fitted to a gas container, any pressure relief device attached to it shall comply with sub-paragraphs (3) to (7).
- (3) Any pressure relief device shall be such that—
- (a) there is an adequate discharge rate to ensure the safety of the system;
 - (b) any cooling effect of the gas during discharge will not affect the discharge rate;
 - (c) its relieving characteristics will not be impaired on exposure to fire;
 - (d) operation of the device will not inhibit the discharge rate from the device;
 - (e) its outlet size is not less than the size of inlet or outlet pipework of the gas container;
 - (f) it cannot be installed in the reverse flow direction;
 - (g) it is so protected as to ensure that its operation is unaffected by the collection of moisture or other foreign matter;
 - (h) if the device is adjustable, unauthorised interference with its settings is prevented, and
 - (i) it is marked clearly with the set pressure or temperature and with the flow direction.
- (4) Any pressure relief device shall be placed so that—

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- (a) so far as practicable, the device and its outlets are protected from damage and blockage in the event of an accident;
 - (b) its discharge rate is not inhibited if an associated gas container is located within an enclosure, and
 - (c) it is away from any source of heat which could impair the designed operation of the device.
- (5) The discharge from a pressure relief device shall terminate outside the vehicle and be directed or deflected away from any opening into the engine, driver, passenger or living compartment, vehicle boot, or any space which is not so ventilated as to prevent the accumulation of gas.
- (6) The discharge from a pressure relief device shall not terminate near any source of heat or other potential source of ignition.
- (7) A pressure relief device on any gas container or regulator located within the driver, passenger or living compartment, vehicle boot, or in any space which is not so ventilated as to prevent the accumulation of gas shall have its discharge vented separately and directly to the outside of the vehicle.

Pipelines

- 5.—(1) Every pipeline shall be fixed in such a manner and position that—
- (a) it will not be adversely affected by the heat of the exhaust system of any engine or by any other source of heat;
 - (b) it is protected from vibration and strain in excess of that which it can reasonably be expected to withstand;
 - (c) it is so placed or shielded as to minimise the risk from flying debris; and
 - (d) in the case of a medium or high pressure pipeline it is so far as practicable accessible for inspection.
- (2) Save as provided in sub-paragraph (4), every medium or high pressure pipeline shall be—
- (a) a rigid line of seamless steel of high pressure hydraulic grade, suitable for service on road vehicles and designed for the full range of operating temperatures, pressures and loading which may occur, and
 - (b) effectively protected against, or shielded from, or treated so as to be resistant to, external corrosion throughout its length unless it is made from material which is corrosion resistant under the conditions which it is likely to encounter in service.
- (3) No unsupported length of any medium or high pressure pipeline shall exceed 600mm.
- (4) Flexible hose may be used in a medium or high pressure pipeline if—
- (a) it is reinforced either by stainless steel wire braid or by textile braid, and
 - (b) save in the case of a pipeline attached to a gas container for the purpose of filling that gas container, the flexibility which it provides is necessary for the construction or operation of the gas propulsion system of which it forms a part.

Unions and joints

- 6.—(1) Every union and joint on a pipeline or gas container shall be so constructed and fitted that it will—
- (a) not be liable to work loose or leak when in use, and
 - (b) be readily accessible for inspection and maintenance.

(2) Every union on a medium or high pressure pipeline or on a gas container shall be made of suitable metal but such a union may contain non-metal washers and seals provided that such washers and seals are supported and constrained by metal components.

Filling connectors

7.—(1) Any filling connector for the refuelling of the vehicle shall be of a type which is used exclusively for natural gas filling and which is compatible with the filling nozzle without the use of an adapter fitting.

(2) Gas shall be prevented from flowing back from the gas container to the filling connector.

(3) Any filling connector shall be covered with a dust cap, which is secured permanently to the vehicle.

(4) Where a filling connector is placed on the outside of the vehicle, it shall be protected against unauthorised interference.

(5) The filling connector shall be located outside the driver or passenger compartment in a suitably protected, well ventilated and readily accessible position, away from any openings in the driver, passenger or living compartment.

Valves, safety devices and control equipment

8.—(1) Every gas propulsion system shall be so designed and constructed that—

(a) the supply of gas to the engine is stopped by an automatic valve when—

(i) the engine is not running at all;

(ii) the engine is not running on the supply of gas, or

(iii) the engine ignition is off;

(b) where the valve referred to in sub-paragraph (a) is not integral with the regulator, it shall be positioned upstream of the regulator so as to be able to isolate the gas container and filling point, and

(c) in the event of a rapid deceleration of the vehicle in an accident or similar occurrence, the supply of gas to the engine is automatically stopped at a point as close as is possible to the gas container and can only be restored manually.

(2) Where the engine or vehicle is constructed or adapted to run on one or more fuels as an alternative to gas or in addition to gas, the safety of the engine or the gas fuel system shall not be impaired by the presence of any other fuel system.

