



Fire Hydrant Systems

Wet Riser & Yard Hydrants

NBC 2016 Part 4 · IS 13039 : 2014 (India) · with NFPA 14 / NFPA 24 comparison
www.fireandsmokesystems.com

1 Wet Riser & Internal Hydrants · NBC 2016 Part 4 cl. 5.1.1 · Table 8

100 MM RISER · SINGLE-OUTLET LANDING VALVES

Residential (A) incl. hotels up to 45 m · Educational (B) · Institutional (C) up to 30 m · Assembly (D) · Business (E) up to 45 m · Mercantile (F) · Industrial (G) up to 15 m

150 MM RISER · SINGLE-OUTLET LANDING VALVES

Hotels above 45 m · Starred hotels · Institutional above 30 m · Business above 45 m · Industrial above 15 m · Storage (H) and Hazardous (J) up to 15 m

≥ 3.5 bar

at the hydraulically remote and the highest hydrant

≤ 7.0 bar

at hydrants; use orifice plates or pressure-reducing valves

- Ring wet risers together at **terrace level**, with a cut-off valve on each connection
- Hydrants and hose reels go in the **firefighting shaft lobby**. Cabinets near an exit stair go within **5 m** of the exit door
- Valves: supervisory switch to the fire alarm panel, or chained and locked **open**

2 Pump Sets & Water Supply · NBC 2016 Table 7 (Notes) · cl. 5.1.2

Main pump (each)	Typical NBC pump set
1 620 L/min	1 electric + 1 diesel standby + 180 L/min jockey
2 280 L/min	1 (or 2) electric + 1 diesel standby + jockey(s) of 180 L/min
2 850 L/min	2 electric + 1 diesel standby + two 180 L/min jockeys
900 L/min	Pump at terrace-tank level, min. 3.5 kg/cm ² (where Table 7 lists one)

- Which set applies depends on **occupancy and height** (Table 7)
- **One pump set per 100 hydrants** or part thereof, max. two sets, joined at the delivery headers
- Fire water stored in **two or more interconnected compartments**. Underground tank no more than **7 m** deep
- Fire brigade collecting head on the tank with **4 × 63 mm** instantaneous inlets (2 × 63 mm for a 1 400 L/min pump)

3 Yard (External) Hydrants · IS 13039 : 2014

60 m

Light hazard
1 hydrant per 60 m of wall

45 m

Ordinary hazard
1 per 45 m

30 m

High hazard
1 per 30 m of wall/perimeter

2–15 m

from building face
(light/moderate)
High hazard: 5–15 m

- Stand posts **80 mm** (single-headed), **100 mm** (double-headed); outlets **1 m** above ground
- **Oblique** landing valves to IS 5290 with **63 mm** instantaneous female couplings and screw-down valves
- Fit pressure-reducing devices where pressure exceeds **7 kg/cm²**
- Stand posts: **fire red** (IS 5 shade 536) is recommended

- Underground mains: top of pipe ≥ **1 m** below ground. Mains laid as a **ring**
- Above-ground mains ≥ **6 m** from buildings (light/ordinary), **15 m** (high hazard); supports ≤ 6 m apart (≤ 3 m below 150 mm)
- Ordinary hazard: if any point is beyond **45 m** of an external hydrant, add internal hydrants (≤ 30 m reach)
- Jockey pump: **3–5 %** of installed pump capacity (min. 10.8 m³/h)

IS 13039 hydrant pump capacity	≤ 20 hydrants	21–55 hydrants	56–100 hydrants
Light hazard (Table 1)	1 620 L/min	2 280 L/min	2 850 L/min
Ordinary hazard (Table 2)	2 280 L/min	2 850 L/min	4 550 L/min
High hazard A (Table 3)	2 850 L/min	4 550 L/min	6 825 L/min

NFPA comparison · NFPA 14 (Standpipes) & NFPA 24 (Private Fire Mains)

- **Class I** 2½ in (fire service) · **Class II** 1½ in (occupant) · **Class III** both
- Class I/III: **100 psi (6.9 bar)** at the most remote 2½ in outlet, flowing **500 gpm (1 893 L/min)**
- +250 gpm per extra standpipe; max. **1 250 gpm**, or **1 000 gpm** if fully sprinklered
- Class II: **65 psi (4.5 bar)** at 100 gpm (379 L/min)
- Static pressure at hose connections ≤ **175 psi (12.1 bar)**; otherwise fit pressure-regulating devices
- Standpipes min. **4 in** (6 in in partially sprinklered buildings)
- NFPA 24: private hydrants ≥ **40 ft (12.2 m)** from the buildings they protect; hydrant mains ≥ **6 in**
- Buried mains: **30 in (762 mm)** cover where frost is not a factor