

MINISTRY OF ELECTRICITY AND WATER

Decree No. (1) for the year 2004 Pertaining to WATER Connections Regulation

The Minister of Electricity and Water:

After viewing the Law by Decree No. (1) for the year 1996 pertaining to Electricity and Water. And

Based on the presentation of the Undersecretary of the Ministry of Electricity and Water,

Decides:

Article (1)

The Regulation attached to this Decree shall be applied and any provision contrary to it shall be cancelled.

Article (2)

The Undersecretary of the Ministry of Electricity and Water shall implement this Decree, and it shall come into force after the expiry of six months from the day following its publication in the Official Gazette.

Minister of Electricity and Water
Abdulla Bin Salman Bin Khalid Al Khalifa

Issued: 23 Rabea Al Awal 1425 H.
Corr. 10 July 2004

PART 1 – INTERPRETATIONS AND GENERAL PROVISION.

CLAUSE 1. INTERPRETATIONS

In this Regulation, unless the context otherwise requires: -

BACKFLOW means flow in a direction contrary to the intended normal direction of flow;

BACKSIPHONAGE means backflow caused by the siphonage of liquid from a cistern or appliance into the pipe feeding it;

BOILER means an enclosed vessel in which water is heated by the direct application of heat;

CISTERN means a fixed container for holding water atmospheric pressure;

COMBINED FEED AND EXPANSION CISTERN means a cistern for supplying water to a hot water system and which is also the cistern for discharge of vented hot water from that hot water system;

COMMUNICATION PIPE means that part of a service pipe which is vested in the WDD;

CYLINDER means a cylindrical closed vessel capable of containing water under pressure greater than atmospheric pressure;

DOMESTIC relates to any supply or installation into mainly residential premises;

DISTRIBUTING PIPE means any pipe (other than an overflow pipe or a flush pipe) conveying water from a storage cistern, or from a hot water apparatus supplied from a feed cistern, and under pressure from that cistern;

DISCHARGE PIPE means any pipe conveying water from a cistern or pressure vessel to the point of use;

DWELLING means any property occupied for residential use;

EXPANSION CISTERN means a cistern connected to a water heating system which accommodates the increase in volume of water in that system when it is heated from cold;

FEED CISTERN means any storage cistern used for supplying cold water to a hot water apparatus, cylinder or tank;

FLOAT OPERATED VALVE means a valve, for controlling the flow of water into a cistern, the valve being operated by the vertical movement of a float riding on the surface of the water;

FLUSHING CISTERN means a cistern provided with a device for discharging the stored water rapidly into a water closet pan or urinal;

FLUSH PIPE means a pipe for conveying water from a flushing cistern to a water closet pan or urinal;

INSTANTANEOUS WATER HEATER means an appliance in which water is immediately heated as it passes through the appliance;

NON-DOMESTIC relates to any supply or installation to/in agricultural, industrial or commercial premises;

PRIMARY CIRCUIT means an assembly of pipes and fittings in which water circulates between a boiler or other water heater and primary heater inside a hot water storage vessel;

PRIMARY HEATER means a heater mounted inside a hot water storage vessel for the transfer of heat to the stored water from circulating hot water;

PREMISES means any property which receives a supply from WDD;

SERVICE PIPE means so much of any pipe for supplying water from main to any premises as is subject to water pressure from that main, or would be so subject but for the closing of some valve;

SERVICING VALVE means a valve for shutting off the flow of water in a pipe connected to a water fitting to facilitate the maintenance or servicing of that fitting;

SPILL OVER LEVEL – means the level at which the water in a cistern or vessel will first spill over if the inflow exceeds the outflow through any outlet and any overflow pipe;

STOP VALVE means a valve, other than a servicing valve, fitted in a pipeline for controlling or stopping at will, the flow of water;

STORAGE CISTERN means any cistern storing water for subsequent use, other than a flushing cistern;

SUPPLY PIPE means so much of any service pipe as is not a communication pipe;

TANK means a non-cylindrical closed vessel capable of containing water under pressure greater than atmospheric pressure;

UNVENTED PRIMARY CIRCUIT means a primary circuit which is not provided with a vent pipe;

VENT PIPE means a pipe open to the atmosphere and used in connection with a hot water system for the escape of air or steam;

VENTED PRIMARY CIRCUIT means a primary circuit which is provided with a vent pipe;

WARNING PIPE means an overflow pipe so fixed that its outlet, whether inside or outside the building, is in a conspicuous position where the discharge of water can be readily seen;

WASHING TROUGH means a wash basin, wash trough or sink measuring internally more than 1.2 m over its longest or widest part, at which two or more persons can wash at the same time;

WATER SUPPLIED FOR DOMESTIC PURPOSES means water supplied by the WDD for drinking, washing, cooking and sanitary purposes and includes watering a garden and washing vehicles kept for private use.

WATER FITTINGS includes pipes (other than mains), taps, cocks, valves, ferules, meters, cisterns, baths, water closets, soil pans and other similar apparatus used in connection with the supply and use of water suitably marked to demonstrate compliance with standards that are internationally recognised and accepted;

WDD means the Water Distribution Directorate.

CLAUSE 2. PROHIBITION OF NON-COMPLYING FITTINGS

No person shall:

- (a) install a water fitting to convey or receive water supplied by the WDD, or alter, disconnect, such a water fitting unless that person is a licensed plumber approved by WDD.
- (b) cause, or permit such a water fitting to be installed, altered, disconnected or used in contravention of Regulation, or
- (c) shall use water except for the purpose and class of use for which the connection was applied for and obtained.

CLAUSE 3. PROHIBITION OF FITTINGS WHICH ARE DAMAGED OR WORN.

No person shall:

Install or cause or permit to be connected or arranged a water fitting in a manner which, or use, or cause or permit to be connected or used, a water fitting which is damaged, worn or otherwise faulty so that it; causes or is likely to cause, waste, undue consumption, misuse or contamination of water supplied by the WDD.

**CLAUSE 4.
SAVING FOR FITTINGS LAWFULLY FITTED.**

Subject to any express provision to the contrary, this Regulation shall not require any person to remove, replace, alter, disconnect or cease to use any water fitting lawfully installed, or lawfully used, or capable of being used, before this Regulation came into operation.

