



**MINISTRY OF DEFENCE AND NATIONAL SECURITY
MALE', REPUBLIC OF MALDIVES**

REQUIREMENT FOR FIRE PREVENTION EQUIPMENTS IN BUILDINGS

1- Hose Reels.

Recess Hose reels approved to BS EN 671-1: 1995, or any other equable International Standard, Automatic operation, Right or Left hand take off. Including 30m length of Hose, 19mm diameter Hose approved to PR EN 694, or any other equable International Standard, and Nylon twist operated Jet/spray Nozzle on mounting plate with integral flexi guide for Hose withdrawal device. 03 or 04 fixing holes should be provided in position indicated to suit M8/M10 sized fixing screws or M12 fixing bolts. With Ball valve inlet and Flexible inlet water Pipe.

The overall width of the reel should be no more than 850mm. The overall height of the Reel should be less than 850mm including Hose and integral Flexi guide for hose withdrawal guide. The overall depth of the Hose reel should be no more than 150mm. Colour of the Reel should be Red, fitted with operating instruction plate.

The Hose Reels and the related equipment's should be approved by the MNDF Fire and Rescue Service before Installation. Special permission should be taken for the other size of the Hose reels.

The Hose Reels nozzle retainer or hose guide and the inlet valve should be fitted at a height of about 900mm above floor level.

2- Hose Reel Cabinets.

The hose reel cabinet should be Recess mounting type with or without glass paneled door for use with the above mentioned sized Hose Reels. Hose Reel Cabinet dimension should be no more than 900mm in width, 900mm in height, 160mm in depth (including door).

Colour of the cabinet should be Red. **Special permission should be taken for other Colour.**

Recessed Latch Type handle should be installed. Hose reel signage should be in accordance to BS 5499 or any other equable International Standard. Fixing hole should be provided.

The Hose Reel cabinets should be approved by the MNDF fire and Rescue Service before Installation.

3- Water Supply for Hose Reel System.

As a minimum, the water supply to the hose reel should be such that when the two top most reels in the building are in use simultaneously, each should provide a jet of approximately 6m in length and will deliver not less than 0.5 litre/s (30 litre/min).

Minimum Quantity of water storage required for hose reel systems only.

Minimum storage required for the first hose reel. 2275 litre.

For each additional hose reel. 1137.5 litre up to a maximum of 9100 litre.

Tank or inter-connected tanks supplying water for the hose reels should be automatically supplied from the MWSC's main(s) controlled by ball valve of a minimum diameter 50mm.

Tanks supplying water for domestic purposes should not be used as suction tanks for hose reel installations unless arrangements have been made for these domestic supplies to be drawn off in such a manner that the requisite reserve of water for the hose reel installation is always preserved.

The Pippings for the supply of Water for Hose reels should be In and Out Galvanized schedule 40. Diameter of the Piping should be not less than 50mm.

The piping details of the supply of Water for the Hose reel system and the water supply system should be approved by the MNDF fire and Rescue Service before Installation.

Special permission should be taken if it is different from above.

4- Hose Reel Booster Pump system.

Hose Reel booster pump set, complete with In and Out galvanized steel pipe work with or without expansion vessel.

- a) Where the water pressure in hose reel mains needs to be boosted, the provision of an electrically driven pump is usually a convenient method. A duplicate standby pump should also be provided.
- b) Both motors and pump should be sited in fire-protected positions and the electrical supply to them should be **an Exclusive Circuit** with the cables following a route of negligible fire risk or be provided **with adequate protection**.
- c) The booster pumps system should come into operation **automatically on a drop in pressure or a flow of water**. Both pumps should be automatically primed at all times.
- d) All pumps should also be capable of being **started or stopped manually**. **The standby pumps should be so arranged that it would operate automatically on a failure for any reason of the duty pump**.
- e) **The Hose Reel Booster Pump set should be approved by the MNDF Fire and Rescue Service before installation.**
- f) **Special permission should be taken if it is different from above.**

5- Fire Extinguishers.

- a) 2kg Co2 stored pressure Extinguisher approved to BS EN 3. Aluminium Alloy Body approved to BS5045 Part 3 or any other equable International Standard. Red body with black band or Black coloured headcap, swivel Horn, English screen. Fully charged.

