



# Fire Safety Command (Building Improvement Division)



# Processes and Procedures on Acceptance Test and Inspection for Building Fire Service Installations



## Provision of fire services installation and equipment

1. Automatic Sprinkler System
2. Manual Fire Alarm System
3. Fire Hydrant & Hose Reel System
4. Emergency Light
5. Automatic Cut-Off Device for Mechanical Ventilating System  
(Ventilation/Air Conditioning Control System)
6. Portable Fire Extinguisher



## Relevant Standard for each installations

- Fire Hydrant / Hose Reel System (FH/HR)
  - CoP 1994 : Section 5.14
- Manual Fire Alarm System (MFA)
  - CoP 1994 : Section 5.11 & 5.14(b)
  - BS 5839 (Fire Detection and Fire Alarm System)
- Ventilation / Air-conditioning Control System (VAC)
  - CoP 1994 : Section 5.26
  - FSD Circular Letter No. 2/2005





## Relevant Standard for each installations (con't)

### ➤ Sprinkler System

- FOC Rules for Automatic Sprinkler Installations (FOC 29 Edition)
- LPC Rules for Automatic Sprinkler Installations
- FSD Circular Letter No. 4/1996 (Improvised Sprinkler System)

### ➤ Fire Detection System

- FOC Rules for Automatic Fire Alarm Installations
- BS 5839 ( Fire Detection and Fire Alarm System)

### ➤ Emergency Lighting System

- CoP 1994 : Section 5.9
- BS 5266: Part 1
- BS EN 60598-2-22

### ➤ Portable Fire Extinguisher

- Maintenance label according to FSD Circular Letter No. 4/1996



## Document list for inspection required (if applicable):

- a. Delegation letter from Owner / Occupier
- b. Water Authority - Fire Service Completion Advice
- c. Water tank calculation (effective volume)
- d. Checklist for FH/HR System
- e. Checklist for Fire Detection and Fire Alarm System



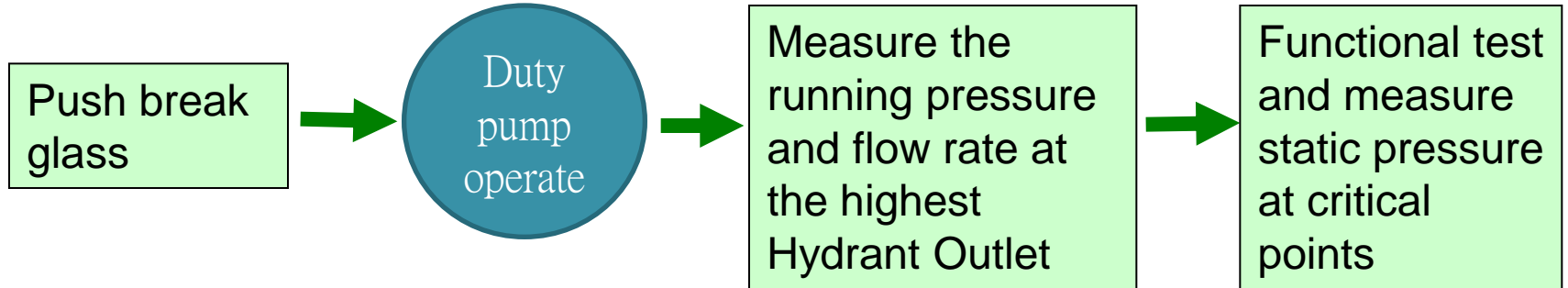
A recommended document list for inspection is shown on below (if applicable):

- f. Calculation for battery capacity
- g. Equipment list and equipment approval letters, technical specification and catalogues etc. for FSIs
- h. Connection of DTL
- i. Consent from BD for the associated building works related to FSIs