**CLAUSE 5.
REQUIREMENT FOR STORAGE.**

Every premises must have adequate storage capacity sized in accordance with anticipated usage and demand patterns and which should provide no less than 24 hours supply. As a guideline; per capita daily consumption for Villas 350 Litre/person/day and for Flats 230 Litre/person/day.

WDD will provide water up to the metre and the owner of the premise shall provide a ground storage to receive supply of water from WDD.

**PART 2.
PREVENTION OF CONTAMINATION OF WATER FROM CONTACT WITH
UNSUITABLE MATERIALS OR SUBSTANCES.**

**CLAUSE 6.
PIPES NOT TO BE LAID THROUGH SEWERS, MANHOLES, etc.**

No supply pipe, distributing pipe or other water fittings shall be laid or installed in or on, or pass into or through any foul soil, refuse or refuse chute, ash pit, sewer, drain, cesspool, or any manhole connected with any such sewer, drain or cesspool. The minimum clearance from such unsuitable materials or substances shall be 1.0 metre horizontal and vertical.

**CLAUSE 7.
SPECIFICATIONS OF PIPES STORAGE SYSTEMS.**

- (a) The specifications of materials used for manufacturing of pipes and storage systems shall comply to the specifications in the Manual issued by the Ministry from time to time.
- (b) Supply or distribution pipes or any other water fittings shall not be made of materials that allow permeation by any gas or deteriorate by contact with any substance which causes, or is likely to cause contamination of the water in that pipe or fitting.
- (c) No pipe shall be laid or installed in a place or position where such permeation or deterioration occurs, or is reasonably likely to occur.

**CLAUSE 8.
PIPES NOT TO BE CONSTRUCTED OF CONTAMINATING MATERIALS.**

- (1) No material or substance which causes, or is likely to cause, contamination of water shall be used in the construction or installation of any pipe or water fitting which conveys or receives water supplied for domestic purposes.

- (2) Paragraph (1) shall not apply to:
- (a) any hosepipe used in connection with a clothes washing machine or dishwasher, or for watering a garden, or washing a vehicle kept for private use, where the pipe or other fitting to which that hosepipe is, or may be connected, incorporates a check valve or some other no less suitable device to prevent the backflow or backsiphonage of water through that hosepipe; or
 - (b) any flushing cistern; or
 - (c) any feed cistern connected to a primary circuit; or
 - (d) any warning pipe,
 - (e) any ablution pipe.

PART 3.
**PREVENTION OF CONTAMINATION OF WATER BY BACKSIPHONAGE,
BACKFLOW OR CROSS CONNECTION.**

CLAUSE 9.
DEFINITION OF BACKSIPHONAGE PREVENTION DEVICES.

In this Part, unless the context otherwise provides, the following words and phrases shall have the following meanings:

BACKFLOW PREVENTION DEVICE means either a Type A or Type B air gap, a check valve, a double check valve assembly, a combination of check valve and vacuum breaker, a pipe interrupter, or some other water fitting or arrangement of water fittings designed to prevent the backflow or backsiphonage of water;

CHECK VALVE means a mechanical device resistant to corrosion, and immune from, or resistant to, dezincification, and will continue to operate in a continuous water temperature not exceeding 65°C, and when shut will prevent the passage of water from inlet to outlet where the water pressure at the valve inlet does not exceed 10 millibar, and has a resilient elastic seal or seals permits water to flow in one direction only and is closed when there is no flow;

CRITICAL WATER LEVEL in relation to a Type B air gap means the steady water level in a cistern, vessel or other water fitting when there is a maximum inflow of water and all outlets, except any overflow, are closed;

DOUBLE CHECK VALVE ASSEMBLY means a mechanical device comprising two check valves with a test cock between them;

TYPE A AIR GAP occurs if there is an arrangement of water fittings whereby:

- (a) water is discharged into a cistern, vessel or other fitting which has at all times an unrestricted overflow to the atmosphere; and

- (b) the pipe discharging into that cistern, vessel or other water fitting not obstructed; and
- (c) water is discharged downwards into the cistern, vessel or other fitting at not more than 15° from vertical; and
- (d) the vertical distance from the spill over level of the unrestricted overflow of that cistern, vessel or other fitting to the point above that spillover level which is the lowest point of any pipe or fitting which discharges into that cistern or vessel or fitting is not less than the figure mentioned in the Table below in relation to a pipe of the appropriate bore:

TABLE

Item	Size of pipe or outlet	Vertical distance of point of outlet above spill over level
1	not exceeding 14 mm	20 mm
2	exceeding 14 mm but not exceeding 21 mm	25mm
3	exceeding 21 mm but not exceeding 41 mm	70mm
4	exceeding 41 mm	twice the bore of the outlet

TYPE B AIR GAP occurs when water is discharged into a cistern, vessel or other fitting which is open at all times to the atmosphere, and the vertical distance in the lowest point of discharge into that cistern, vessel or water fitting and its water level is either:

- (1) sufficient to ensure that, if there were a vacuum in that discharge pipe or fitting, no water in the cistern, vessel or water fitting would be siphoned back into that pipe or fitting, or
- (2) not less than the figure mentioned in the preceding Table in relation to a pipe of the appropriate bore;

VACUUM BREAKER means a mechanical device with an air inlet which is closed when water flows past it at/or above atmospheric pressure but which opens to admit air if there is a vacuum in the pipe and closes so as to be water tight when the flow of water is resumed at normal pressure.

CLAUSE 10.
NO CROSS CONNECTION OF DOMESTIC AND NON DOMESTIC SUPPLIES.

- (1) No supply or distributing pipe which conveys water supplied for domestic purposes shall be connected so that it can convey water supplied for non-domestic purposes.
- (2) No cistern which receives, water supplied for domestic purposes shall be connected so that it can receive water supplied for non-domestic purposes.
- (3) Paragraphs (1) and (2) shall not apply to a cistern, or to any pipe conveying water from such a cistern to a point of use if water is discharged into that cistern through a Type A air gap.

CLAUSE 11.
PUMPS NOT TO BE CONNECTED ON SUPPLY PIPES.