- b) 6 Kg DCP Extinguisher (Gas Cartridge Type) approved to BS EN 3 or any other equable International Standard. Blue Body Headcap, English Screen, Fully charged.
- c) 9 Liter Water Extinguisher (Gas Cartridge Type) approved to BS EN 3 or any other equable International Standard. Red Body Headcap, English Screen, Fully charged.
- d) **The Fire Extinguishers should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.**
- e) **Fire Extinguishers should be located in conspicuous positions on bracket or stands where they will be readily seen by person. The carrying handle of larger heavier extinguishers should be about 01m from the floor level. But smaller extinguishers should be mounted so as to position the handle 1.5m from the floor level. Extinguishers installing on the cabinet the height should be approved by MNDF Fire and Rescue Service.**

6- Cabinets for Fire Extinguishers.

Cabinets for fire extinguishers should be of stainless steel with or without glass-fronted doors. Colour of the cabinet should be Red or to suit the requirements of architectural surroundings. **Recessed Latch Type** handle should be installed.

- a) Fire Extinguisher **Single Cabinets** dimension should be no more than 190mm in width, 640mm in height, 180mm in depth (including door).
- b) Fire Extinguisher **Double Cabinets** dimension should be no more than 440mm in width, 640mm in height, 180mm in depth (including door).
- c) **The Cabinets for Fire extinguishers should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.**

7- Fire Blankets.

Fire Blankets should be certified to BS EN 1869: 1997 or any other equable International Standard. Fire Blankets should be extremely flexible and drape easily the slim pack of fire blanket should be Red or White.

The Fire Blankets should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.

8- Dry riser Gate valve.

Dry riser gate valve to BS 5041/2, or any other equable International Standard, Gunmetal c/w Padlock strap, blank cap and chain. Inlet 2 ½” ASA 150 F/F. Outlet 2 ½” Inst. Female couplings to BS 336. Colour red.

The Dry Riser Gate Valves should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.

Dry Riser Gate valves should be installed with its lowest point about 750mm above floor level.

9- Dry riser Outlet boxes.

Dry riser outlet box for Dry Riser gate valve. Construction should be similar to BS 5041. Standard finish colour Red.

- Glazing: 6mm Georgian wired glass
- Label: Self-adhesive label applied to inside of glass.
- Lettering: White lettering on red back ground to comply with BS 5499.
- Door: Standard right hand hinged and left hand hinged as option.
- Lock: Standard Yale lock with inside opening lever.

Dry Riser outlet cabinet dimension should be no more than the below mentioned dimensions.

- Height: 610mm
- Width: 460mm
- Depth: 325mm

The Dry Riser Outlet Boxes should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.

10- Pumping in Breeching

Twin pumping in breeching, approved to BS 5041, or any other equable International Standard, Gunmetal inlets 2 x 2 ½” BS Instantaneous Male Coupling c/w non-return valves. Outlet 4” ANSI 150 F/F flange.

Pumping in Breeching should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.

11- Dry riser inlet box.

Dry Riser inlet box for horizontal/vertical pattern. Double inlet to BS 5041 or any other equable International Standard finish color Red.

- Glazing: 6mm Georgian wired glass
- Label: Self-adhesive label applied to inside of glass.
- Lettering: White lettering on red back ground to comply with BS 5499.
- Door: Standard right hand hinged and left hand hinged as option.
- Lock: Standard Yale locks with inside opening lever.

Dry riser inlet cabinet dimension for flush mounting should not be more than the below mention dimensions.

Twin horizontal pattern:

Height - 395mm
Width- 595mm
Depth - 295mm

Twin vertical pattern:

Height - 595mm
Width- 395mm
Depth - 295mm

The Dry Riser Inlet Box should be approved by the MNDF fire and Rescue Service before installation. Special permission should be taken if it is different from above.

The Dry Riser Inlet Box should be positioned with its lower edge between 400mm and 600mm above ground level.

12- Air release valve

Air release valve, Gunmetal, Inlet 1" BSP Male.

The Air release valve should be approved by the MNDF fire and Rescue Service before Installation. Special permission should be taken if it is different from above.