# FH/HR Acceptance Test

## A. Fixed Fire Pump





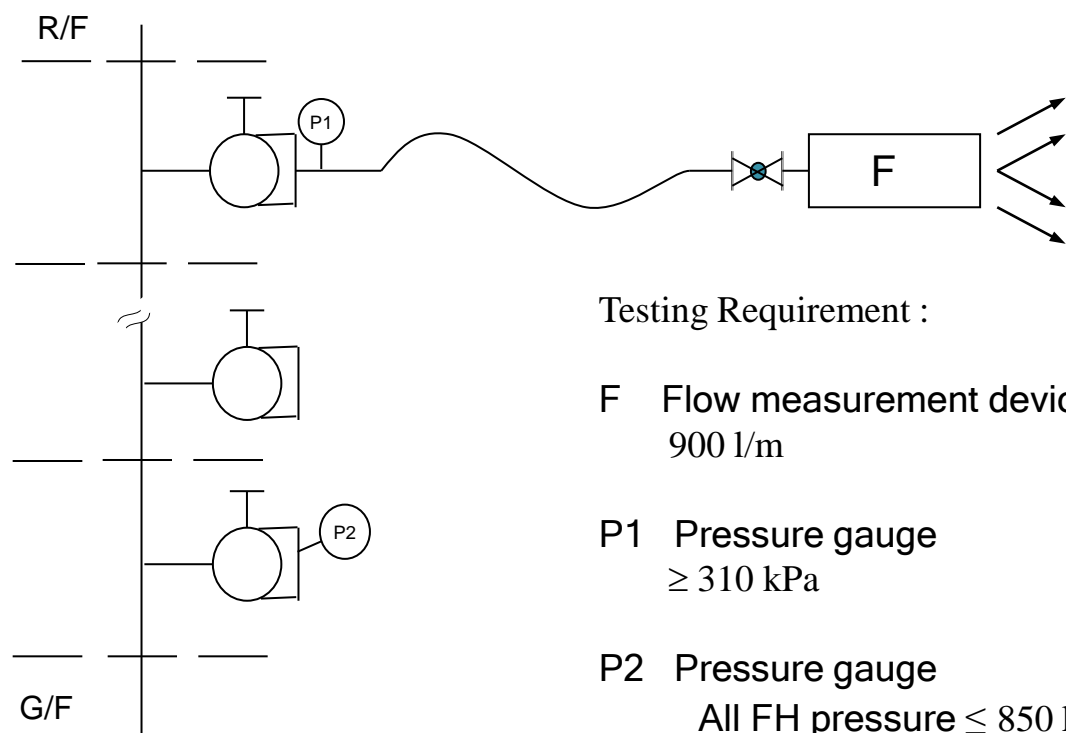


## FH/HR Acceptance Test (con't)

### A. Fixed Fire Pump (con't)

#### ➤ Flow and pressure test

Figure for equipment arrangement for testing of fire pumps (common method)



Testing Requirement :

F Flow measurement device  
900 l/m

P1 Pressure gauge  
 $\geq 310$  kPa

P2 Pressure gauge  
All FH pressure  $\leq 850$  kPa



## FH/HR Acceptance Test (con't)

### A. Fixed Fire Pump (con't)

- Flow and pressure test (con't)