- (1) No pump or other apparatus shall be connected in or to a supply pipe for the purpose of increasing the pressure in, or rate of flow from –
 - (a) a supply pipe; or
 - (b) any water fitting connected on or to a supply pipe.
- (2) No supply pipe or pipe drawing water from a supply pipe shall convey, or be connected so that it can convey, water from-
 - (a) a distributing pipe, or
 - (b) a storage or flushing cistern; or
 - (c) a pump delivery pipe drawing water from a distributing pipe or cistern; or
 - (d) a pipe or vessel pressurised by compressed air or gas; or
 - (e) a source other than from the WDD mains.

CLAUSE 12.
PROTECTION FROM CONTAMINATION AT DRAW-OFF TAPS.

- (1) Subject to paragraph (3), every draw-off tap or similar fixed fitting (other than a shower hosepipe) installed to discharge water into a bath, sink, washbasin or similar fixed appliance (other than a bidet) shall comply with paragraph (2) and shall:
 - (a) incorporate a double check valve assembly; or
 - (b) have fitted as close as is practicable to the point of draw off or use, some other no less effective device to prevent the backflow or backsiphonage of water; or

- (2) the vertical distance from the spill-over level of a bath, sink or other appliance to the point above that spill-over level which is the lowest point of any draw-off tap or other fixed fitting which discharges into that bath, sink or other appliance is not less than the figure mentioned in the Table below in relation to a tap of the appropriate size.

TABLE

Item	Size of tap or combination fitting	Vertical distance of point of outlet above spill over level
1	not exceeding 12mm ($\frac{1}{2}$ "	20 mm
2	exceeding 12 mm ($\frac{1}{2}$ " but not exceeding 20 mm ($\frac{3}{4}$ "	25 mm
3	exceeding 20 mm ($\frac{3}{4}$ "	70 mm

(3) Paragraph (1) shall not apply to any draw-off tap or other water fitting where that tap or fitting draws water by gravity only from a cistern, cylinder or tank having a vent pipe open at all times to the atmosphere; provided that:

- (a) the vertical distance between the point at which the pipe supplying water to that tap or other fitting connects to the cistern, cylinder or tank and the spill-over level of the relevant bath, sink or other appliance is not less than 25 mm; and
- (b) the pipe supplying water to that tap or other fitting does not supply water to any other tap or fitting (other than a draining tap) at a lower level.

CLAUSE 13.

PROTECTION FROM CONTAMINATION AT DRAW-OFF TAPS INCORPORATING FLEXIBLE SHOWER HOSEPIPES.

- (1) Subject to paragraph (2), every draw-off tap or other water fitting which incorporates a shower hosepipe (whether or not operated by a manual or automatic diverted) installed to discharge water into a bath, shower tray, sink, washbasin or similar fixed appliance (other than a bidet) shall:
- (a) incorporate a double check valve assembly; or
 - b) incorporate a check valve and a vacuum breaker; or

- (c) have fitted as close as is practicable to the point of draw-off or use some other no less effective device than the valves referred to (a) and (b) above, to prevent the backsiphonage or backflow of water.
- (2) Paragraph (1) shall not apply to any draw-off tap or other fitting where -
 - (a) the tap or other fitting is installed in accordance with paragraph (3) of Clause 12; or
 - (b) the showerhead of any shower hosepipe is constrained by a fixed or sliding attachment so that it can only discharge water to a point not less than 25 mm above the spill-over level of the relevant bath, shower tray or other fixed appliance; or
 - (c) the vertical distance between the showerhead of any unconstrained shower hosepipe and the spill-over level of the relevant bath, shower tray or other fixed appliance is not less than the figure mentioned in the Table in Clause 12(2) in relation to a tap or fitting of the appropriate size.

**CLAUSE 14.
PROTECTION FROM CONTAMINATION AT HOSEPIPES.**

- (1) No hosepipe, other than a hosepipe used in accordance with Clause 7 or a shower hosepipe installed in accordance with Clause 12, shall be connected to a draw off tap or other similar fitting for use either inside or outside any premises.
- (2) Paragraph (1) shall not apply to any hosepipe connected to a draw-off tap or other similar fitting which draws water by gravity only from a cistern by means of a pipe which does not supply water to a draw-off tap or similar fitting (other than a draining tap) at a lower level; or is on a domestic premises or elsewhere with the written consent of WDD, and incorporates as close as is practicable to the point of draw off or use either a double check valve assembly or some other no less effective backflow prevention device.

**CLAUSE 15.
FITTINGS NOT TO BE CONNECTED TO SUPPLY PIPES.**

- (1) No draw off tap shall be connected to any supply pipe.
- (2) A storage cistern complying with the requirements of Clause 25 may be connected to any supply pipe.

**CLAUSE 16.
BIDETS - PROTECTION AT THE POINT OF USE.**

Every bidet of the over rim feed type shall be installed so that the vertical distance between the outlet point of any draw off tap or similar fitting and the spill over level of the bidet is not less than the figure mentioned in the Table in Clause 12 (2) in relation to a tap or fitting of the appropriate size.

CLAUSE 17.
BIDETS – METHODS OF CONNECTION.

- (1) No bidet which is equipped with any type of submersible spray, or any draw-off fitting to which a hand held flexible spray is attached, shall be connected to any supply pipe.
- (2) No hot water pipe or water heater which supplies hot water, and no distributing pipe which supplies cold water, to a bidet with an ascending spray shall also supply water to any other draw-off tap or similar fitting (except a draining tap), which can discharge water at a point below the spill-over level of the bidet.
- (3) Paragraph (2) shall not apply:
 - (a) to pipe supplying water to a bidet which complies with Clause 16;
or
 - (b) to a distributing pipe which supplies cold water only to a flushing cistern or to a urinal; or
 - (c) to a hot water pipe which supplies water only to a bidet and which either has a check valve and vent pipe arranged to prevent the backflow or backsiphonage of water from a bidet; or is fitted with some other no less effective backflow prevention device.

CLAUSE 18.
CLOTHES AND DISHWASHING MACHINES.

- (1) Every clothes washing machine, dishwasher, or tumble drier connected permanently or temporarily to the water system in any premises shall incorporate Type A or Type B air gap or a pipe interrupter which, if removed, renders the machine in-operable.
- (2) Every machine of a kind mentioned in paragraph (1) which is connected permanently or temporarily to the water system shall, in addition to complying with that paragraph, draw water by gravity only from a storage cistern.

CLAUSE 19.
PROTECTION OF FLOAT OPERATED VALVES AT CISTERNS.

