

Hydrants and water supplies for firefighting

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Contents

Part 1 - Overview.....	3
1 Introduction	3
2 Hydrant types.....	3
3 Water supplies from fire hydrants.....	6
4 Fire hydrants in London	7
5 Fire hydrant installations.....	7
6 The LFB fire hydrant inspection process	8
7 Devices fitted to hydrants.....	9
8 Unauthorised use of hydrants	9
9 Open water supplies (emergency water sources).....	10
10 Fire hydrants on mobile data terminals (MDTs)	10
11 Hydrant location books	10
12 General enquiries.....	10
Part 2 - Undertaking fire hydrant inspections and reporting defects	11
1 Station diary	11
2 Hydrant inspections	12
3 Inaccessible or unusable hydrants	14

Part 3 - The safe system of work	15
1 General	15
2 Preparation of work area	15
3 Handling the hydrant cover	15
4 Cleaning out the hydrant pit	16
5 Use of hydrant bar and key.....	16
Appendix 1 - Devices fitted to fire hydrants.....	18
Appendix 2 - Types of fire hydrant covers and manual handling guidance	23
Appendix 3- Key point summary - Hydrants and water supplies for firefighting	29
Document history	32

Part 1 - Overview

1 Introduction

- 1.1 In order to fulfil its responsibilities under the Fire and Rescue Services Act 2004, the LFB undertakes inspections and some in-house maintenance of fire hydrants in agreement with the water undertakers who own the majority of London's fire hydrants. Fire hydrants that are owned by the water undertakers are known as statutory fire hydrants. To achieve this, all fire stations undertake scheduled inspections of the statutory fire hydrants on their grounds. Major defects that cannot be remedied in-house are referred to the water undertaker who owns the fire hydrant for repair, or for replacement with a new one if the fire hydrant is at the end of its life. Occasionally, if the defective fire hydrant is no longer required as suitable fire coverage is available from other nearby fire hydrants, the LFB Water Team may decide to abolish a fire hydrant.

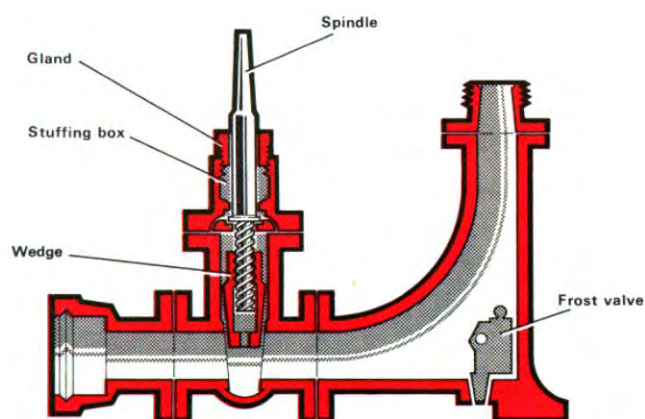
2 Hydrant types

- 2.1 The principal types of hydrant found in the London area are sluice valve and screw-down, with new through-bore design hydrants gradually being introduced.

Sluice valve hydrant

- 2.2 This type of hydrant is a legacy design that is no longer installed but still prevalent in Greater London. This hydrant usually runs off a short branch from the water main, the water flowing horizontally past the valve. It consists of three main castings. The inlet piece, which is connected to the pipe, the sluice valve itself and the duck foot bend leading to the outlet. The opening and closing of the waterway is affected by means of a gate or wedge having gunmetal faces. This sits on corresponding faces in the body of the valve. Rotation of the spindle raises the wedge until it is clear of the waterway. The spindle passes through the valve cover by means of a gland and stuffing box. A sluice valve hydrant may be fitted with either a single or double outlet. Also, some old sluice valve fire hydrants are double hydrants so they have two spindles and two outlets.
- 2.3 This hydrant is usually opened by turning the spindle in a clockwise direction. It should be noted that sluice valve hydrants are usually replaced by the screw-down type or the through-bore type when they reach their end of life.

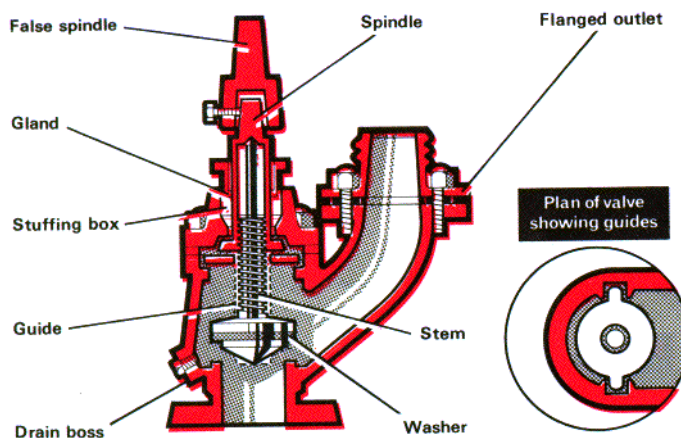
Figure 1 Cross-section of a sluice valve hydrant



Screw-down fire hydrant

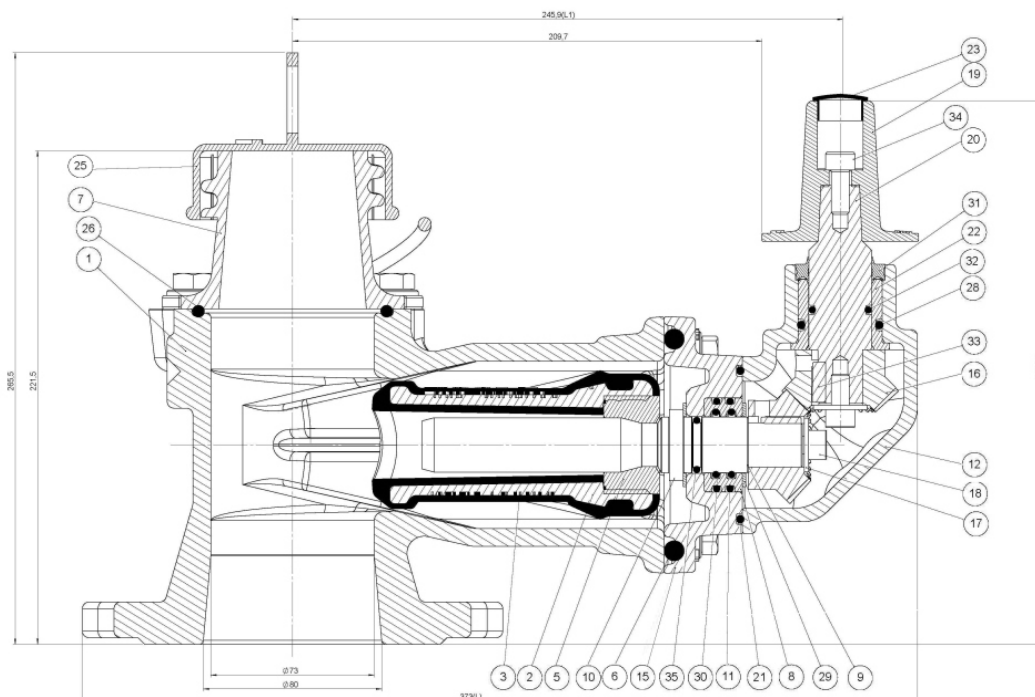
- 2.4 This type of hydrant may be attached directly to the main or a short branch running off it, which is provided at the chosen point with a vertical extension pipe having a flange to which that of the hydrant is bolted. All screw-down hydrants are fitted with a single outlet. A mushroom type valve closes on a seating in the base of the hydrant body above the inlet flange. The valve has a rubber washer, while the seating is of gunmetal. The valve is attached to the lower end of a screwed stem and is lifted from its seating by the rotation of a hollow spindle into which the stem screws until it is clear of the waterway. A cover to the hydrant body carries the stuffing box and gland through which the spindle passes. These hydrants are opened by turning the spindle in an anticlockwise direction.