13- Piping for Dry Riser System.

The Pippings for Dry Riser System should be In and Out_Galvanized schedule 40. Diameter of the Piping should be not less than 100mm.

Piping details for Dry Riser System should be approved by the MNDF fire and Rescue Service before Installation.

Special permission should be taken if it is different from above.

13- Fire Doors

All fire doors should be opened to the direction of the flow of people while on emergency.

These doors should be installed with self-closing device including the Panic Latch. These Panic Latch devices should conform to BS 5725 Pt 1 or any other equable International Standard.

Fire doors conforming to the method of construction as stipulated below shall be deemed to meet the requirement of the fire-resisting period.

- a) Doors and frames constructed in accordance with one of the following specification shall be deemed to satisfy the requirements for doors having fire resisting period of half-hour (30min.).
- i) A single door 900 millimeters wide x 2100 millimeters high maximum or double doors 1800 millimeters high maximum constructed of solid hardwood core of not less than 37 millimeters laminated with adhesives conforming to either BS 745 “Animal Glues”, or BS 1204, “Synthetic resin adhesives (phenolic and aminoplastic) for wood” Part 1, “Gap-filling adhesives”, or BS 1444 “Cold – setting casein glue for wood”, or any other equable International Standard, faced both sides with plywood to a total thickness of not less than 43mm with all edges finished with a solid edge strip full width of the door. The meeting stiles of double doors shall be rabbeted 12mm deep or maybe butted provided the clearance is kept to a minimum;
 - ii) Doors may be double swing provided they are mounted on hydraulic floor springs and clearances at floor not exceeding 4.77mm and frame and meeting stiles not exceeding 3mm;
 - iii) A vision panel should be incorporated provide it does not exceed 0.065 square meter per leaf with no dimension more than 1370mm and should be glazed with 6 mm Georgian wired glass in hard wood stops;
 - iv) Doors constructed in accordance with BS459 part 3 : 1951 or any other equable International Standard, fire check flush doors and wood and metal frames (half hour type);
 - v) Timber frames for single swing half hour fire doors of overall width of 60 mm including 25 mm rabbet and Depth to suit door thickness plus 34 mm stop;
 - vi) Metal frames for half hour fire doors shall be of sheet steel not lighter than 18 gauge of overall width 50 mm including 18 mm rabbet and depth to suit the door thickness plus 53 mm stop;
 - vii) Timber or metal frames for double swing doors should be as specified above with minimum clearances between frame and door;
 - viii) Double doors with rabbeted meeting stiles should be provided with co-ordinating device to ensure that leafs close in the proper sequence;
 - ix) Fire doors may held open provided the hold open device incorporates a heat activated device to release the door. Heat activated devices shall not be permitted on fire doors protecting openings to protected corridors or protected staircase.

The Fire doors and its related devices should be approved by the MNDF fire and Rescue Service before Installation.

Special permission should be taken if it is different from above.

14- Fire Exit Signs

Photoluminescent Fire exit signs should sign each Fire Exit Door. The Symbol height should be not more than 100mm.

The Fire Exit Signs should be approved by the MNDF Fire and Rescue Service before Installation.

Special permission should be taken if it is different from above.

15- Fire Detection and Alarm System

Fire Detection and Alarm System should confirm to BS 5839 or any other equable International Standard. Fire Detection and Alarm System should be Analogue Addressable System with mimic diagram. A system in which signals from each detector and/or call point are individually identified at the control panel. Fire Detection and Alarm System should consist of Automatic Detectors, Manual Call Points, Control and Indicating equipment, etc. It should also covers System capable of providing signals to initiate, in the event of fire, the operation of ancillary services such as fixed fire extinguishing systems and other precautions and actions. Main Fire Control Panel should be located at the reception and the Repeater Panel should be located in the guardroom.

- a) Red Xenon Beacon should be weather resistant IP65 rated Xenon.
- b) 24 Tone Wall Sounder Compact should confirm BS 5839 Pt.1 or any other equable International Standard.
- c) Wiring for Detectors should be of Fire Resistant Cable.
- d) Heat Detectors Should comply BS 5445 or any other equable International Standard,
- e) **The Fire Detection and Alarm System and all related equipment's should be approved by the MNDF fire and Rescue Service before Installation including All the relevant Equipment's.**
- f) **Wiring details and the positioning of Detectors, Call point, etc. for Fire Detection and Alarm System should be approved by the MNDF fire and Rescue Service before Installation.**
- g) **Special permission should be taken if it is different from above.**

16- Installation and testing of wet rising system.