- (1) Every supply pipe conveying water to a cistern (whether or not fitted with a float-operated valve) shall
 - (a) If the cistern receives or contains, or is likely to receive or contain, any substance which is, or is likely to be, harmful to health, incorporate a Type A air gap; or
 - (b) If the cistern supplies water to a primary circuit in a domestic dwelling, or it is a flushing cistern, incorporate a Type B air gap, a pipe interrupter or a double check valve assembly.

- (2) Paragraph (1) (b) shall not apply to a supply pipe conveying water to a cistern which is fitted with a float operated valve of a reducing flow type which will prevent back siphonage through it if a vacuum occurs in the feed pipe or complies with Clause 25 of this Regulation.

**CLAUSE 20.
POINT OF USE PROTECTON REQUIREMENTS.**

- (1) Every pipe through which water is supplied for domestic purposes to a point of use or draw-off where backflow or back siphonage is, or is likely to be harmful to health by reason of a contaminating substance:
- (a) shall incorporate a Type A air gap; when backflow or backsiphonage is continuously or frequently present or
 - (b) shall incorporate a Type A or Type B air gap, a combination of check valve and vacuum breaker, double check valve assembly, or some other no less effective backflow prevention device, when backflow or backsiphonage may be present.
- (2) Every pipe through which water is supplied for domestic purposes to a point of use or draw off where backflow or backsiphonage is not, or is not likely to be, harmful to health, shall incorporate a check valve or some other no less effective backflow prevention device.
- (3) Paragraphs (1) and (2) shall not apply where a pipe supplying water to a point of use or draw-off is supplied from a cistern which:
- (a) supplies water by gravity only to the point of use or draw-off; and
 - (b) is installed so that the vertical distance between the spill-over level of any vessel containing used or contaminated liquid at any point of use or draw-off, and :
 - (i) the invert level of the warning pipe in the cistern, is not less than 300 mm, and
 - (ii) the lowest point inside the cistern, is not less than 15 mm; and
 - (c) is fed with water from a pipe fitted with one of the backflow prevention devices mentioned in paragraph (1) (b) of this Clause.
- (4) If the contents of any cistern mentioned in paragraph (3) are likely to be contaminated by any disturbance or splashing of contaminated liquid in any vessel at a point of use or draw-off it shall be closely covered.

CLAUSE 21.
SECONDARY BACKFLOW PROTECTION.

Every supply or distributing pipe shall be fitted with such a combination or combinations of check valves, vacuum breakers, double check valve assemblies or some other no less effective backflow prevention device, as will effectively prevent the backflow or backsiphonage of water in either of the following cases:

- (a) supply or distributing pipe which conveys water to two or more separately occupied premises (whether or not they are separately chargeable by the WDD for a supply of water); and
- (b) supply pipe which conveys water to premises which under any enactment are required to provide a storage cistern capable of holding sufficient water for not less than 24 hours ordinary use;

CLAUSE 22.
SUPPLY PIPES AND FIRE FIGHTING SUPPLIES TO BE INDELIBLY MARKED.

In any premises, other than a domestic dwelling, every supply pipe everywhere; and any pipe for supplying water solely for fire fighting purposes should be clearly and indelibly marked so that such pipes are readily distinguished from each other and every other pipe in those premises.

CLAUSE 23.
FIRE FIGHTING SUPPLIES.

No water fitting shall be connected to any pipe installed solely for the supply of water for fire fighting purposes except a water fitting or other equipment installed solely for those purposes.

CLAUSE 24.
ACCESSIBILITY OF BACKFLOW DEVICES.

Every backflow prevention device shall, so far as is reasonably practicable, be installed so that it is accessible for examination, repair or replacement.

PART 4
PREVENTION OF WASTE OR CONTAMINATION OF STORED WATER

CLAUSE 25.
STORAGE CISTERNS STANDARDS.

Every storage cistern for water supplied for domestic purposes, shall:

- (a) be installed in a place or position which will prevent the entry into that cistern of surface or ground water, foul water, or water which is otherwise unfit for human consumption; and

- (b) when a cistern is made of a material which will, or is likely to, contaminate stored water, be lined or coated with an impermeable material designed to prevent such contamination, and
- (c) The cistern shall be made of material or materials which do not shatter or fragment when broken and which will not contaminate any water which condenses on its underside, and have a rigid, close fitting and secured fixed cover which:
 - (i) is not airtight,
 - (ii) excludes light and insects from the cistern,
- (d) in the case of a cistern storing more than 1000 litres of water, it shall be constructed so that the cistern may be inspected and cleansed without having to be wholly uncovered, and
- (e) be made to fit closely around any vent or expansion pipe installed to convey water into the cistern; and
- (f) be provided with warning and over flow pipes, as appropriate, which are so constructed and arranged as to exclude insects.
- (g) to have a screened air vent inlet
- (h) be effectively protected against heat
- (f) every outlet from every storage cistern mentioned in this Regulation shall be a minimum of 25 mm from the floor of the cistern to the delivery point of that pipe.

**CLAUSE 26.
PLACING OF STORAGE CISTERN.**

Every storage cistern shall be installed in a place or position such that:

- (a) the inside may be readily inspected and cleansed; and
- (b) any float-operated valve or other device used for controlling the inflow of water may be readily installed, repaired, renewed or adjusted.

**CLAUSE 27.
SUPPORT OF STORAGE CISTERNS.**

Every storage cistern shall be adequately supported to avoid distortion or damage to it, or to any water fitting connected directly to it.

**CLAUSE 28.
FLOAT OPERATED VALVES ON STORAGE CISTERN.**

- (1) Every pipe supplying water to a storage cistern shall be fitted with a float operated valve or some other no less effective device for controlling the inflow of water by preventing any overflow.

- (2) Paragraph (1) shall not apply to a pipe connecting two or more storage cisterns each of which has the same overflowing level.

**CLAUSE 29.
MAXIMUM WATER LEVELS IN STORAGE CISTERNS.**

- (1) Every float-operated valve or other device which controls the inflow of water to a storage cistern shall be :
- (a) securely and rigidly fixed to that cistern; and
 - (b) installed so that the inflow of water is shut off when the level of the water in the cistern -
 - (i) is not less than 25 mm below the overflowing level of the cistern,
or
 - (ii) where the cistern is fitted with a device mentioned in Clause 30 (2) below, is not less than 50 mm below the overflowing level of the cistern.
- (2) Every feed pipe supplying water to such a valve or other device as is mentioned in paragraph (1) shall be connected, braced and supported so as to prevent it from moving or buckling in relation to the thrust of that valve or other device.