Figure 2 Cross-section of a screw-down hydrant



Through-bore fire hydrant

- 2.5 Through-bore fire hydrants operate in the same manner described for sluice valve and screw-down fire hydrants but have a different internal construction for the valve and operating mechanism. This allows water from the water main or supply pipe to flow directly through the fire hydrant unimpeded and with minimal frictional loss. Although more expensive to manufacture than screw-down fire hydrants, this design typically provides an improved water flow of about 10%-15% over screw-down fire hydrants under the same conditions.



Associated fittings

Frost valves

- 2.6 Where the valve of a hydrant is closed after use, a small amount of water is trapped in the body of the hydrant between the valve and the outlet. In cold weather, this may freeze and prevent the valve opening. In extreme circumstances it may crack the hydrant body. To prevent this happening, water is drained away from the hydrant by way of either a hole drilled into a gunmetal plug (screw-down hydrant) or an automatic valve called the frost valve (sluice valve hydrant).

False spindles

- 2.7 The spindle of a fire hydrant is usually made of stainless steel, bronze or gunmetal. To protect it from wear caused by the loose-fitting hydrant key, a cap known as a false spindle made from a harder metal is fitted over it and secured by a bolt or screwed stud. The false spindle is not designed to be an integral part of the fire hydrant and may become detached or stolen. All appliances must carry an appropriate number of spare false spindles to ensure any fire hydrants encountered with their false spindles missing can still be operated for firefighting or testing purposes. Fire hydrants should not be operated without the use of a false spindle. Doing so is likely to damage the spindle, causing it to become inoperable and require the fire hydrant to be replaced at considerable expense to LFB.

Outlets

- 2.8 Due to incidences of theft of gunmetal outlets that were fitted to fire hydrants up until the 1990's, the British Standard for fire hydrants was revised to address this. Plastic outlets were installed for a time before being superseded by a base metal outlet of limited value. However, older fire hydrants with gunmetal outlets may still remain in situ and the outlet subject to theft. It has not been possible to combat this to date without introducing measures that impact on operational fire fighting. When a fire hydrant with a missing outlet is encountered, it should be reported to the Water Team who will arrange replacement. If it is found that a number of fire hydrants within a local area have had the outlets removed and that there is a severe shortage of working fire

hydrants to provide fire cover as a result, please notify the Water Team via water@london-fire.gov.uk so as urgent action may be taken.

NB – Due to health and safety concerns about plastic outlets which have failed in a small number of cases, a decision has been made that all plastic outlets will be replaced for metal ones. These repairs are carried out as and when fire hydrants with plastic outlets are identified either via the scheduled inspection round or by operational usage. In the event of an emergency, any fire hydrants with plastic outlets must be used with extreme caution and anyone operating the fire hydrant must not stand directly above or lean over the standpipe when the fire hydrant is open and in use. Any fire hydrants with plastic outlets must be reported to the Water Team for a suitable repair at the earliest opportunity.

3 Water supplies from fire hydrants

General water supply requirements

- 3.1 The supply of water in the water undertaker's network is governed by the Water Industry Act and any requirements placed upon them by industry regulator Ofwat. LFB does not have authority to influence this requirement through normal engagement channels and crews should therefore consider and appreciate the statutory obligations in place before reporting low water pressure concerns.
- 3.2 A water undertaker is required by law 'to supply water at a pressure which will reach the topmost storey of a residential property including within a block of flats but not at a height greater than it will flow by gravitation through its water mains from a service reservoir'. Ofwat's Guaranteed Standards Scheme requires that the water company must maintain a minimum pressure in the communication pipe of seven metres static head (0.7 bar). The Water Industry Act does not specify flow and pressure rates for fire hydrants. The National guidance document on the provision of water for firefighting, which does outline suggested flow rates to cover various types of development, is a guidance document, not legislation. The Fire and Rescue Service therefore cannot insist the local water undertaker delivers the flow rates described in this document.
- 3.3 If LFB requires the local water undertaker to increase the supply of water available at an incident for firefighting, a request can be made in accordance with the Fire and Rescue Services Act 2004, which states '*If a fire and rescue authority requests a water undertaker to provide a supply and pressure of water for the purposes of extinguishing a fire that is greater than the undertaker would otherwise provide, the undertaker must take all necessary steps in order to do so.*' It should be noted however that water undertakers may not always be able to increase the supply due to the age of the water mains in some areas and the significant risk of causing major damage to the water mains which could lead to a loss of water for firefighting.
- 3.4 In areas of known low water flow and pressure, Station Commanders should consider an increased Pre-Determined Attendance (PDA).

Drought planning

- 3.5 Where London and surrounding areas experiences a sustained lack of rainfall, a water undertaker may implement drought planning measures in accordance with their action plans. These will usually consist of:
 - Level 1 - publicity targeted at raising awareness and encouraging reduced usage.
 - Level 2 - domestic restrictions, i.e. hosepipe bans.
 - Level 3 - business use restrictions.

- 3.6 Should a drought situation continue and the steps above be regarded as insufficient to maintain water supplies, a water undertaker may apply to the Secretary of State for an Emergency Drought Order. Should this be implemented, emergency measures will be introduced to ensure that domestic water supplies are maintained or supplemented by other means.
- 3.7 Water undertakers are required to advise LFB if any of the steps described above are implemented. LFB will issue advice and instructions as appropriate under the circumstances to ensure that measures are taken for water conservation, hydrant testing and operational supplies.