1-Wet rising systems shall be provided in every building in which the topmost floor is more than 30.5 meters above fire appliance access level.

2- A hose connection shall be provided in each fire fighting access lobby.

3- Wet risers shall be of minimum 152.4 millimeters diameter and shall be hydrostatically tested at a pressure 50% above the working pressure required and not less than 14 bars for at least twenty-four hours

4- Each wet riser outlet shall comprise standard 63.5 millimeters instantaneous coupling fitted with a hose of not less than 38.1 millimeters diameter equipped with a approved typed cradle and a variable fog nozzle.

5- A wet riser shall be provided in every staircase which extends from the ground floor level to the roof and shall be equipped with a three-way 63.5 millimeters outlet above the roof line.

6- Each stage of the wet riser shall not exceed 61 meters, unless expressly permitted by D.G.F.S but in no case exceeding 70.15 meters.

17- Wet or dry rising systems for buildings under construction.

- 1- Where either wet or dry riser system is required, at least one rise shall be installed when the building under construction has reached a height of above the level of the fire brigade pumping inlet with connections thereto located adjacent to a useable staircase.
- 2- Such riser shall be extended as construction progress to within two floors of the topmost floor under construction and where the designed height of the building requires the installation of wet riser system fire pumps, water storage tanks and water main connections shall be provided to serve the riser.

Minimum Quantity of water storage required for wet riser systems only.

Minimum storage required for the wet riser system.45500 litre.

Pump capacity 1500 L/M at running pressure (not less than 4bar but not more than 7bar)

Automatic refilling rate of 455 L/M

Tank or inter-connected tanks supplying water for the wet riser should be automatically supplied from the MWSC's main(s) controlled by ball valve of a minimum diameter 100mm.

Tanks supplying water for domestic purposes should not be used as suction tanks for wet riser installations unless arrangements have been made for these domestic supplies to be drawn off in such a manner that the requisite reserve of water for the wet riser installation is always preserved.

The Piping for the supply of Water for wet riser should be in and out galvanized schedule 40. diameter of the piping should be not less than 100mm.

The piping details of the supply of Water for the wet rise system and the water supply system should be approved by the MNDF fire and rescue service before installation.

Special permission should be taken if it is different from above.

18- Wet riser booster pump system.

Wet riser booster pump set, complete with In and Out galvanized steel pipe work with or without expansion vessel.

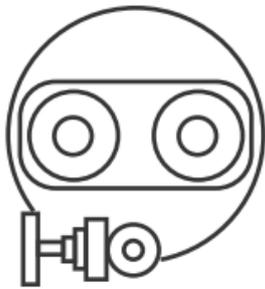
- a) Where the water pressure in hose reel mains needs to be boosted, the provision of an electrically driven pump is usually a convenient method. A duplicate standby pump should also be provided.
- b) Both motors and pump should be sited in fire-protected positions and the electrical supply to them should be **an exclusive circuit** with the cables following a route of negligible fire risk or be provided **with adequate protection**.
- c) The booster pumps system should come into operation **automatically on a drop in pressure or a flow of water**. Both pumps should be automatically primed at all times.
- d) All pumps should also be capable of being **started or stopped manually**. **The standby pumps should be so arranged that it would operate automatically on a failure for any reason of the duty pump.**
- e) **The wet riser booster pump set should be approved by the MNDF fire and rescue service before installation.**
- f) **Special permission should be taken if it is different from above.**