### B. Fixed Fire Pump Functional Test

- Automatic changeover test

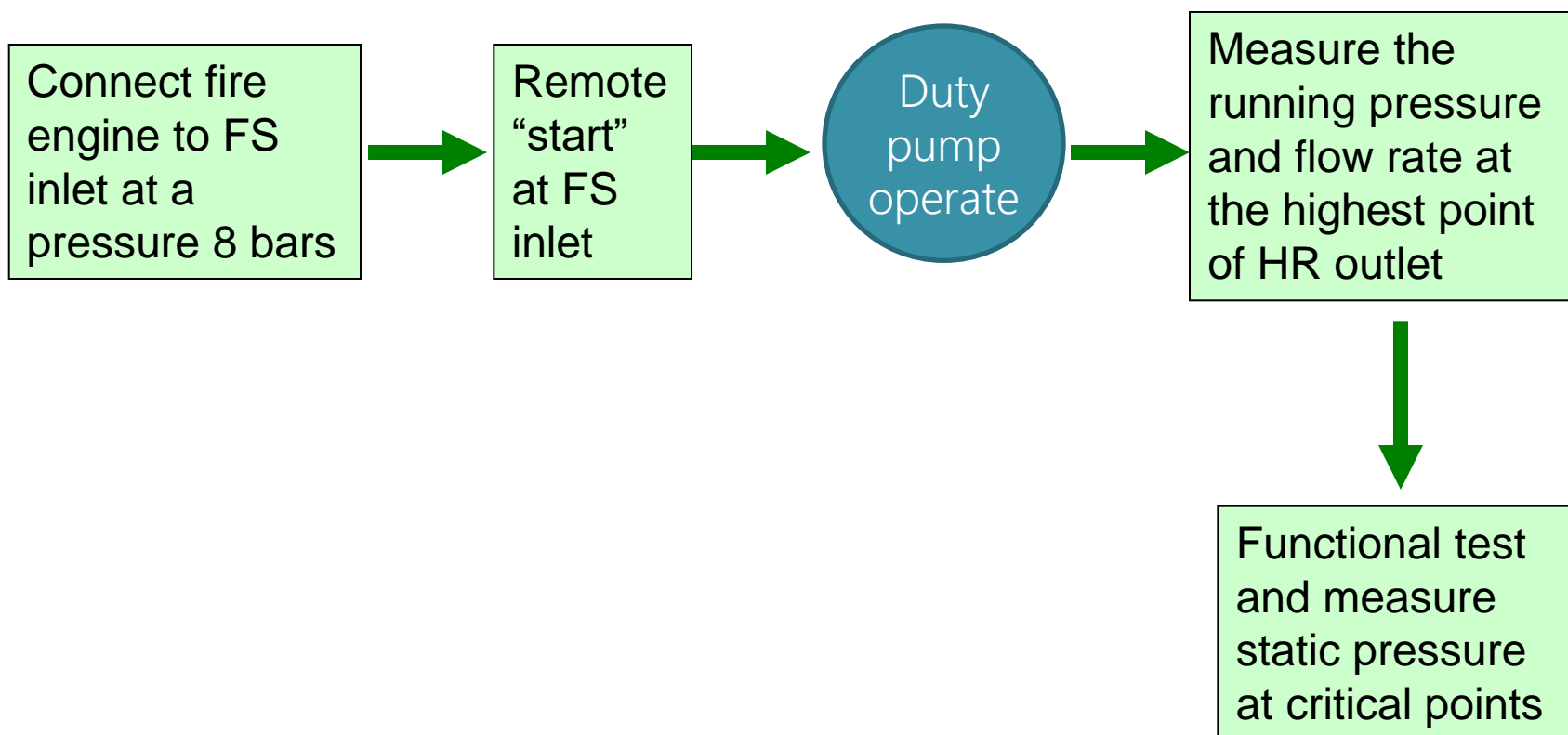
### C. MFA and Hose Reel

- Activate the manual fire alarm call point
- Projection of HR jet not less than 6m