4 Fire hydrants in London

- 4.1 There are three categories of fire hydrant found within the London area:
- Statutory.
 - City.
 - Private.
- 4.2 **Statutory fire hydrants** - Although there is only one Fire Authority for London, there are four statutory water undertakers whose districts of operation are wholly or partly within this area. Due to changes in water industry legislation, there is the opportunity for this number to increase as water undertakers no longer have a monopoly on the geographic areas they once served. In London approximately 102,000 fire hydrants have been connected to a water undertakers' mains specifically for fire fighting purposes. These fire hydrants are known as statutory fire hydrants.
- 4.3 **City fire hydrants** - Within the City of London, approximately 690 fire hydrants have been installed and are maintained by the City of London Corporation. These hydrants are available to LFB for firefighting purposes in the same way as statutory fire hydrants and are inspected by LFB because of the high risks contained in the area. Old pattern city hydrants have two outlets controlled by one valve, which usually opens clockwise. When a city hydrant is replaced at end of life by the City of London Corporation, a single screw-down fire hydrant or a single through-bore fire hydrant is normally installed.
- 4.4 **Private fire hydrants** - Water undertakers' mains are usually in public thoroughfares. Consequently, buildings occupying extensive sites (e.g. hospitals, railway goods yards, generating stations and some blocks of flats) may be some distance from the nearest main. In these cases (usually in accordance with recommendations made by the LFB Water Team) the owners of the property may provide, at their own expense, private hydrants on an independent supply pipe connected to the nearest main, or other adequate water supply. Their inspection and maintenance is the responsibility of the owner concerned.
- 4.5 **Fire station yard fire hydrant defects** - It should be noted that defective hydrants located in fire station yards must not be reported to the LFB Water Team. PFI stations (Dagenham, Dockhead, Leytonstone, Mitcham, Old Kent Road, Orpington, Plaistow, Purley and Shadwell) must report station yard hydrant defects to the Kier Helpdesk via 0330 0415703. For all other fire stations, please log repairs using the Property Portal (online service in Start Menu) or call the Property Helpdesk on 0208 555 1200 Ext 89100 - Option 2.

5 Fire hydrant installations

- 5.1 New fire hydrants in residential areas are normally spaced at a distance of 180 metres, although historically they have been installed at lesser distances. The only exception to this will be cul-de-sac or dead-end locations where it is normally not necessary to install hydrants if the distance to the nearest hydrant in the adjacent road is 90 metres or less.

- 5.2 In areas of high risk where shorter distances may be preferable, fire hydrants will normally be spaced at a distance of no less than 90 metres. High-risk areas may be identified by such premises as manufacturing or warehouse complexes, bulk oil/petrol storage, large timber distribution areas or houses of multiple occupation, although these examples are by no means exhaustive.
- 5.3 Advice on where fire hydrants are to be located within new development sites or redevelopment of existing sites can be provided by the LFB's Water Team on request using the GIS database available for this purpose. Please note that the Fire and Rescue Service is not a statutory consultee on water for firefighting provisions so is not always consulted.
- 5.4 Wherever possible, fire hydrants are installed in footways immediately adjoining carriageways or surfaces that will take the load of a pumping appliance. The top of the outlet should be more than 100mm (but not more than 300mm) below surface level. Any hydrant that does not meet this standard should be reported to the Water Team.

6 The LFB fire hydrant inspection process

- 6.1 The purpose of undertaking fire hydrant inspections is to identify the overall operational condition of the fire hydrant and allow station personnel to remain familiar with the locations of fire hydrants within their station grounds. The activity arises from the statutory obligation to secure water supplies for fire fighting contained in the Fire Services Act and provides an assurance that fire hydrants installed for this purpose have not fallen into a state of disrepair through either lack of use, wear and tear or damage/vandalism, i.e. that all reasonable steps are taken to ensure that fire hydrants produce a supply of water for operational fire fighting and operate safely in doing so, including their infrastructure.
- 6.2 LFB currently operates a rolling four yearly fire hydrant inspection process. This means that approximately one quarter of the fire hydrants within each fire station's grounds are inspected by fire crews in year one, a further quarter in year two and so on. Once completed, the cycle starts again. The inspection period runs from 1st March and typically ends on 31st October, with the whole of November allocated as a mop up month for outstanding inspections. The duration of the inspection round (the active months in which inspections can be undertaken and outcome data handled) is determined by the appropriate principal manager on the Operational side of LFB. The start of each year's inspection round and active months will be circulated in advance.
- 6.3 The station-based process is planned and undertaken via Station Diary. Each station watch is responsible for creating appointments in Station Diary to ensure that all the fire hydrants are inspected in their due months. Information on the fire hydrants due for inspection in the active months and the numbers completed are available from the link to the fire hydrant inspection pages once an appointment is created. Management information on the overall fire hydrant inspection process is also available from a report via this link.
- 6.4 All fire hydrants that are reported by stations as defective are firstly visited by one of the LFB's Water Team Hydrant Technicians. Hydrant Technicians carry a range of tools in a service van that allows a number of minor repairs to be carried out in-house. This is both timely and cost effective. The inspection cycle allows defective fire hydrants to be visited by the Hydrant Technicians shortly after the station inspections are completed. The priority for the Water Team Hydrant Technicians is to attempt to remedy fire hydrants that are reported as either inoperable for firefighting purposes or in a potentially hazardous condition. Since fire hydrant locations are available on MDTs within the fire appliances, replacing missing fire hydrant marker plates is a lesser priority that is undertaken as a single activity later in the year.
- 6.5 Where defects cannot be remedied in house (i.e. because they require the water supply to be shut down, the fire hydrant to be dismantled or similar more extensive work) these defects are

passed to the appropriate water undertaker as repair orders to be completed in an agreed timeframe. It is important to note that during winter months London experiences higher incidences of burst water mains because of the aging water main infrastructure in a predominantly clay soil. During this time, the water undertaker's priority is to respond to burst mains to ensure that water supplies can be restored as quickly as possible. For this reason, LFB's hydrant inspection programme aims to have orders placed before the winter season to avoid fire hydrant repairs remaining outstanding for longer than desired.

- 6.6 Comprehensive information on undertaking the physical inspection of fire hydrants is addressed in part 2 of this policy.

7 Devices fitted to hydrants

- 7.1 From time to time, devices may be found that have been fitted to a fire hydrant by the local water undertaker. Pressure monitors are generally attached to the fire hydrant outlet and used to monitor the water supply network. Caps may also be fitted to fire hydrant outlets to address leakage problems. Occasionally a very small number of fire hydrants, in agreement with the London Fire Brigade Water Team, may be fitted with locking devices where there have been reported and repeated issues of illegal fire hydrant usage. These locking devices are removed within an agreed period of time, normally around 3 months. Also, the local fire stations are informed and provided with a suitable tool to remove the locking device. More information on the range of devices fitted to hydrants can be found in Appendix 1 of this policy.
- 7.2 If a fire hydrant fitted with a device is required for operational use, the device should be removed carefully in line with the information provided in Appendix 1 of this Policy. ***NB - As a precaution, the operator should not stand directly above the device whilst removing it.***
- 7.3 If a fire hydrant is encountered with a device fitted to it during routine fire hydrant inspections, the fire hydrant should not be inspected and the device left in situ. The inspection outcome for the fire hydrant should be entered as 'Defective-Inoperable' and the defect code is 'Outlet Defective – Capped'. Such returns should also be annotated as 'Unable to inspect – logging device fitted'. A Hydrant Technician will visit the fire hydrant at a later stage.