**CLAUSE 30.
WARNING AND OVERFLOW PIPES ON STORAGE CISTERNS.**

- (1) In this Clause ‘capacity’ means the volume of water which the cistern is capable of holding measured to its overflowing level.
- (2) Every storage cistern which has a capacity equal to or less than 2500 litres shall be fitted with a warning pipe .
- (3) Every storage cistern which has a capacity exceeding 2500 litres but not more than 10000 litres shall be fitted with an overflow pipe and a warning pipe, and with an instrument which indicates when the water level is not less than 25 mm below the overflowing level of the lowest overflow pipe;
- (4) in the case of a storage cistern with a capacity exceeding 10,000 litres, that cistern shall be fitted with an overflow pipe and a warning pipe and with an audible or visual alarm operating independently of the valve or device which controls the inflow of water and indicates when the water in the cistern is about to overflow.

**CLAUSE 31.
DISCHARGE OF WARNING PIPE.**

Every warning pipe shall be installed so as to discharge water immediately when the water in the cistern reaches overflowing level.

CLAUSE 32.
FLEXIBLE HOSES NOT TO BE USED AS OVERFLOW WARNING
PIPES.

No warning or overflow pipe shall comprise, include or have connected to it, any flexible hose.

CLAUSE 33.
CONNECTING TOGETHER OF WARNING PIPES.

Where two or more cisterns have a common warning pipe that shall be installed so that the source of any overflow may be readily identified and shall be so arranged that one cistern cannot discharge to another.

CLAUSE 34.
FLOAT OPERATING VALVES - STANDARD.

Every float operated valve installed in any cistern or apparatus; shall:

- (a) be capable of controlling the flow of water into that cistern or apparatus; and
- (b) when it is closed, be watertight; and
- (c) incorporate either a renewable seal and washer which are resistance to both corrosion and erosion by water or some other no less effective valve assembly; and
- (d) on installation, be capable of withstanding without leaking when closed an internal hydraulic pressure 1.5 times the pressure to which it will ordinarily be subject; and
- (e) have a float which –
 - (i) is constructed of a material capable of withstanding without leaking any water temperature in which it operates or is likely to operate; and
 - (ii) has a lifting effort such that when not more than half immersed, the valve is capable of droptight closure against the highest pressure to which that valve is likely to be subject, and
- (f) has a lever which:
 - (i) when the valve is closed will withstand without bending or distorting a force twice that to which it is ordinarily subject, and
 - (ii) in the case of a 12 mm ($\frac{1}{2}$ inch) valve, is constructed so that the water shut-off level may be altered or adjusted without bending the float lever.

CLAUSE 35.
FLOAT OPERATING VALVES – HOT WATER.

No float operated valve shall be installed to convey hot water to any cistern unless –

- (a) it is constructed of materials capable of withstanding without leaking any ordinary operating water temperature to which it is or may be subject; and
- (b) so far as it is reasonably practicable, its operation is not, and is not likely to be, prevented or impaired by scale; and
- (c) having regard to any scale which is, or is likely to be, deposited on the valve or float, it is adjusted to prevent any overflow.

CLAUSE 36.
VALVES AT CISTERNS (OTHER THAN FLOAT OPERATED).

Every valve or device installed for controlling the inflow of water into any storage cistern (other than a float-operated valve) shall be capable of controlling the flow of water into that cistern.

CLAUSE 37.
ANIMAL DRINKING TROUGHS.

- (1) Subject to Clauses 5 and 15 of this Regulation, every pipe which conveys water supplied by the WDD to a drinking trough or drinking bowl for animals or poultry shall be fitted with a float-operated valve or some other no less effective device to control the inflow of water and prevent any overflow.
- (2) Subject to paragraph (1), the provisions of Clauses 26 to 29 shall apply to any such trough or bowl.

CLAUSE 38.
PONDS, FOUNTAINS AND POOLS.

Every pond, fountain or pool, which is filled with or supplied with water from the WDD main, shall:

- (a) have an impervious lining or membrane to prevent the leakage or seepage of water,
- (b) not be replenished by automatic means, and
- (c) all swimming pools must be equipped with filter and circulation system.

PART 5.
**PREVENTION OF WASTE OF WATER FROM DAMAGE TO WATER FITTINGS
FROM CAUSES OTHER THAN CORROSION.**

CLAUSE 39.
DEPTHS OF PIPES LAID BELOW GROUND.

- (1) Subject to paragraphs (2) and (3) below, the vertical distance between the top of every pipe or other water fitting laid or installed below ground and the finished ground level shall not be less than 300 mm; or more than 1.35 m.
- (2) A pipe or other water fitting shall be laid or installed as deep as is reasonably practicable below the finished ground level and shall be effectively protected against damage from any cause, where it is impracticable to make the vertical distance between the top of every pipe or other water fitting and the finished ground level not less than 300 mm; or more than 1.35 m
- (3) This Clause shall not apply to any pipe or other water fitting which is laid or installed in the ground under any building or structure of a permanent nature.

CLAUSE 40.
PROTECTION AGAINST DAMAGE.

Every pipe or other water fitting whether installed inside or outside a building or structure shall, so far as is reasonably practicable, be effectively protected against damage.

CLAUSE 41.
PLASTIC PIPES TO BE PROTECTED FROM OIL AND PETROL.

Every pipe made of plastics which is likely to be damaged by exposure to oil or petrol shall, so far as is reasonably practicable, be protected from such damage.

PART 6.
**PREVENTION OF WASTE FROM, OR CONTAMINATION BY
UNSUITABLE OR IMPROPERLY INSTALLED WATER
FITTINGS.**

CLAUSE 42.
**WATER FITTINGS NOT TO BE LINED WITH CONTAMINATING
SUBSTANCES.**

No water fitting which conveys water supplied by the WDD for domestic purposes shall be made wholly or partially of, or incorporate, or lined or coated with any material or substance which contaminates, or is likely to contaminate, such water by altering its colour, odour, taste or composition.