## FH/HR Acceptance Test (con't)

### D. FH Intermediate Booster Pump



# FH/HR Acceptance Test (con't)

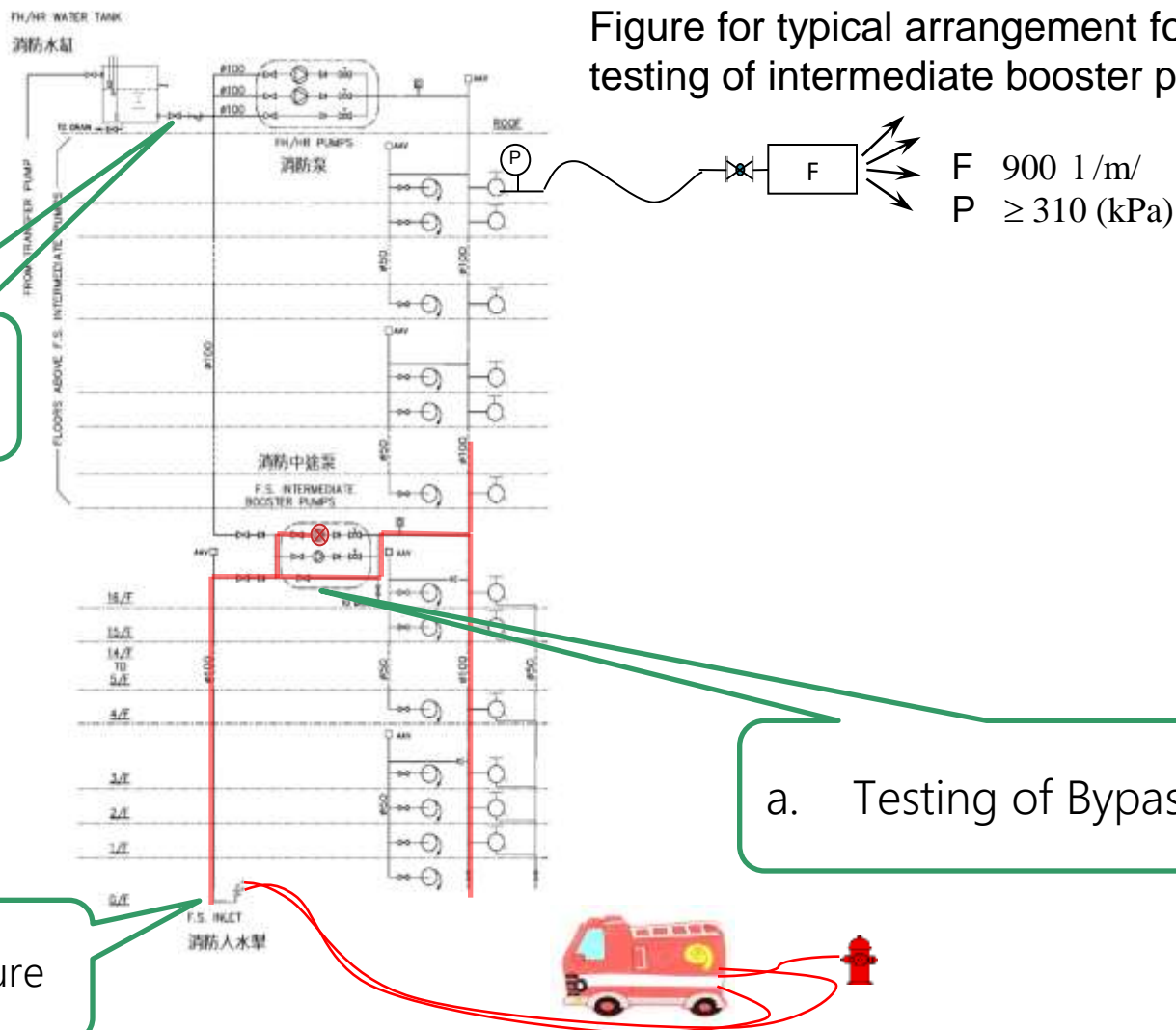
## D. FH Intermediate Booster Pump (con't)

Figure for typical arrangement for testing of intermediate booster pumps

Turn off the water tank outlet valve

Fire Engine maintain pressure 800kPa

a. Testing of Bypass pipe



# FH/HR Acceptance Test (con't)

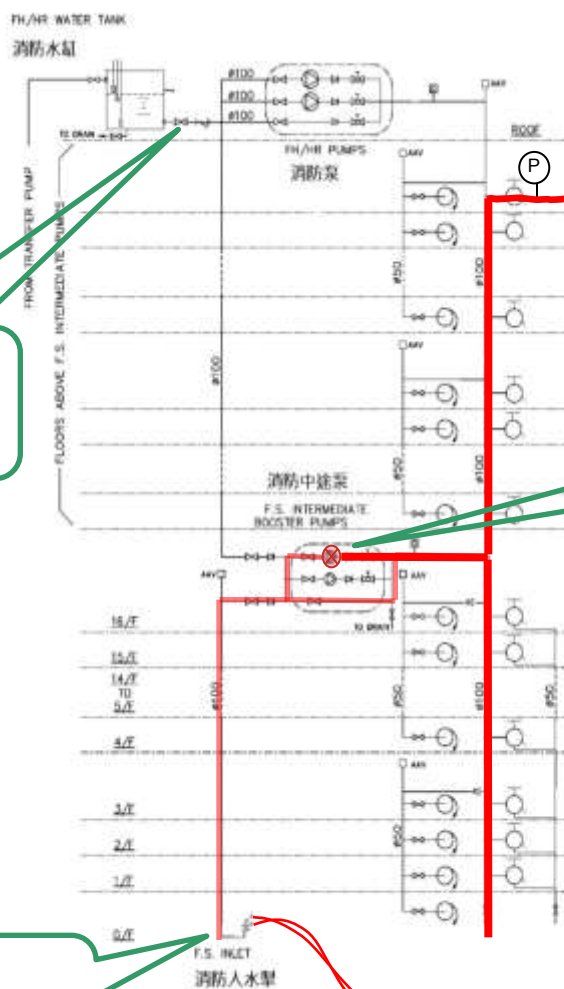
## D. FH Intermediate Booster Pump (con't)