8 Unauthorised use of hydrants

- 8.1 Misuse of a fire hydrant means use other than for firefighting under the Fire Service Act or as authorised by the water undertakers or owners of the hydrant. Any such misuse may render the person concerned liable to a fine. Additionally, any person who damages or obstructs a fire hydrant, unless using it for an authorised purpose is also, on conviction, liable to a fine.
- 8.2 Although LFB has done some good work with the water undertakers to encourage that wash outs be used instead of fire hydrants in order to protect fire hydrants from damage caused by wear and tear, most water undertakers authorise the use of fire hydrants without reference to LFB. Such authority may be in respect of one fire hydrant for a specified period, or may be a general authority, e.g. to a Local Authority. Any case of unauthorised use brought to the notice of a local officer is to be reported immediately to the Water Team by telephone or e-mail (address water@london-fire.gov.uk) giving the following information/evidence:
- The location of the fire hydrant.
 - The date and time at which the fire hydrant was observed in use.
 - The name, address, telephone number and vehicle registration number of the individual or company using the fire hydrant, if known.
 - Any photos of the fire hydrant in illegal use, should you have them.

9 Open water supplies (emergency water sources)

- 9.1 Where appropriate and available, crews may use an open water supply to supplement firefighting using water from an adjacent fire hydrant. Their use and method of extraction will be determined by the officer in charge at the incident. Open water supplies include rivers, lakes, ponds, swimming pools or similar. These are subject to inspection by the local fire station from time to time to ensure that they are still available for use.
- 9.2 Where fire stations identify new and suitable open water supplies, they should notify the Water Team as soon as possible so these sources can be added to the LFB fire hydrant and open water source database. This information will then be published on the MDTs carried on fire appliances.

10 Fire hydrants on mobile data terminals (MDTs)

- 10.1 Hydrants are displayed on all MDTs in appliance cabs. Information is updated on a daily basis and is drawn from the LFB's fire hydrant database. Fire hydrants that are displayed as defective usually derive their status data from the latest fire hydrant inspection and will remain as such until the defect is either remedied by a Hydrant Technician or the water undertaker. The Water Team take all steps to ensure data displayed on MDTs is accurate and up to date, however sometimes mistakes do occur and the Water Team is reliant on information relayed from users on the fire ground or during inspections. If any data displayed on MDTs is found to be incorrect, staff should inform the Water Team as soon as possible so the information can be investigated and corrected where necessary.
- 10.2 Open water supplies are also displayed on MDTs by an icon that shows the point at which an appliance can park adjacent to the supply in order to extract water from it. Open water supplies are inspected from time to time by the local fire station to check that their availability has not altered.
- 10.3 The icons for hydrants and open water supplies displayed on MDTs are shown below.

- | | |
|---|---|
|  | Operable fire hydrant. |
|  | An operable fire hydrant that has a minor defect. |
|  | An inoperable fire hydrant that will not supply water for firefighting. |
|  | Open water supply. |

11 Hydrant location books

- 11.1 Hydrant location books are available to supplement the information provided by MDTs. They are printed by stations locally and stored in a standard A4 ring binder which is carried on the fire station's appliances. A hydrant location book can be produced via this link (it can be formatted as required).

12 General enquiries

- 12.1 Reports of fire hydrant defects are to be investigated and resolved as far as possible at the local fire station level before being reported to the Water Team if any further action is required. General enquiries or complaints regarding fire hydrants from members of the public or other bodies that cannot be answered at fire station level are to be emailed to the Water Team (water@london-fire.gov.uk).

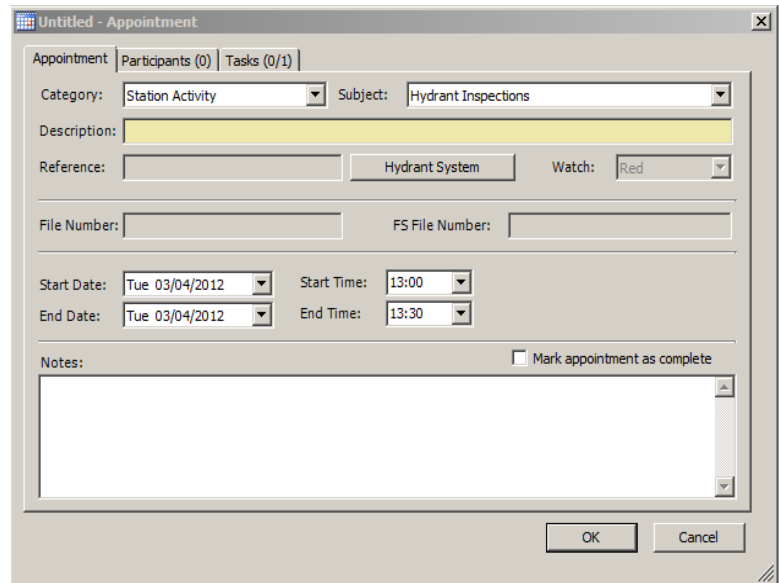
Part 2 - Undertaking fire hydrant inspections and reporting defects

This section explains the steps required to create a time slot in Station Diary, the generation and completion of fire hydrant inspection sheets and the physical inspection of fire hydrants. It also covers the facility to carry out fire hydrant inspections using the AWA (Appliance Workload Application)

1 Station diary

Creating time slots on Station Diary

- Open Station Diary.
- Create new appointment for hydrant inspections.
- From category list, select station activity.
- From subject, select 'Hydrant/EWS inspections'.
- A button marked 'Hydrant System' appears on the appointment front page (see image to side).
- Select the date and time slot for the activity.
- Select OK.



Accessing and printing fire hydrant inspection sheets via Station Diary

- 1.1 To access the page displaying the hydrants due to be inspected by a watch for the month, click the 'Hydrant System' button in the appointment.
 - This launches the Water Management Module.
 - The hydrants to be inspected by your watch this month will be displayed.
 - Select the print icon.
 - A map should also be printed to assist crews carrying out the inspections in locating the hydrants using the map tab. It should be configured to landscape.

Accessing and completing the fire hydrant inspection via the Appliance Workload Application (AWA)

It is now possible to complete the fire hydrant inspections using the AWA. The AWA provides a digital map showing the locations of the fire hydrants to make them easier to find. For details on how to do this please see the AWA User Guide.

Carrying out physical inspections

- 1.2 The new hydrant inspection sheets show columns to indicate:
 - The fire hydrant number.
 - The address of the fire hydrant.
 - The inspection result (satisfactory or unsatisfactory).