**CLAUSE 43.
WATER FITTINGS STANDARD.**

- (1) Every water fitting shall be constructed of materials, the nature, the strength and thickness of which (including any internal lining or external coating) will prevent, so far as is reasonably practicable, damage from:
 - (a) any external load.
 - (b) vibration, stress or settlement.
 - (c) internal water pressure.
 - (d) internal and external temperatures; and
 - (e) corrosion
- (2) When new water fittings or materials are installed they shall be of an internationally recognised standard or directive and are suitably marked confirming compliance with those approved standards or directives.

**CLAUSE 44.
WATER FITTINGS - PRESSURE TEST AND DEZINCIFICATION
RESISTANCE.**

Each of the following water fittings:

- (a) is installed below ground; or
- (b) passes through or under any wall, footing or foundation; or
- (c) is embedded in any wall or solid floors; or
- (d) is enclosed in any chase or duct; or
- (e) is in any other position which is inaccessible, or to which access is difficult; shall be:
 - (i) constructed to withstand without bursting, buckling, fracture or leaking an internal hydraulic pressure twice that to which it would normally be subject and
 - (ii) installed to accommodate any reasonably foreseeable movement (including any thermal movement) in the pipe; and
 - (iii) except in a closed circuit, resistant to dezincification.

CLAUSE 45.
SUPPORT OF PIPES – AIRLOCK AND REVERBERATION.

Every pipe shall be adequately supported and secured so as to avoid damage from any airlock or reverberation.

CLAUSE 46.
FLUSHING OF PIPES.

Every pipe which supplies or may supply, water for domestic purposes shall be flushed to remove debris before it is first used after installation, renewal or repair.

CLAUSE 47.
WATER PIPES TO BE INSULATED.

- (a) Every pipe installed in a dwelling which supplies cold water for domestic purposes to any tap, shall be installed in such a place or position that, so far as is reasonably practicable, the water will not be warm when it is drawn off from that tap.
- (b) Every pipe conveying water from any hot water apparatus to any draw off tap shall be fully insulated to prevent heat loss, and the length of such pipework kept as short as possible.

CLAUSE 48.
METAL PIPES NOT TO BE JOINTED WITH ADHESIVES.

Non of the following metal pipes shall be connected to any other water fitting by means of any adhesive:

- (a) is installed in the ground or passes through or under any wall, footing or foundation;
or
- (b) is embedded in any wall or solid floor; or
- (c) is enclosed in any chase or duct; or
- (d) is in any other place or position to which access is difficult.

CLAUSE 49.
ACCESSIBILITY OF PIPES AND FITTINGS.

- (1) No pipe or other water fitting shall be embedded in any wall or solid floor or installed in or below a solid floor or under a suspended floor at ground level.
- (2) Paragraph (1) shall not apply to:
 - (a) a pipe or other water fitting installed in a chase or duct (not being the cavity in a cavity wall) in a wall or solid floor which may if necessary be readily exposed; or
 - (b) a pipe (but not a pipe joint) installed in a pipe sleeve or duct in or under a solid floor which may, if necessary, be readily removed and replaced; or

- (c) a pipe installed in an internal wall which is not a solid wall; or
- (d) a pipe under a suspended floor at ground level which may, if necessary, be readily removed and replaced.

**CLAUSE 50.
DETERIORATION THROUGH GALVANIC ACTION.**

No metal pipe or pipe joint or other water fitting shall be connected to any other pipe, pipe joint or other water fitting constructed of a different metal (whether or not by way of repair or replacement) unless, either:

- (a) deterioration through galvanic action is unlikely to occur; or
- (b) effective measures are taken to prevent such deterioration.

**PART 7.
STOPVALVES etc.**

**CLAUSE 51.
STOPVALVES – DEFINITION OF PREMISES.**

In this Part premises means:

- (a) any premises to which a separately chargeable supply of water is provided by the WDD; and
- (b) any premises which are occupied as a dwelling whether or not separately charged for a supply of water.

**CLAUSE 52.
STOPVALVES – POSITION OF.**

- (1) Every supply and distributing pipe providing water to premises shall be fitted with a stopvalve to enable the supply to those premises to be shut off without shutting off the supply to any other premises.
- (2) Every stopvalve mentioned in paragraph (1) shall, so far as is reasonably practicable, be:
 - (a) inside premises;
 - (b) above the floor level;
 - (c) as near as possible to the point where the supply first enters the premises; and
 - (d) so installed that its closure will prevent the supply of water to any point of use.

**CLAUSES 53.
STOPVALVES – ON COMMON SUPPLIES.**

- (1) Every supply and distributing pipe providing water in common to two or more premises shall be fitted with a stopvalve (whether inside or outside the premises) to which each occupier of the premises has access.
- (2) Every stopvalve mentioned in paragraph (1) shall be installed so its closure will prevent the supply of water to all of the premises supplied by that common pipe.

**CLAUSE 54.
STOPVALVES – STANDARD.**

Every stopvalve fitted in accordance with Clauses 52 and 53 shall:

- (a) be watertight when closed, and
- (b) be watertight when open and subjected to an internal hydraulic pressure 1.5 times the pressure to which it is normally subject: and
- (c) except in the case of a plug valve or spherical valve be so designed or adapted that its seal can be readily renewed; and
- (d) not incorporate a loose washer plate; and
- (e) be reasonably resistant to corrosion

**CLAUSE 55.
DRAINTAPS - STANDARD.**

Supply and distributing pipes in premises shall be fitted where appropriate with a draining tap to facilitate maintenance which:

- (a) is watertight when closed and subjected to an internal hydraulic pressure 1.5 times the pressure to which it is normally subject; and
- (b) is so designed or adapted that its seal can be readily renewed; and
- (c) is reasonably resistant to corrosion.

**CLAUSE 56.
DRAINTAPS - NOT TO BE BURIED.**

No draining tap fitted to a supply pipe shall be –

- (a) buried in or covered with soil,
- (b) installed so that it is submerged, or is likely to be submerged.

CLAUSE 57.
SERVICING VALVES AT CISTERNS AND CYLINDERS.

Every pipe for conveying water from a cold water storage cistern the capacity of which exceeds 18 litres; or a hot water storage cistern, cylinder or tank shall be fitted with a servicing valve as close that cistern, cylinder or tank as is reasonably practicable.