19- Installation of Fire Fighting Systems on the basis of building usage

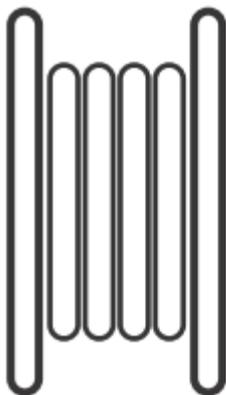
CATEGORY	BUILDING SIZE (In Square Metres)	HEIGHT OF THE BUILDING (No. of Floors)			
		Up to 3 Stories or Lower than 9m	4 Stories or Lower than 15m	from 5 stories to 10 stories or between 15m to 30m	11 stories and above or Higher than 30.5m
House Category A	Smaller than 80	F/B	F/B		
House Category B	Smaller than 80	F/B	F/B	F, B, M, D	F, B, M, D
	Between 80 to 200	F/B	F/B	F, B, M, D, H	F, B, M, D, H, WR
	Bigger than 200	F/B,M	F, B, M,D/H	F, B, M, D, H	F, B, M, D, H, WR
Types of other residences	Smaller than 80	F/B	F, B, M	F, B, M, D	F, B, M, D, WR
	Between 80 to 200	F/B	F, B, M, H	F, B, M, D, H	F, B, M, D, H, WR
	Bigger than 200	F/B, M	F, B, M, H/D	F, B, M, D, H	F, B, M, D, H, WR
Institutional Hospitals, Schools, Clinics	Smaller than 80	F, B, M	F, B, M/A	F, B, M/A, D	F, B, M/A, D, WR
	Between 80 to 200	F, B, M	F, B, M/A, H	F, B, M/A, H, D	F, B, M/A, H, D, WR
	Bigger than 200	F, B, M/A	F, B, M/A, H	F, B, M/A, H, D	F, B, M/A, H, D, WR
Assembly Areas, Mosque, Recreation Halls	Smaller than 80	F, B, M	F, B, M/A	F, B, M/A, D	F, B, M/A, D, WR
	Between 80 to 200	F, B, M	F, B, M/A, H	F, B, M/A, H, D	F, B, M/A, H, D, WR
	Bigger than 200	F, B, M/A	F, B, M/A, H	F, B, M/A, H, D	F, B, M/A, H, D, WR
Office, Admin Buildings, Libraries, Printing Halls	Smaller than 80	F, M	F, M	F, A, H, D	F, A, H, D, WR
	Between 80 to 200	F, M	F, M, H	F, A, H, D	F, A, H, D, WR
	Bigger than 200	F, A	F, A, H	F, A, H, D	F, A, H, D, WR
Shops, Cafés, Saloons	Smaller than 80	F, B	F, B, M	F, B, M	
	Between 80 to 200	F, B, M	F, B, M, H	F, B, M, H, D	
	Bigger than 200	F, B, M	F, B, A, H	F, B, A, H, D	
Industrial Factories	Smaller than 80	F, B, M	F, B, M	F, B, A, H, D/S	
	Between 80 to 200	F, B, M	F, B, A	F, B, A, H, D/S	
	Bigger than 200	F, B, M, H	F, B, A, H	F, B, A, H, D, S	
Workshops (Repairing Areas)	Smaller than 80	F, B, M	F, B, M	F, B, A, H, D/S	
	Between 80 to 200	F, B, M	F, B, A	F, B, A, H, D/S	
	Bigger than 200	F, B, M, H	F, B, A, H	F, B, A, H, D, S	
Stores (Category A, B)	Smaller than 80	F, B, M	F, B, M	F, B, A, H, D/S	
	Between 80 to 200	F, B, M	F, B, A	F, B, A, H, D/S	
	Bigger than 200	F, B, M, H	F, B, A, H	F, B, A, H, D, S	
Dangerous Material Storing Stores (Category C)	Smaller than 80	F, B, A	F, B, A, H		
	Between 80 to 200	F, B, A, FA	F, B, A, H/D, FA		
	Bigger than 200	F, B, A, FA	F, B, A, H/D, FA		
Key					
F - Fire Extinguishers		B - Fire Blankets			
M - Manual Alarm System		A - Automatic Alarm System			
D - Dry Riser System		S - Sprinkler System			
H - Hose Reel System		FA - Automatic Extinguishing System			
WR- Wet Riser System					
Note: Stores Category C Does not have permission to be built Higher than 15 metres.					