- The fault codes for an unsatisfactory fire hydrant.
 - Notes which can be added as free text for where it is helpful to provide some additional information.
- 1.3 The printed inspection sheets should be completed with the inspection findings as the physical inspections are undertaken. On return to the station, the information recorded is then entered electronically as explained below.
- 1.4 As an alternative, the AWA will allow the fire hydrant inspection results to be completed electronically. For details on how to do this please see the AWA User Guide

Entering hydrant inspection findings through Station Diary

- Open Station Diary.
- Select the appointment for the fire hydrant inspections that have just been undertaken.
- Select the fire hydrant button to access the fire hydrant inspection sheets.
- Click on the icon adjacent to the fire hydrant number.
- You now see a screen for you to input information with the fire hydrant's address at the top.
- Use the additional information box below the fire hydrant's address to enter any additional location information (i.e. by side entrance).
- Using drop down box, select the inspection outcome. Note that if faulty – non operable is selected, this means the fire hydrant is not available for operational use.
- If OK is selected as the inspection outcome, then press 'Update' to complete.
- If the inspection outcome is not OK, this has to be supported by one or more fault codes.
- Click on a fault code in the 'Faults Code' box and use the right arrow key to transfer it to the 'Hydrant Faults' box. Repeat if required for an additional fault code.
- If an incorrect fault code has been selected, highlight it in the 'Hydrant Faults' box and select the left arrow to remove.
- If additional notes are required, enter them in the 'Notes' box.
- Once satisfied that all the information is correct, press 'Update'.
- Once the 'Update' button is selected, the hydrant inspection is complete.
- This information is now sent to the Water Team for action and is no longer visible at the station.
- Close the Water Management Module, this will return you to the Station Diary.
- The inspection appointment can now be marked as 'Complete' in the normal way once the participants and time frame have been updated.

Note -as the information for each fire hydrant in that month is entered, this will update the overall fire hydrant inspection figures at the top of the page.

2 Hydrant inspections

- 2.1 Personnel carrying out fire hydrant inspections are to wear work-wear uniform with cap and if appropriate, a fire tunic. Fire boots are to be worn instead of shoes. The driver of the appliance may wear shoes while engaged in driving.
- NB - When fire hydrants are tested or inspected, all efforts must be made by crews to remedy any defect(s) found where it is possible to do so.***
- 2.2 Each fire hydrant is to be tested in the following manner using a standpipe and operating key and bar.
- **Outlet to be tested.** Conduct a check of the outlet to ensure it is in good order and is attached firmly to the fire hydrant. A standpipe should then be fitted to the outlet to ensure

that the thread or connection is in good order. **NB** – *If the fire hydrant has a plastic outlet or the outlet is damaged, please do not attempt to ship a standpipe and operate the hydrant. Any fire hydrant with a plastic outlet should not be used during testing as there have been a few instances of the plastic outlets failing and nearly causing serious injury. Any fire hydrants with plastic outlets must be reported as a matter of urgency to the Water Team as defective either via the fire hydrant inspection round process or via an e-mail to water@london-fire.gov.uk*

- **Fire hydrant charged.** With a standpipe, head and blank cap connected to the outlet, the valve should be partially opened to release a small quantity of water through the fire hydrant. The flow of water must be directed to the gutter, using a length of hose if necessary. Please do not open the fire hydrant fully at this stage.
- **Valves to be tested.** With the standpipe still in position a blank cap should be inserted in the head (or the valve in the standpipe head should be closed), and the fire hydrant opened to its fullest extent. Whilst under this pressure, all joints should be examined for signs of leakage. The fire hydrant should then be turned off and, if the cap is not fitted with an air release, the standpipe should be unshipped without the blank cap being removed (or the valve in the standpipe head being opened).
- **Frost valve.** The frost valve (where fitted) should be checked to see that it operates in a satisfactory working order.

Note: These tests should not be carried out in cold weather where there is a likelihood of water freezing as this could present a slip hazard to the public.

2.3 A fire hydrant should only be considered defective and reported as unsatisfactory if it:

- Cannot be used for operational purposes; and/or
- Has a defect which does not render the fire hydrant unusable, however, it cannot be resolved by the fire crews and needs attention from a LFB Water Team Hydrant Technician; and/or
- Presents a significant hazard to the general public.

2.4 In addition to the standard testing procedure described above, the following points should be noted:

Frost valve: Failure of the frost valve may sometimes be remedied by tapping lightly on the elbow flange with the blunt end of a fire hydrant bar. If a frost plug is fitted to a screw-down fire hydrant and fails to drain the bend, the drilled hole can often be cleared by inserting a thin, sharp object such as a piece of wire or similar. If there are signs of the main valve letting by, the fire hydrant is to be flushed out to remove any foreign matter that may be preventing the valve from seating properly. NB: A defective frost valve is not a notifiable defect.

Frame and/or cover: Where a damaged frame and/or cover constitutes a serious hazard to the public, the Water Team should be informed immediately by phone (0208-555 1200 and ask for the Water Team) or by e-mail (water@london-fire.gov.uk).

Spindle Leaks: These are rarely of a reportable nature when the fire hydrant is in the closed position and should not be reported as defects unless the spindle leak results in water collecting in the fire hydrant pit above the level of the outlet when the fire hydrant is fully closed, or they present a hazard to the public because the water is not contained in the fire hydrant pit and is over spilling into public areas. This includes the occupiers of neighbouring premises who may suffer damage from the leakage, particularly where there is a dwelling, a basement or a cellar below street level. Spindle leaks will generally cease once the packing gland becomes wet. Slow leaks where the water does not collect in the pit above the level of the outlet should not be reported as defective unless they pose a risk to the operator or members of the public when the fire hydrant is in operation.

Tight spindles: These can usually be eased using the full extent of a hydrant bar. However, under no circumstances should excess force be used as this could result in injury as well as further damage to the fire hydrant. If the fire hydrant cannot be opened after easing the spindle, this should be reported as defective.

False spindles: These are to be checked to ensure that they are securely fixed to the true spindles. However, missing false spindles should not be replaced or reported as a defect as false spindles are carried on all fire appliances.

Hydrant pit: A pit defect should only be reported if the fire hydrant is unusable or presents a hazard to the public.

This is to be inspected for loose brickwork or cement packing. Some pits are rendered watertight because of vaults etc. underneath. Broken or cracked cement rendering should therefore also be noted and the possibility of leakage considered. Any debris or silt is to be removed from the fire hydrant pit using the salvage scoop and bucket carried on the appliance. The collected debris or silt should be disposed of carefully and in accordance with the appropriate policies.

NB - Very occasionally crews may find used hypodermic needles in the fire hydrant pit. Please do not attempt to remove these needles when testing the fire hydrant. Please report the defect to the Water Team via the inspection results process. The Water Team will arrange to have the pit cleaned.

If a fire hydrant is needed for an operational incident and contains used hypodermic needles in the pit, it will be for the Incident Commander to decide if it is safe to use the fire hydrant.

Fire hydrant tablet: This is to be cleaned and any small deficiencies, such as missing screws, remedied if possible (it should be noted that fire hydrant tablets can also be secured to wall, posts etc. with binding tags or other means – as long as permission is sought from the owner of the wall, fence, post, etc first. Fire hydrant marker tablets must not be attached to trees or any other vegetation under any circumstances. The numbers indicating the distance to the fire hydrant cover are to be checked and reported to the Water Team if not correct.