CLAUSE 58.
SERVICING VALVES TO BE FITTED ON EVERY FLOAT OPERATED VALVE.

- (1) Every pipe supplying water to a float-operated valve shall be fitted with a servicing valve to shut off the supply of water to that valve.
- (2) Every servicing valve installed in accordance with paragraph (1) shall be fitted as near as is reasonably practicable to the float-operated valve.

CLAUSE 59.
SERVICING VALVES – STANDARD.

Every servicing valve shall be-

- (a) watertight when closed; and
- (b) capable of withstanding without leaking an internal hydraulic pressure 1.5 times the pressure to which it is ordinarily subject; and
- (c) reasonably resistant to corrosion.

CLAUSE 60.
BACKFLOW PREVENTION DEVICES – STANDARDS.

Every vacuum breaker, check valve, double check valve assembly or combination of check valves and vacuum breakers installed in any pipe shall be-

- (a) watertight when closed; and
- (b) capable of withstanding without leaking an internal hydraulic pressure 1.5 times the pressure to which it is normally subject.

CLAUSE 61.
STOP AND SERVICING VALVES TO BE ACCESSIBLE.

Every stopvalve and servicing valve installed in accordance with Part 7 of the Regulation shall be so placed that so far as is reasonably practicable it can be readily examined, maintained and operated.

**PART 8.
WATERCLOSETS AND URINALS.**

**CLAUSE 62.
WC PANS TO BE SUPPLIED FROM FLUSHING CISTERNS.**

Every water closet pan shall be:

- (a) supplied with water from a flushing cistern of the type which incorporates the apparatus of approved and recognised standards; and
- (b) so made and installed that after normal use its contents can be cleared effectively by a single flush of water.

**CLAUSE 63.
FLUSHING CISTERN VOLUMES.**

No flushing cistern installed for use with a water closet pan shall give a flush exceeding 6 litres.

**CLAUSE 64.
REPLACEMENT OF UNITS.**

Nothing in Clauses 62 or 63 shall prevent the replacement of a cistern installed before this Regulation came into operation by a similar cistern.

**CLAUSE 65.
FLUSHING CISTERNS TO BE MARKED WITH WATER LINE.**

Every flushing cistern installed in compliance with Clauses 62 and 63 in any premises supplying water to a water closet pan shall be fitted with a warning pipe and shall be indelibly marked on inside with a line indicating the water level at which the float operated valve is to shut off..

**CLAUSE 66.
URINALS TO BE SUPPLIED FROM FLUSHING CISTERNS –RATES OF FILL.**

Every urinal which is cleared by water after use shall be supplied with water from a flushing cistern which is designed to supply no more water than 2 litres per flush per bowl or 700mm width of stall or slab.

**CLAUSE 67.
URINALS – CONTROLS TO BE FITTED.**

Every flushing cistern used for flushing a urinal shall be manually operated; or fitted with an electronic sensor, pressure pad or some other device designed to ensure that the cistern flushes only after the urinal is used.

CLAUSE 68.
URINALS AND WC PANS - DISCHARGE OF WARNING PIPES.

No pipe shall be arranged to deliver water to any water closet pan or urinal bowl or stall except:

- (a) a flush pipe; or
- (b) a warning pipe installed to discharge water into the air not less than 150 mm above the top edge of a water closet pan; or
- (c) a warning pipe discharging via a tundish into a flush pipe with an air gap of at least 150 mm above the tundish, for hospitals, etc, where no visible outlet may be possible.

PART 9.
**PREVENTION OF WASTE, MISUSE AND CONTAMINATION OF WATER FROM
DRAW-OFF TAPS, BATHS, BASINS, SINKS AND OTHER FITTINGS.**

CLAUSE 69.
INLETS AND OUTLETS OF BATHS.

- (1) Every bath, wash basin, sink or similar apparatus installed for use in any premises shall be:
 - (a) so constructed or arranged that every inlet for water is hydraulically separate from, and unconnected with any water outlet; and
 - (b) provided with a watertight and readily accessible plug or some other device capable of closing the water outlet.
- (2) Paragraph (1) (b) shall not apply to any:
 - (a) shower bath or shower tray;
 - (b) apparatus to which water is delivered at a rate not exceeding 3.6 litres a minute, or in the case of a washing trough 3.6 litres a minute to any unit of it, solely from a fitting designed or adapted for that purpose; or
 - (b) apparatus installed in any hospital or used in any medical, dental or veterinary practice which is designed or adapted for use with an unplugged outlet.

CLAUSE 70.
DRAW OFF TAPS - STANDARDS.

Without prejudice to Clause 43 every draw-off tap to which water is supplied by the WDD shall:

- (a) be capable of operating effectively at any water temperature not exceeding 65° C, and any internal water pressure to which it is likely to be subject; and
- (b) be made and designed so that it may be easily closed to shut off the flow of water; and
- (c) if it incorporates a renewable seal or washer, be made or adapted so that the seal or washer can be renewed or replaced; and
- (d) be resistant to corrosion; and
- (e) be designed when new to withstand without leaking an internal water pressure 1.5 times that to which it will ordinarily be subject.

CLAUSE 71.
CLOTHES AND DISHWASHING MACHINES, TUMBLE DRIERS -
MAXIMUM WATER USAGE.

- (a) a clothes washing machine without a tumble drier shall not use more than 0,8 litre of water for every litre of machine drum volume or 5 litre for every kilogram of dry clothes in any complete washing cycle; or
- (b) a clothes washing machine incorporating a tumble drier shall not use more than 2.2 litre of water for every litre of machine drum volume or 14 litre for every kilogram of dry clothes in any complete washing cycle; or
- (c) a tumble drier incorporating a water spray shall not use more than 10 litres of water for every kilogram of dry load; or
- (d) a dishwasher shall not use more than 7 litre of water for every place setting.

PART 10.
PREVENTION OF WASTE OR CONTAMINATION OF WATER FROM ANY HOT
WATER SYSTEM.

CLAUSE 72.
STORAGE FED UNVENTED HOT WATER SYSTEMS - MEANS OF
ACCOMODATING EXPANSION WATER.