20- Symbols

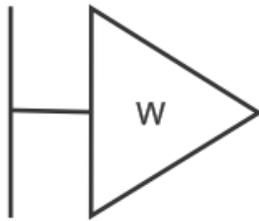
Landing Valve

Breeching Inlet With Drain Valve
(Two way / Four way)

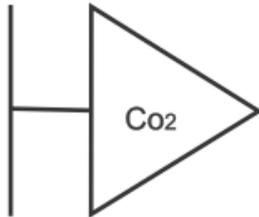
Air Relief Valve



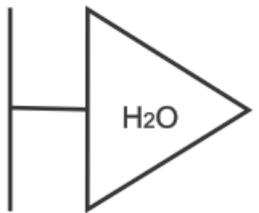
30 Meter Fire Hose Reel



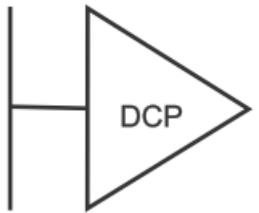
Wet Chemical Fire Extinguisher



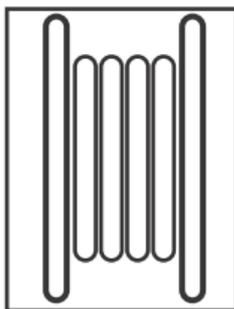
Carbon dioxide Fire Extinguisher



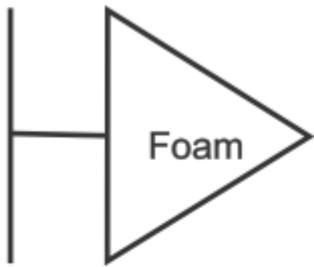
Water Fire Extinguisher



Dry Chemical Powder Fire Extinguisher



30 Meter Fire Hose Reel With Cabinet



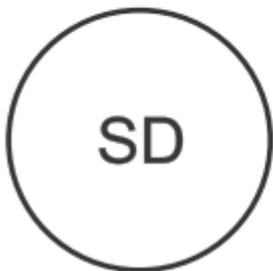
Foam Fire Extinguisher



Fire Blanket



Fire Alarm Control Panel



Smoke Detector



Heat Detector



Fire Alarm Sounder



Manual Call Point



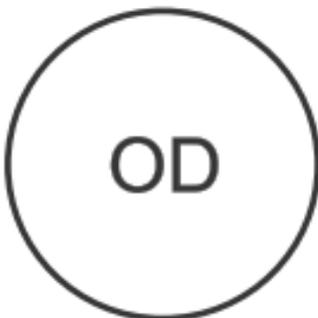
Strobe Light



Gas Detector



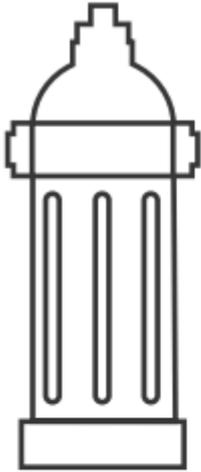
Flame Detector



Oxygen Detector



Fire Retardant Cable



Pillar Hydrant



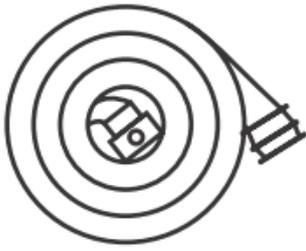
Sprinkler Head



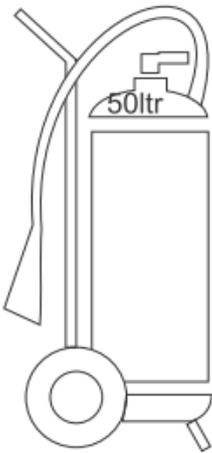
Sprinkler Main Valve



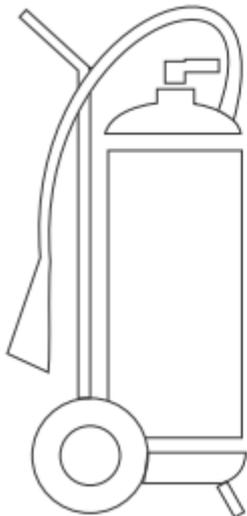
Branch / Nozzle



30 Meter Fire Hose (64mm / 38mm)



Foam Trolley



DCP Trolley