Fire hydrant marker posts: Where a concrete tablet and post is found to be damaged, every effort should be made to make it safe for the public. Only in extreme cases should the fire crew attempt to remove the reinforced concrete marker post and crews should note that the concrete marker posts often have a concrete base under the pavement which helps to keep the marker post stable and secure. No trip hazards must be left as a result of any works carried out by Fire Crews. The Water Team is to be contacted immediately, enabling the necessary arrangements to be made with the water undertakers to have the post removed safely and/or ensure the area is made good.

Bolts, joints and lugs: The fire hydrant is also to be inspected for slackness of any bolts or joints. Lugs of old pattern valve body covers are to be examined for signs of breakage.

3 Inaccessible or unusable hydrants

Obstruction of hydrants

- 3.1 If it is found that a fire hydrant cannot be used, examined or tested because of obstruction, road or footway improvements, or other work in progress, the Sub Officer/Station Officer is to take such remedial action as is possible and inform the Water Team using the fire hydrant inspection resulting process, an e-mail to water@london-fire.gov.uk, or via the telephone Monday to Friday, 7am to 5pm.

Excavation work adjacent to hydrants

- 3.2 If it is noticed that excavation work for the erection of buildings or for the laying of pipes, etc. is in progress adjacent to or below any fire hydrant pit or fire hydrant branch pipe, the Sub Officer/Station Officer is to take such action as is possible to ensure that the fire hydrant is not rendered inoperative and inform the Water Team. The work is to be inspected to see that the fire hydrant is properly secured and accessible for Brigade purposes and that any damage or disturbance to the fire hydrant pit and the frame cover is made good.

Part 3 - The safe system of work

1 General

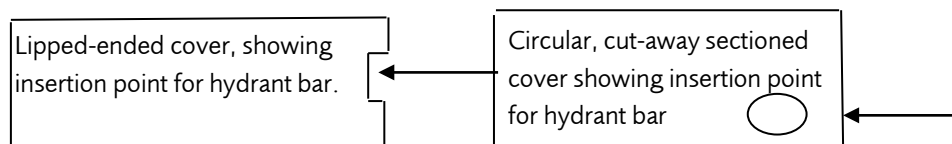
- 1.1 This section describes the steps to be followed in gaining access to a fire hydrant and operating it for testing purposes in a safe manner.
- 1.2 Fire hydrant tests should be undertaken by not less than two fire station personnel. One person must be nominated to maintain an awareness of passing pedestrians, vehicles and other traffic so that work can be carried out safely for the operator and without risk to the general public.
- 1.3 There are 4 main steps to be followed when undertaking minor repairs. They are:
- Preparation of work area.
 - Handling the fire hydrant cover.
 - Cleaning out the fire hydrant pit.
 - Use of the fire hydrant bar and key.
- 1.4 The safe system of work to be followed for each step is described below.

2 Preparation of work area

- 2.1 The operative should make sure that the area surrounding a fire hydrant is set up in a safe manner before work begins. This requires assessing any risks that may affect operatives, pedestrians, vehicles or other passing traffic.
- 2.2 In pedestrian areas, any potential risks to pedestrians are to be taken into account and they should be directed away from the working area. When working at the roadside, the appliance is to be parked adjacent to the fire hydrant with warning lights on and in a manner that shields the operatives from oncoming traffic. In exceptional circumstances where the location of the fire hydrant means that the level of risk from passing traffic is unreasonably high, the Water Team is to be informed.

3 Handling the hydrant cover

- 3.1 Fire hydrant covers have evolved in design over many decades. Whilst generally square or rectangular, they can differ in size and depth and may be grey/black, painted yellow or even manufactured in yellow composite plastic. They generally weigh from 15kg to 75kg although new composite plastic material designs are being fitted that are significantly lighter. They can be lifted using the fire hydrant bar in one of two ways. For covers containing a lipped, cut-away section at one or either end of the cover, the flat end of the fire hydrant bar should be inserted under the lip in order to gain leverage. Covers containing a circular, cut-away section allow the fire hydrant bar to be inserted to a further degree in order to gain leverage.



Comprehensive information on the variety of fire hydrant designs that can be found in London and manual handling guidance can be found in Appendix 2 of this Policy.

- 3.2 Once leverage using the bar has lifted the cover, the remaining removal action should be carried out with the cover remaining in contact with the ground. This will ensure that the majority of the weight remains on the ground and is not borne by the operative. Where a heavier style of cover is being lifted, assistance from a second operative will allow the first operative to raise the cover using the bar. The second operative can then safely move the cover away from the fire hydrant pit using both hands. The cover should remain in contact with the ground at all times so that the ground rather than the operative supports the majority of its weight. The second operative should wear fire-fighting gloves during this stage. All operations should be performed whilst maintaining good posture; that is, keeping the back straight to prevent unnecessary strain. Newer style fire hydrant covers are compact but sit more deeply in their accompanying frame. These covers are designed to be lifted directly upwards from the frame they sit in. They may appear to 'stick' during lifting if a fire hydrant bar is inserted at one end and removal attempted in the same way as thinner style covers. Users should find the correct method of lifting to be a simple process upon familiarity with the type of cover.
- 3.3 Once the cover has been lifted from the pit, it should be placed away from the working area before work begins, having due regard to the advice contained in 16.1 above.

4 Cleaning out the hydrant pit

- 4.1 The fire hydrant pit is to be cleaned by removing excess water and any objects, including soil or debris, that may affect the operation of the fire hydrant. Fire-fighting gloves are to be worn during this procedure to guard against dirty water and the potential presence of sharp objects. The operative should endeavour to maintain a good posture. Excess water is to be removed from the pit using a scoop or similar device before removing any debris. Extreme caution should be taken to avoid contact with any sharp objects that may have entered the pit. **NB** - Very occasionally crews may find used hypodermic needles in the fire hydrant pit. Please do not attempt to remove these needles when testing the fire hydrant. Please report the defect to the Water Team via the inspection results process. The Water Team will arrange to have the pit cleaned. A supply of plastic bags used to cover sandbags should be carried on the appliance during the course of fire hydrant testing. These are to be used to store pit debris. The bags should be disposed of upon return to the station.

5 Use of hydrant bar and key

- 5.1 The fire hydrant is operated by firstly fitting a false spindle of the correct size over the spindle of the hydrant if one is not already in situ. The bolt on the false spindle should be tightened so that it is properly secured over the hydrant spindle. This should be checked where a false spindle is already attached to the fire hydrant spindle on arrival. Once the standpipe has been fitted to the outlet, the key is placed securely onto the false spindle and the bar located in the head of the key. The key is then usually turned anticlockwise although older sluice valve hydrants are operated by turning the spindle clockwise. This allows the main valve to open and water to flow.

