

## Manual Pull Stations (Manual Fire Alarm Boxes)

Quick field guide for design, install, and QA. Verify with adopted IBC/IFC, NFPA 72, ADA, and local amendments.

### 1) Purpose & Function

- Manually initiate a fire alarm by closing listed contacts that signal the FACU.
- Devices shall be listed (UL 38) for fire alarm initiating use only.
- Single-action or double-action permitted; listed protective covers allowed when approved by AHJ.

### 2) When Are Pull Stations Required? (High-level)

- Required wherever IBC/IFC requires a manual fire alarm system for the occupancy/use.
- Common triggers: Groups A, E, H/I, R-1/R-2, M; verify IBC/IFC §907 in adopted edition.
- Sprinklered exception: Often permitted if waterflow activates the system and a manual means exists at a constantly attended location.
- Healthcare/detention: Often at staff-attended locations.
- Group E options: In some editions, omit corridor boxes if sprinklered with detection/EVACS and a manual means at a normally occupied location.

### 3) Where to Locate (Placement & Spacing)

- At every exit on each floor; within 5 ft (1.5 m) of exit doorway along normal egress path.
- Travel distance to nearest box  $\leq$  200 ft (61 m) along path of travel.
- Stairs: at floor side of stair door; not inside stair enclosure.
- Grouped openings  $>$  40 ft aggregate width: stations on both sides.
- Conspicuous/accessible; exterior egress requires listed weatherproof models.

### 4) Mounting Height & Accessibility

- Operable part 42–48 in. AFF (meets ADA  $\leq$ 48 in reach).
- Provide clear floor space; one-hand operation; no tight grasp/pinch/twist;  $\leq$ 5 lbf.
- Protrusion  $\leq$ 4 in. into path between 27–80 in. AFF (device + cover).

### 5) Identification, Color, and Signage

- Color red; clearly marked (e.g., 'FIRE' / 'PULL').
- If system not monitored, provide required sign (e.g., 'WHEN ALARM SOUNDS—CALL FIRE DEPARTMENT').
- Use directional signage where not readily visible.

### 6) Device Types & Accessories

- Single- or double-action; choose per AHJ and nuisance-pull risk.
- Listed protective covers permitted; ensure ADA protrusion/height compliance.
- Use appropriate environmental/NEMA ratings.

### 7) Wiring & Circuiting (Typical)

- Contacts typically N.O. and latch until key reset.

### **Manual Pull Stations – Field Guide**

- Circuits supervised: conventional IDC with EOL at last device (accessible), or addressable via monitor module programmed as Manual Box.
- Label addresses/zones on drawings and at FACU/annunciator.
- Pre-signal/PAS only where permitted and documented.

## **8) Inspection, Testing & Maintenance (ITM)**

- Semiannual visual inspection (condition, visibility, access).
- Annual operation of each pull station; record results.
- Maintain ITM records per NFPA 72 Chapter 14 and local requirements.

## **9) Common Field Misses (and Fixes)**

- Height installed at 50–54 in. AFF (legacy) → lower to max 48 in.
- Devices inside stair enclosure → relocate to floor side of door.
- Hidden by merchandise/door swings → reposition; add directional signage.
- Too few devices for large floor plates → add to meet  $\leq 200$  ft travel.
- Covers causing  $>4$  in protrusion → use low-profile/recessed solutions.

## **10) Quick Design/QA Checklist**

- See separate 1-page checklist included; covers code path, exits, travel distance, visibility, ADA, coordination, markings/signage, environment, wiring/labeling, and testing/turnover.

## **11) Special Cases & Exceptions (by Occupancy)**

- Fully sprinklered buildings: public boxes may be omitted with attended manual means (AHJ approval).
- Group I-2/I-3: locate in staff-attended areas; coordinate with security plan.
- Group E: some editions allow omission in corridors with conditions; provide manual means at main office.
- R-1/R-2: check local corridor/unit-level requirements and attended locations.
- High-rise: provide manual activation at Fire Command Center; coordinate with firefighter phone and annunciation.

## **12) Environmental / Location-Specific**

- Outdoor/exposed: Type 3R/4/4X; consider heated back boxes in freezing climates.
- Cold storage: heated enclosures, gaskets, condensation management.
- Wet/corrosive: stainless/4X; UV-stable plastics; sealed entries.
- Hazardous (classified): use listed devices or locate outside boundary per NEC.
- Vandalism: double-action and listed covers; verify ADA.

## **13) Visibility & Wayfinding**

- Maintain line-of-sight; add directional signage.
- Use contrasting backplates; ensure adequate illumination.
- Avoid dark alcoves and visual clutter.

## **14) Coordination with Architecture & MEP**

- Outside stair enclosures; clear door swing arcs.

### **Manual Pull Stations – Field Guide**

- Respect  $\leq 4$  in protrusion with AED/extinguisher/sign clusters.
- Consider wide openings/grouped doors (both-sides rule).