Figure for typical arrangement for testing of intermediate booster pumps

Turn off the water tank outlet valve

b. Testing of Intermediate pump

Fire Engine maintain pressure 800kPa



F 900 l/m/  
P  $\geq 310$  (kPa)





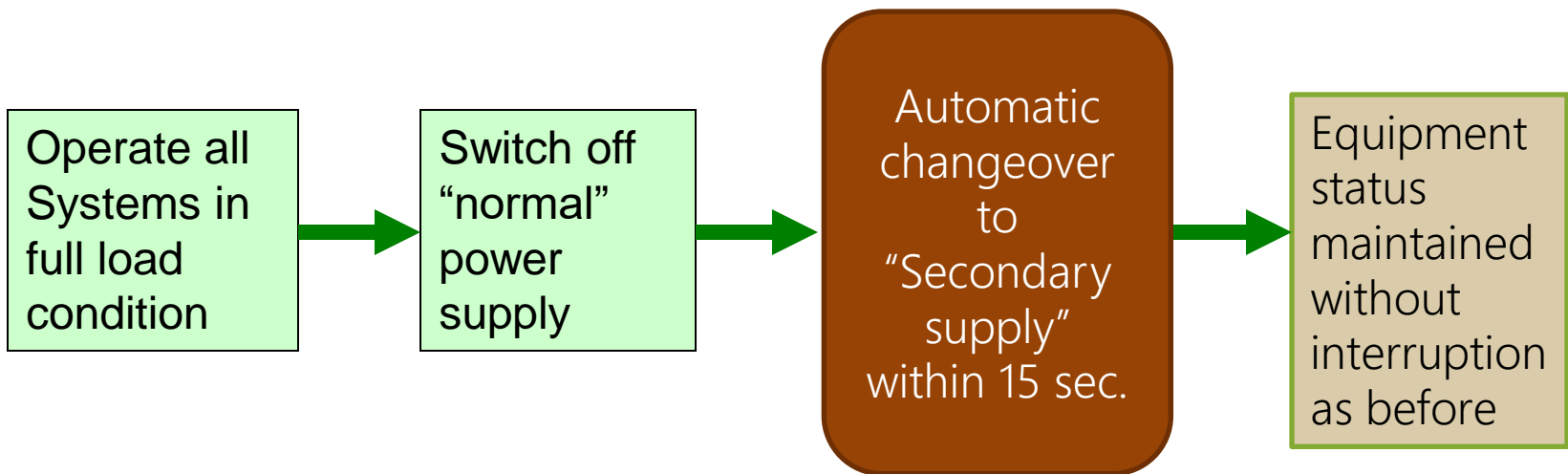
## FH/HR Acceptance Test (con't)