- 5.2 Care must be taken to avoid using excessive force when turning the bar and key. The operation should be performed slowly, since opening or closing the fire hydrant valve too quickly may cause pressure changes or 'water hammer' within the mains that can either result in damage to the water main which could significantly affect the supply of water for firefighting, or displace particles which normally rest at the bottom of the water main. This can cause discolouration or contamination of the drinking water supply. In some cases, the spindle may be situated close to the outlet, resulting in contact between the fire hydrant key and standpipe. Care is to be taken when turning the bar and key to avoid the operative's hand striking the standpipe. Good posture is to be maintained whilst this operation is performed as demonstrated in the photographs below. (**Note:** that these are to illustrate good posture only and not current work wear/PPE).



Appendix 1 - Devices fitted to fire hydrants

Pressure loggers

Pressure loggers are used by water companies to monitor what is happening in the pressurised water network (the mains). Their most common use is to detect leakage. Any number may be in use and attached to hydrants at a given time. Because of the way that monitoring happens, this can be for hours, days or weeks at a time. It is therefore impractical to advise of where loggers might be encountered at any one time.

Pressure loggers are always fitted to the outlet of a fire hydrant. They are either screwed directly to the outlet or are magnetically attached.

Screw-on loggers operate with the hydrant turned on, although this will not be apparent from inspection. Hydrants with these types of loggers should be slowly and fully closed down before the logger cap is removed, or if in doubt, the hydrant should not be used. If a logger of this type is removed, it should be left in the pit and the Water Team informed via an e-mail to water@london-fire.gov.uk.

Magnetically attached loggers can simply be removed before use and reattached after. The following examples show the various types of pressure loggers commonly in use, although designs can vary.

It should be noted that more modern loggers may contain a flashing LED to show that they are working properly. In the past they have been confused with suspect devices, particularly when visible only through the eyelets of the hydrant cover.

Pressure logger



Typical pressure logger installation with hydrant cap and flexible hose

If encountered during hydrant inspections, please do not remove it. Complete the hydrant inspection as Defective – Operable (as the logger can be removed for emergency use), with the Defect Code 'Outlet Defective - Capped'. Please also add a note to say 'unable to inspect, logger fitted'.

To remove a pressure logger for emergency use of the fire hydrant:

- i) Shut hydrant slowly and fully using the LFB key and bar.
- ii) Disconnect data logger and flexible hose from hydrant cap.
- iii) Carefully remove the hydrant cap using the LFB key and bar.

NB - Take care when removing cap as there may be some residual pressure in the hydrant. Do not stand directly above the hydrant when removing the cap.

- iv) Please leave logger, hydrant cap and hose in fire hydrant chamber and inform the Water Team via an e-mail to water@london-fire.gov.uk

Note – There are a number of pressure loggers of this type that differ slightly in size and design

Pressure logger



Typical pressure logger installation with hydrant cap and flexible hose

To remove a pressure logger for emergency use of the fire hydrant: -

- i) Shut the hydrant down slowly and fully using the LFB key and bar. If you're not sure if the hydrant is fully closed, take a pressure reading to confirm that hydrant is completely shut down.
- ii) Disconnect data logger and flexible hose from hydrant cap.
- iii) Carefully remove hydrant cap using key and bar. NB -Take care when removing cap as there may be some residual pressure in the hydrant. Do not stand directly above the hydrant when removing the cap.
- iv) Please leave the logger, hydrant cap and hose in fire hydrant chamber and inform the Water Team via an e-mail to water@london-fire.gov.uk

Permalog pressure logging



To remove a pressure logger for emergency use of the fire hydrant: -

- i) This type of logger is magnetically attached to the outlet of the hydrant.
- ii) Remove logger carefully by hand and place to one side during hydrant inspections or firefighting operations.

After use, replace logger in hydrant outlet so that it clamps magnetically.

Any issues should be reported to the Water Team, via an e-mail to water@london-fire.gov.uk quoting the LFB hydrant number.

Enigma Hydrophone pressure logger

This data logger is used for leak detection



To remove this type of logger for emergency use of the fire hydrant: -

- i) Shut hydrant down fully using key and bar.
- ii) Open the bleed valve (shown in red) to ensure the hydrant is off and to remove any residual pressure.
- iii) Wait until water has stopped discharging from the valve immediately below the nozzle
- iv) Carefully remove the equipment with hydrant key and bar. **Do not stand directly above the hydrant when removing the cap, in case of any residual pressure.**
- v) Leave equipment in fire hydrant pit after use chamber and inform the Water Team via an e-mail to water@london-fire.gov.uk.

Other devices fitted to hydrants

Water companies may fit other devices to hydrants although it is rare for them to be significantly different to the devices described above. As a general precaution, a hydrant should not be inspected if a device is fitted to it. If the hydrant is required for operation use, care should be taken in removing the device and the operator should be satisfied that the hydrant is fully shut down before a device is removed. The operator should take care to ensure they are not positioned above any device fitted to a hydrant outlet.

Hydrant security devices

LFB have previously evaluated the potential widespread use of hydrant security devices with a view to preventing unauthorised use. Such devices to date have proved to be ineffective or have hindered quick access to the hydrant. However, LFB may continue to work with water companies on similar initiatives from time to time and information will be communicated as and when this occurs.

That said, on occasions where illegal usage of a hydrant is being regularly observed, in agreement with LFB a water company may install a hydrant security device for an underground fire hydrant, such as the one in the picture below. In these instances, the local Fire Station will be informed ,familiarisation / instructions on how to remove the security device will be given, and a key (the grey item in the picture below) will be provided so as the security device may be removed for operational use.



Appendix 2 - Types of fire hydrant covers and manual handling guidance

Typical fire hydrant cover types

The following hydrant cover types are likely to be encountered during inspections and operational activities:

- Standard
- Large
- Small
- Split

The images that follow show

(a) each cover type alongside a standard lifting key to demonstrate the typical size of the cover being described and

(b) the best posture and steps to be followed when removing the cover to access the hydrant.

Refitting is carried out in reverse to the procedure for removing, ensuring that the cover sits correctly in its frame to avoid being a trip hazard.

The selection that follows is designed to be representative of a range of cover types but is not meant to be exhaustive as innovation and modification may continue to provide alternative designs in future. Actual dimensions (length, width and depth in centimetres) are also representative and may vary.

Manual handling

Correct manual handling techniques must always be adopted when lifting any fire hydrant cover. The action must always be performed with the equipment issued for the purpose. Operators must be mindful of posture, and the operation should be performed with back straight and as close to the cover as is possible. Examples of correct manual handling are demonstrated in the range of hydrant cover types that follow.

The weight of different hydrant covers will vary depending on design but generally range from between 9kg to 28kg.

Type 1 hydrant cover (aka London County Council or Duck-foot Hydrant)

Dimensions: 68 x 25 x 2





Large type cover

Dimensions: 66 x 35 x 2



Small deep type cover (without city key)

Dimensions: 38 x 23 x 8



Small deep type cover (with assistance of city key)



Small type cover

Dimensions: 31 x 23 x 3



(Follow lifting technique shown above for small type cover)

Two part split type cover

Dimensions: 38 x 24 x 8

**Composite plastic covers**

Lightweight covers made of composite plastic which are fitted to hydrants in footpaths and verges, they are not suitable for use in carriageways.