(3) In addition to the isolation valve required under paragraph 3 and the pressure relief device required under paragraph 4, every gas container shall, subject to sub-paragraph (4), be fitted with an automatically-operated valve to prevent gas escaping from the gas container in the event of a fracture or failure of the pipeline or any component in the gas supply system.

(4) In the case of a group of gas containers interconnected in such a manner that the pipework is protected in the event of an accident, the group of gas containers may be fitted with a single automatically operated valve or device to prevent gas escaping from the group of gas containers in the event of a fracture or failure of the pipeline or of any component in the gas supply system.

(5) Any electrically operated valve shall be constructed so as to open when electrical power is applied and close when electrical power is removed.

(6) Where a vehicle is equipped to operate on more than one fuel but not on a mixture of fuels, a fuel selection system shall be installed which—

(a) has a control switch which is readily accessible to the driver at all times and is clearly marked for the selection of each fuel or fuel mixture;

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- (b) has a change-over system, operated by the control switch mentioned in paragraph (a) to prevent the use of more than one fuel at a time, except for the fuel remaining in the common system during change-over, and
- (c) does not impair the safety of the engine or the fuel system.

(7) All parts of every valve or cock which are in contact with gas shall be made of suitable metal, save that they may contain non-metal washers and seals if those washers and seals are supported and constrained by metal components.

Regulators

9.—(1) Any regulator fitted shall be designed so that—

- (a) it has a pre-set pressure and flow rating suitable for the part of the system to which it is attached;
- (b) it incorporates a means of protecting the system downstream of the regulator from the upstream pressure in the event of failure of or leakage from the regulator;
- (c) it is marked clearly and permanently with the fuel type, pressure and flow direction, and
- (d) if the engine cooling system is utilised within the regulator, passage of gas into the engine cooling system is prevented.

(2) Any pressure relief device on a regulator shall comply with the requirement of paragraph 4(3) to (7).

(3) Any regulator shall be so installed that—

- (a) it is in an accessible position for inspection and maintenance;
- (b) it is in a position where it is protected from heat sources;
- (c) it is in a position where, as far as is practicable, any ventilation holes are prevented from being blocked, and
- (d) it is securely attached to a secure mounting.

(4) Where a regulator is to be located in the driver, passenger or living compartment, or in the vehicle boot or in any other space which is not so ventilated as to prevent the accumulation of gas, it shall be enclosed in order to contain any gas leakage, either by—

- (a) placing the gas container and its fillings within a durable enclosure which is—
 - (i) sealed so that it is gas tight to the compartment, vehicle boot or space as the case may be and which is,
 - (ii) provided with permanent direct ventilation to the outside of the vehicle, or
- (b) enclosing the neck and fittings of the gas container within a durable envelope which is—
 - (i) gas tight to the compartment, vehicle boot or space as the case may be and which is,
 - (ii) provided with direct permanent ventilation to the outside of the vehicle.

(5) A regulator shall not be attached directly to the engine or to any part ancillary to the engine.

Special requirements for buses

10. In the case of a large bus there shall be fitted as near as practicable to the gas container a valve which stops the flow of gas into the gas supply pipeline in the event of—

- (a) the angle of tilt of the vehicle exceeding that referred to in regulation 6 of the Public Service Vehicles (Conditions of Fitness, Equipment, Use and Certification) Regulations 1981(4), or
- (b) the deceleration of the vehicle exceeding 5g.

Connections for articulated vehicles

- 11.**—(1) Where a trailer is used for the carriage of any part of the gas supply system—
- (a) an articulating connector complying with sub-paragraphs (2) to (8) shall be fitted between the part of the system on the vehicle and the part of the system on the trailer, and
 - (b) the articulating connector shall not be subjected to more than medium pressure.
- (2) Any articulating connector shall—
- (a) be of a type suitable for natural gas systems;
 - (b) be designed to accept a compatible nozzle without the use of adapter fittings; and
 - (c) not be interchangeable with connections for other services.
- (3) The gas supply pipework at the terminal on each section of the articulated unit shall be capable of withstanding a force of at least 200N in any direction before deformation or failure occurs.
- (4) Any articulating connector shall be designed so that separation can be achieved in a fail-safe manner, minimising the volume of gas released during the separation process and while the joint remains disconnected.
- (5) Disconnection devices shall be designed to prevent unauthorised interference.
- (6) Dust caps shall be fitted to exposed connections to keep out dirt and such dust caps shall be attached to the system.
- (7) The articulating connector shall be properly supported and protected at all times.
- (8) The articulating connector shall incorporate a breakaway coupling, which is designed to separate when a breakaway force of 200N or greater is applied in any direction and which has an automatic isolation system to minimise the release of gas in the event of the separation of the breakaway coupling.

Marking and labelling of the vehicle

- 12.**—(1) Every vehicle which is equipped to be fuelled by natural gas shall be fitted with a metal identification plate, located in a readily visible and accessible position, that is marked clearly and permanently to identify—
- (a) that the vehicle has been constructed or adapted to run on natural gas, and
 - (b) the maximum system filling pressure.