### E. Fire Control Panel & Equipment Compliance Check

- Functional Test of FS control panel
- F.S. equipment compliance check

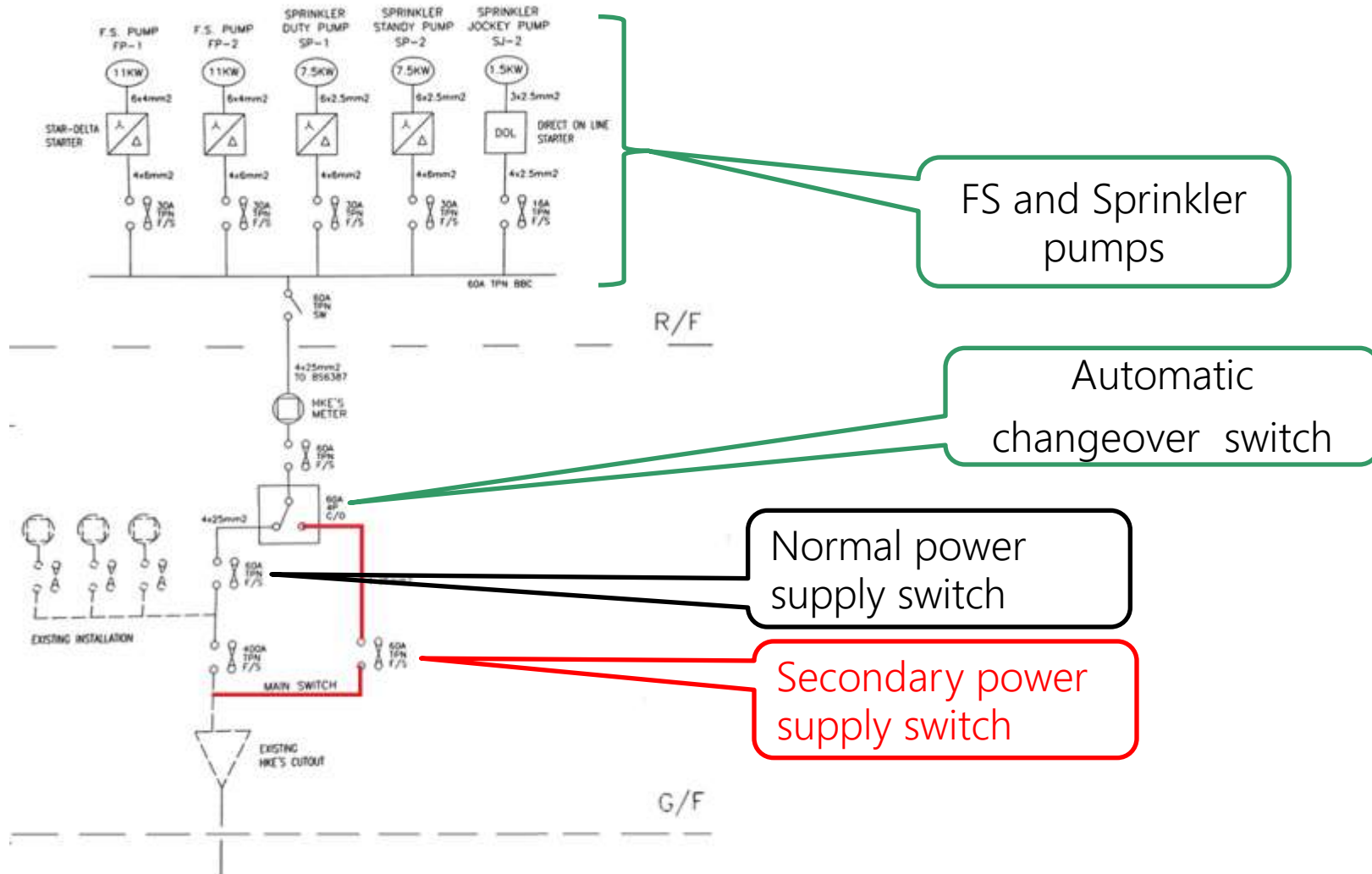


## Secondary power supply test



# Secondary power supply test (con't)

## Electrical Schematic Diagram for FSIs



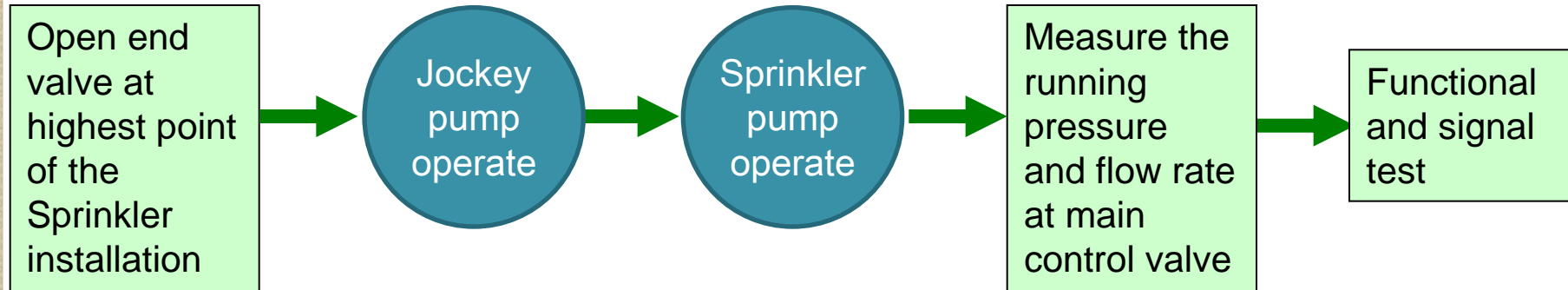


## Emergency lighting test

- Self-contained type  
Emergency Luminaries
- Self-contained type  
Emergency Luminaries  
(Recessed arrangement)