They should be lifted via the pry slot using a LFB bard and key.

NB – Please ensure the locking catch is set to the unlocked position (Instructions are shown in the picture below) before attempting to lift the cover. If the locking catch is inoperable, the cover may be forced open using the LFB bar and key. In this instance, extra care must be taken to use good posture and not to put excessive pressure on the bar and key which may cause the operator injury should the cover suddenly open. If a cover has to be forced open, the locking catch can be removed before the cover is refitted.



The new covers have a simple locking mechanism accessible by removing the small cap at the base of the cover.



The twist lock is operated with a screwdriver

If the lock has seized it can be easily opened by using a pry bar, this will snap the lock

Appendix 3- Key point summary - Hydrants and water supplies for firefighting

This policy provides information on the types of fire hydrants that are found in London, the arrangements for undertaking tests and inspections and the reporting of defects to the Water Team.

Fire hydrant inspections are carried out in LFB on a four-year rolling programme. Where appropriate, water may also be drawn from an open water supply.

Types

There are two main types of hydrants found in the London area:

- Sluice valve.
- Screw-down.

A new type of hydrant, a through-bore design, is being introduced offering a reduced frictional loss but very few of these have been installed to date.

Three categories of fire hydrant, statutory, city and private.

Installations

- Since year 2000, fire hydrants in residential areas have been spaced at a distance of 180 metres.
- Exceptions can be made but, in areas of higher risk, fire hydrants will normally be spaced at a distance of no less than 90 metres.
- In London, fire hydrants are normally installed in footways immediately adjoining carriageways or surfaces that will take the load of a pumping appliance.

Operating a hydrant

- Old sluice valve fire hydrants open clockwise, newer fire hydrants usually open anticlockwise.
- Fire hydrants must always be operated slowly and carefully in accordance with the safe systems of work.
- When a standpipe is attached and the fire hydrant is in use, under no circumstances should anyone lean over or stand directly above the standpipe. This is to reduce the risk of injury should the outlet fail for any reason.
- Fire hydrants must be closed down slowly and fully after use.
- If a fire hydrant is found to have a plastic outlet or has hypodermic needles in the pit, it is recommended that an alternative fire hydrant is used and the defects are reported to the Water Team so as an appropriate repair can be made. If the fire hydrant is required for urgent operational use, the decision as to if it can be used safely will be made by the Incident Commander.
- After using and closing down the fire hydrant, care must be taken to ensure the fire hydrant cover is refitted properly in the frame and that no trip hazards are present.

Hydrant water pressure and flow rate

- Relevant standards do not specify any minimum requirement for flow rates from a fire hydrant.

- Ofwat's Guaranteed Standards Scheme requires that the water company must maintain a minimum pressure in the communication pipe of seven metres static head (0.7 bar). The reality is water undertakers usually deliver a minimum of 1.5 bar across their network.
- Crews should consider the above before reporting fire hydrants as suffering low flow or pressure rates and it may be advisable to arrange additional pumping appliances via the Pre-determined Attendance Team for areas of high risk.
- During an incident, fire hydrant flow and pressure can often be temporarily increased through liaison with the water company either by using a water company turncock operator or by remote operation from the water company headquarters to increase the flow of water in the network. Assistance on water supply issues at incidents is to be arranged via LFB Control.
- LFB staff **must not under any circumstances** attempt to turn stopcocks or control valves in order to increase water pressure themselves as this may cause serious damage to the water network resulting in heavy leakage and expensive repairs. In the worst-case scenario, it may be that no water is available from the fire hydrant or those fire hydrants nearby if the pipes serving the fire hydrant burst or are significantly damaged.
- In drought conditions the water companies are required to notify the brigade of any impacts on water supply and any emergency plans.

Inspections and tests

- LFB's inspection cycle tests all statutory fire hydrants on a rolling programme over a four-year period.
- The inspection period begins in March each year and concludes in October, with a further wrap up month in November. This cycle may vary if agreed by principal managers on the Operational side of LFB.
- City hydrants are also inspected and tested but their maintenance falls to the City of London.
- Private hydrants are not currently inspected as they are the responsibility of the hydrant owner.
- When carrying out inspections and testing, station personnel must:
 - Test the fire hydrant outlet (NB – during the inspection and testing round any hydrants with a plastic outlet should not have a standpipe shipped due to Health and Safety concerns. Instead they must be reported to the Water Team for a suitable repair).
 - Charge the fire hydrant.
 - Test the valves.
 - Check the frost valve.
 - Attempt to resolve any minor defects with the fire hydrant wherever possible. This includes clearing the fire hydrant pit chamber of mud, silt, etc that causes the fire hydrant to be inoperable.

Station personal should be mindful of water run off and aim to discharge water from a fire hydrant undergoing testing into the gutter or another suitable place. Fire hydrants should not be tested in very cold weather when water may freeze causing a trip hazard to the public.

Reporting defects

- All stations will carry out fire hydrant inspections using the procedures described in this policy.
- If a defective fire hydrant needs attention outside of the normal inspection cycle or because of extraordinary circumstances, this can be reported via the Appliance Workload Application (AWA). For details on how to do this please see the AWA User Guide. Alternatively, please e-mail the Water Team mailbox (water@london-fire.gov.uk) giving the fire hydrant number, location, nature of defect and the reason why it is urgent. You can also contact the Water

Team via the telephone, Monday to Friday 7am to 5pm via the LFB Switchboard, 020-8555 1200.

Devices fitted to hydrants

- Devices are used by water companies to monitor the pressurised water network (the mains) or to address leakage.
- They are fitted to the outlet of a fire hydrant, and there are various types in use although designs can vary. Devices can be removed from fire hydrants required for operational use by following the information in this policy.
- NB – fire hydrants with a logger fitted are usually left in the fully open position. They must be shut down slowly and fully before any attempts are made to remove the logger.

Document history

Assessments

An equality, sustainability or health, safety and welfare impact assessment and/or a risk assessment was last completed on:

EIA	29/06/26	SDIA	H – 17/06/26	HSWIA	24/06/26	RA	N/A
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Audit trail

Listed below is a brief audit trail, detailing amendments made to this policy/procedure.

Page/para nos.	Brief description of change	Date
Throughout	Reviewed as current with minor updates throughout. Please re-read to familiarise yourself with the changes.	15/06/2016
Page 1	Updated contact from Head of Operational Resilience to Procurement and Technical & Service Support	23/01/2017
Throughout	Reviewed as current with minor updates and role to rank changes throughout. Please re-read to familiarise yourself with the changes.	15/10/2019
Throughout	Reviewed as current with updates throughout. Please re-read to familiarise yourself with the changes.	07/07/2026

Subject list

You can find this policy under the following subjects.

Assets	Water hydrants and supplies
Water	Hydrants
Firefighting	Mobile data terminals (MDTs)
Responding to an incident	

Freedom of Information Act exemptions

This policy/procedure has been securely marked due to:

Considered by: (responsible work team)	FOIA exemption	Security marking classification