This information is in addition to the information required by paragraph 2(1)(f) with respect to the gas container.

- (2) The filling point for natural gas shall be identified adjacent to the point by the words “NATURAL GAS” or other suitable wording.

General requirements

- 13.** Every part of the gas system shall be—
- (a) so far as practicable located and protected so as not to be exposed to accidental damage;

(4) S.I. [1981/257](#); relevant amending instrument is S.I. [1982/1058](#).

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- (b) soundly and properly constructed of materials which are compatible with one another and with the gas used or likely to be used and which are capable of withstanding the loads or stresses likely to be met in operation, and
- (c) so designed and constructed that the number of joints is kept to a minimum and that leakage of gas is unlikely to occur.

SCHEDULE 5B

Article 17A

GAS CONTAINER TESTING REQUIREMENTS

1. Before its first use on a vehicle, every gas container shall be pressure tested by an accredited testing laboratory at a pressure of 1.5 times the working pressure of the gas container. The pressure test shall be carried out in accordance with the procedure set out in paragraph 4.7 of BS 5430 : Part I : 1990 or, where an equivalent procedure has been specified by the manufacturer, in accordance with that procedure.

2. Without prejudice to the obligation imposed by regulation 100 of the Road Vehicles (Construction and Use) Regulations 1986, the owner of any vehicle, or, if it is in the possession of a different person, that person, shall ensure that any gas container used on that vehicle is subject to a periodic test by an accredited testing laboratory every three years, or with such greater frequency as the manufacturer specifies. The periodic test shall include—

- (a) the pressure test specified in paragraph 1, and
- (b) an internal and external visual inspection carried out in accordance with paragraphs 4.4.2 and 4.4.3 of BS 5430 : Part I : 1990, or, where an equivalent procedure has been specified by the manufacturer, in accordance with that procedure.

3.—(1) A gas container which has satisfied a test required under paragraph 1 or 2 shall be permanently and legibly marked with—

- (a) the month and year of the test, and
- (b) the identity of the testing station.

(2) Where the gas container bears a previous test mark, the mark required under this paragraph shall be placed adjacent to that mark.

4. In this Schedule—

“an accredited testing laboratory” means a testing laboratory which has been accredited by the United Kingdom Accreditation Service or by an equivalent body in an EEA State under European Standard EN 45001 : 1989 for general criteria for the operation of testing laboratories (British Standard BS 7501 : 1989);

“BS 5430 : Part I : 1990” means Part I of the British Standard for the periodic inspection, testing and maintenance of transportable gas containers (excluding dissolved acetylene gas containers), published in 1990 or any equivalent standard published by a recognised testing body in an EEA State in which case a reference to any provision of that British Standard is to be taken as a reference to the equivalent provision of any such equivalent standard;

“EEA State” means a State which is a contracting Party to the Agreement on the European Economic Area signed at Oporto on 2nd May 1992 as adjusted by the protocol signed at Brussels on 17th March 1993⁽⁵⁾; and

“gas container” has the meaning given in paragraph 1 of Schedule 5A.”

(5) Cm 2073 and 2183.

EXPLANATORY NOTE

(This note is not part of the Order)

This Order amends the Motor Vehicles (Authorisation of Special Types) General Order 1979 by the insertion of a new article 17A, whereby the Secretary of State authorises the use on roads of vehicles propelled by compressed natural gas notwithstanding that they do not comply with specified requirements of the Road Vehicles (Construction and Use) Regulations 1986, provided that the requirements of new Schedules 5A and 5B to the 1979 Order are complied with.

The new Schedules 5 and 5A are set out in the Schedule to this Order. Schedule 5A sets out the constructional requirements for compressed natural gas systems used for the propulsion of vehicles. The new Schedule 5B sets out the requirements for testing gas containers used in such systems. Tests must be carried out at an accredited testing laboratory in accordance with British Standard 5430 : Part I : 1990 or any equivalent standard recognised in an EEA State and laboratories must be accredited by the United Kingdom Accreditation Service or accredited in accordance with European Standard EN 45001 or an equivalent national standard in an EEA State.

Copies of British Standards BS 7501 : 189 and BS 5430 : Part I : 1990 and of European Standard EN 45001 : 1989 (which is identical with BS 7501 : 1989) can be obtained from the British Standards Institution, Customer Service Department, 389 Chiswick High Road, London W4 4AL (Telephone: 0181-996 7000 or from the Stationery Office).

This Order has been notified to the European Commission pursuant to Directive [83/189/EEC](#) of 28 March 1983 laying down a procedure for the provision of information in the field of technical standards and regulations (OJ 1983 L109, p.9) as amended by Council Directive [88/182/EEC](#) of 22 March 1988 (OJ 1988 L81, p.75) and European Parliament and Council Directive [94/10/EEC](#) of 23 March 1994 (OJ 1994 L100, p.30).