Every unvented apparatus or cylinder which is supplied with water from a storage cistern that stores hot water to be drawn off for use; shall:

- (a) be capable of accommodating any expansion water; or
- (b) be connected to a separate expansion cistern or vessel; or
- (c) be so arranged that expansion water can pass back through a feed pipe to any storage cistern to which that apparatus or cylinder is connected.

CLAUSE 73.
STANDARDS FOR MECHANICAL HOT WATER SYSTEM CONTROLS.

Every pressure relief valve, expansion valve, temperature relief valve or combined temperature and pressure relief valve connected to any boiler or hot water cylinder or storage tank or pipe shall:

- (a) close automatically after discharging water;
- (b) be watertight when closed;
- (c) be resistant to corrosion;
- (d) be constructed and installed so that the discharge of water from the valve (or from any pipe connected to it) is readily visible; and
- (e) satisfy the product performance requirements to comply with any safety regulation.

CLAUSE 74.
UNVENTED HOT WATER SYSTEMS – NON MECHANICAL CONTROLS.

- 1- Every unvented hot water cylinder or storage tank which is fitted with a non-mechanical safety device shall be fitted with a temperature relief valve.
- 2- The temperature relief valve referred to in the above Sub-Clause shall:
 - (a) operates or is designed to operate at a temperature not less than 5^oC below that at which that safety device operates or is designed to operate;
 - (b) closes automatically after discharging water; and
 - (c) is water tight when closed; and
 - (d) satisfy the product performance requirements to comply with any safety regulations

PART 11.
TAPS FOR DRAWING DRINKING WATER.

CLAUSE 75.
DRINKING WATER TAPS.

In every premises to which this Clause applies, a draw-off tap convenient for drawing water shall be connected to a suitable supply pipe drawing water exclusively from a storage cistern which is installed in accordance with Clause 25.

PART 12.
NOTICES TO WDD.

CLAUSE 76.
NOTICES TO WDD (ABOVE GROUND WORK).

- (1) A person who proposes to carry out relevant work mentioned in paragraph (2) shall give written notice to the WDD not less than five working days before he commences, or proposes to commence, that work.
- (2) Relevant work for the purpose of paragraph (1) means the installation or alteration (other than by repair or renewal) of any-
 - (a) bidet; or
 - (b) flushing cistern; or
 - (c) hose union tap or tap to which a hose may be connected; or
 - (d) water fitting which, if there is a backflow or backsiphonage of water through it, will or may contaminate water supplied by the WDD.

CLAUSE 77.
PROTECTION OF PIPES BELOW GROUND OR INACCESSIBLE WORK

Pipes which conveys, or is intended to convey, water supplied by the WDD, where it is proposed to do work on them, a written notice shall be given to the WDD not less than five working days before commencing, or proposing to commence, any of the following work related to these pipes:

- (a) backfill any excavation in which it is laid; or
- (b) thread it through any tabular duct which enters a building below ground level; or
- (c) embed it in any solid floor or wall; or
- (d) lay it underground by means of a mole plough or similar apparatus,

**PART 13.
CONSERVATION.**

**CLAUSE 78.
GARDEN WATERING - PROHIBITED BY DAY.**

Garden watering using sprinkler, spray, or garden hose shall not take place during the heat of the day.

**CLAUSE 79.
SIZING OF WDD CONNECTION PIPEWORK.**

For every premises the WDD shall decide the appropriate size of the WDD connection pipework, the size of the communication pipe, the location of the tapping point, size of ferrule and the size and position of the water meter.

**CLAUSE 80.
DOMESTIC PREMISES – FLOW REGULATION.**

- (1) In domestic premises including flats and hotels, rates of flow from taps and shower fittings shall be limited to the following values.

FITTING	MAXIMUM FLOW AT OUTLET - l/min
Sink basin/bib tap	10
Wash basin tap	8
Bath tap	12
Shower nozzle	10

- (2) Where appropriate flow regulators shall be installed to achieve these flows and may be sited:
- (a) immediately upstream of the fitting, or
 - (b) in the barrel of the fitting, or
 - (c) at the outlet of the fitting
- (3) Every flow regulator shall be:
- (a) capable of withstanding without leakage a pressure of 1.5 times the pressure to which it is normally subjected; and
 - (b) reasonably resistant to corrosion.

CLAUSE 81.
NON-DOMESTIC PREMISES – FLOW REGULATION.

- (1) In every premises providing toilet/washing facilities for general use, those facilities shall be subject to flow restriction as outlined below:
 - (a) Sink basin/bib taps – as for Clause 80 (1)
 - (b) Wash basin taps – self closing delayed action supplying a maximum flow of 6 ltr/ min with a delay closure of 3 secs.
 - (c) Shower nozzles – self closing delayed action supplying a maximum flow of 10 ltr/ min with a delayed closure of 10 secs.
- (2) Every self closing delayed action tap shall:
 - (a) be non concussive in operation, and
 - (b) close against the operating pressure without leakage, and
- (c) be capable of withstanding a pressure of 1.5 times the normal pressure without leakage, and
- (d) be reasonably resistant to corrosion

PART 14.
MISCELLANEOUS

CLAUSE 82.
FIXING WATER FITTING

No water fitting shall be carried on unless by a licensed plumber. Plumbers and their staff shall be approved by WDD.

CLAUSE 83.
LIABILITY FOR WATER FITTING

He who fix or renew water connection system or plumbing shall be responsible of guaranteeing its compliance to this Regulation.

Decree No(7)For The Year 2012 Regarding Issuance of The Regulation Organizing Work in the Field of Plumbing issued By Decree No7 for the Year 2012

The State Minister Of Electricity & Water Affairs,

After viewing the Decree of the Law No1 for the year 1996 pertinent to the Electricity & Water,

And the Decree No98for the year 2007 pertinent to the formation of Electricity and Water Authority

And the Decree No1for the year 2004 pertinent to the Water Connections Regulations
And in accordance with the presentation of the CEO of Electricity and Water Authority,
Hereby decides the following :

Article 1

The provisions of the Regulation Organizing Work in the Field of Plumbing enclosed to this Decree should be implemented.

Article II

The CEO of Electricity and Water Authority should implement this Decree, which shall be effective from the date of its publication in the Official Gazette .

The State Minister For Electricity & Water Affairs,

Dr. Abdul Hussain Bin Ali Merza

Issued on: 2Dhu Ahijah 1433 AH

Corresponding : OCTOBER 18,2012