## **15) Protective Covers & False Alarm Mitigation**

- Listed covers; if sounder-type, do not tie to NAC unless listed.
- Education and policy reduce malicious activation.
- Maintain accessibility (one-hand,  $\leq 5$  lbf).

## **16) Electrical & Integration Details**

- Conventional IDC: Class A/B per design; accessible EOL; correct resistor value.
- Addressable: monitor module; program Manual Box; descriptive point text.
- Avoid non-alarm interlocks on station contacts; use FACU logic.
- NEC: bond metallic boxes; protect conductors; separation clearances.

## **17) Commissioning & Acceptance (Field Script)**

- Visual: height 42–48 in;  $\leq 5$  ft from exit; ADA/protrusion; color/legend; covers listed.
- Functional: operate; check annunciation text.
- Transmission: verify supervising station receipt/descriptor.
- Sequence: demonstrate PAS/pre-signal if used.
- Reset: key-reset; no lingering troubles.
- Docs: record results, photos, update as-builts/point list.

## **18) Maintenance Program**

- Semiannual visual; annual operation of each station.
- Post-alteration spot checks for obstructions/height.
- Maintain spares compatible with finish/listing.

## **19) Documentation / Turnover Deliverables**

- Record drawings (IDs, heights, exit/stair details).
- Address/point list with plain-English descriptors.
- Sequence of operations for manual activation.
- ITM forms and impairment procedures.
- Photo log of installed locations.

## **20) Appendices**

- A. Mounting Height Diagram: operable part 42–48 in;  $\leq 4$  in protrusion (27–80 in);  $\leq 5$  ft from exit door along path.
- B. Sample Spec (Div 28 – short form): devices, mounting, electrical, testing.
- C. 1-Page QA Checklist (separate).

## **Notes & References to Check (by Edition)**

- NFPA 72 (Manual fire alarm boxes placement, height, color, signage, covers, testing)

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- IBC/IFC §907 (Where manual systems are required; exceptions; signage; color)
- ADA 2010 Standards (Reach ranges §308, Operable parts §309, Protruding objects §307)
- Always confirm the exact section numbers in the adopted editions for your project.

## Manual Pull Stations – Quick QA Checklist

Use during layout, rough, and final. Check Pass/Fail and capture notes.

Item	Criteria (condensed)	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Notes
1) Code path documented	<ul style="list-style-type: none"> <li>- Editions listed (IBC/IFC/NFPA 72/ADA + amendments)</li> <li>- Occupancy/use groups noted; sprinklered Y/N</li> <li>- Omission basis &amp; AHJ approval recorded (if used)</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
2) Exit locations	<ul style="list-style-type: none"> <li>- Within 5 ft of exit/exit-access doors (path of travel)</li> <li>- Grouped openings &gt;40 ft: stations both sides</li> <li>- Stairs: station on floor side; none in stair</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
3) Travel distance	<ul style="list-style-type: none"> <li>- ≤200 ft along egress path to nearest box</li> <li>- Add stations for large plates/atria/dead ends</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
4) Visibility & access	<ul style="list-style-type: none"> <li>- Conspicuous on approach; not hidden by doors/displays</li> <li>- Directional signage where not readily visible</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
5) Mounting height & ADA	<ul style="list-style-type: none"> <li>- Operable part 42–48 in AFF; clear floor space 30×48 in</li> <li>- Protrusion ≤4 in (27–80 in AFF); ≤5 lbf; one-hand; no grasp/pinch/twist</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
6) Construction coordination	<ul style="list-style-type: none"> <li>- Outside door swing arc; avoid panic hardware clusters</li> <li>- Back box flush; finish ring depth set; wall protection as needed</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
7) Color/markings/signage	<ul style="list-style-type: none"> <li>- Device red; 'FIRE' &amp; operation legible</li> <li>- Sign provided if system not monitored; directional/overhead signs as needed</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	
8) Environmental suitability	<ul style="list-style-type: none"> <li>- NEMA/Type rating correct (outdoor/cold/wet/corrosive)</li> <li>- Gaskets/heaters/hoods;</li> </ul>	<input type="checkbox"/> / <input type="checkbox"/>	

**Manual Pull Stations – Field Guide**

sealed entries; condensation managed

9) Wiring/circuiting/labeling      - Conv.: supervised IDC, EOL       /   
at last device (accessible)  
- Addr.: to monitor module;  
type=Manual Box; address  
labels  
- Clear point text at  
FACU/annunciator; no  
interlocks on station contacts

10) Testing & turnover              - Each station operates;       /   
annunciation/descriptor  
correct  
- Central station receipt  
verified (if applicable)  
- Covers OK (no  
protrusion/access issues)  
- ITM updated; spares & keys  
turned over; photos taken

Note: Always verify against adopted editions and local AHJ amendments.