# Sprinkler System Test







## Sprinkler System Test (con't)

### A. Sprinkler Pump (con't)

- System pressure & flow test ( Proving test)

**Table 15 — Pressure and flow requirements  
for ordinary-hazard installations**

Hazard group	Lower flow rate		Higher flow rate	
	Pressure at “C” gauge or section stop valve	Flow rate through installation test valve	Pressure at “C” gauge or section stop valve	Flow rate through installation test valve
	bar	L/min	bar	L/min
I	$1.0 + S^a$	375	$0.7 + S^a$	540
II	$1.4 + S^a$	725	$1.0 + S^a$	1 000
III	$1.7 + S^a$	1 100	$1.4 + S^a$	1 350
IIIS	$2.0 + S^a$	1 800	$1.5 + S^a$	2 100
<sup>a</sup> S is the static pressure difference between the “C” gauge and the highest sprinkler in the installation.				



## Sprinkler System Test (con't)

### B. Sprinkler Pump functional test

- ◆ Pump changeover (electrical fault)
- ◆ Pump changeover (mechanical fault)
- ◆ Control circuit "fail safe" test
- ◆ Pump output (nominal flow)



## Sprinkler System Test (con't)

### C. Sprinkler System functional test

- ◆ Water alarm gong
- ◆ Direct Telephone Line
- ◆ Micro switch
- ◆ Flow switch
- ◆ Equipment and Materials
- ◆ Sprinkler layout



## Ventilation/Air Conditioning Control Systems (VAC control systems)

Method	Activated by	Ventilating System to be shut down
A	Smoke Detector (AFA System)	Affected Compartment
B	Probe Type Smoke Detector	Affected Compartment
C	Building Fire Alarm	Whole Building



## VAC Control Systems (con't)

### Method ' A'

- VAC control activated by Smoke Detector (AFA System)

### Method ' B'

- VAC control activated by Probe Type Smoke Detector

### Method ' C'

- VAC control activated by Building Fire Alarm System

### Manual Override Switch





# Portable Fire Extinguisher

## Labelling of Fire Extinguisher

Contractor Name 承建商名稱	:	_____
Registration No. 註冊編號	:	RC3/_____
Maintenance Date 保養日期	:	_____
Valid until 有效日期至	:	_____
Date of Hydraulic Pressure test 壓力試日期	:	_____ _____
FS251 Serial No. 保養證書編號	:	_____



## Observations during compliance check

- Labelling for FS/Spr water tank and capacity are not provided
- Labelling for FS/Spr tank and capacity are not clear
- FS pumps housed in suitable enclosures
- Intermediate booster pump should be enclosed by FRP material
- Labels of FS pumps are not provided
- Static pressure of FH exceeds 850kPa (8.5 bar) limit



## Observations during compliance check

- Hand wheel of fire hydrant not ease for operation
- Fire hydrant with missing hand wheel
- Hose reel operation instruction plate missing
- Incorrect hose reel operation instruction plate
- Hose reel cabinet door obstructing MOE
- Non combustible material shall be used in common area
- Hose reel nozzle installed not higher than 1350mm
- Hose reel cabinet signage & operation plate are not provided



## Observations during compliance check

- Label, Operation and Instruction plate of “ fire hose reel” is not provided
- No identification plates for FS & Sprinkler Inlet
- Enclosure for FS inlet is not provided
- FS Inlet is not readily accessible (Enclosure too small)
- FS Inlet cabinet door obstructs or interferes with the main exit
- FS inlet should be installed outside the Main Gate



## Observations during compliance check

- FS inlet should be installed outside the Main Gate
- DTL not connected
- Permanent label of switch for FS pump should be provided
- Socket outlet / plug shall not be used for Emergency Light
- Insufficient sprinkler coverage
- Spare sprinkler head should be provided adjacent to sprinkler control valve





## Observations during compliance check

- Sprinkler Inlet and control valve should be enclosed and locked to prevent unauthorized tampering
- VAC manual override switch label is not provided
- VAC manual override switch should not be installed inside the main entrance gate



## Points to Note

- ◆ All FSI systems (equipment) under construction/incomplete stage should be provided with proper labels / coverings such that the local residence would be alerted not to use these FSI equipment.
- ◆ Record of As-fitted Drawings with FS251 shall be provided to Owner / Occupier for the identification of works completed.



# The End