ASHRAE 170 Field Sheet Pack

Sheet 1: Table 7-1 Healthcare Ventilation & Air-Change Quick-Reference

Current version — Oct 31, 2026. Update history: https://healthcarefacilityhub.org/healthcare-hvac-design-ashrae-170-ventilation-pressure-air-changes/ — Derived strictly from published Table 7-1 criteria.

1. GOVERNING TABLE 7-1 CLINICAL SPACE BASELINE DESIGN VALUES

Standard 170 Space Function	Pressure Rel.	Min. Outdoor ACH	Min. Total ACH	Exhaust To Outdoors	Terminal Filtration & Airflow Rules
General Operating Room (Class B)	**Positive (+)**	4	20	Recirculation permitted	MERV 8 pre + 14 final; laminar ceiling diffuser array
Specialty Operating Room (Ortho, Neuro, Transplant)	**Positive (+)**	4	20	Recirculation permitted	Terminal HEPA (99.97% @ 0.3 µm) supply diffusers required
Airborne Infection Isolation Room (AIIR)	**Negative (-)**	2	12	100% direct exhaust	No recirculation to other spaces; dedicated exhaust stack
Protective Environment (PE)	**Positive (+)**	2	12	Recirculation permitted	Terminal HEPA supply array; tight architectural envelope
Emergency Dept. Exam / Treatment	Neutral (±)	2	6	Recirculation permitted	Standard inpatient filtration; baseline thermal comfort
Emergency Dept. Triage Room	**Negative (-)**	2	12	100% direct exhaust	Continuous negative containment at patient intake
Emergency Dept. Public Waiting	**Negative (-)**	2	12	100% direct exhaust	Negative pressure prevents waiting area aerosol drift
General Hospital Waiting Rooms	Neutral (±)	1	4	Recirculation permitted	Standard commercial comfort; avoid 20 ACH OR misbalance
SPD — Decontamination Area	**Negative (-)**	2	6	100% direct exhaust	Strictly negative cascade; biohazard aerosol evacuation
SPD — Clean Assembly / Workroom	**Positive (+)**	2	4	Recirculation permitted	Positive to decontamination; protects clean trays
SPD — Sterile Storage Area	**Positive (+)**	2	4	Recirculation permitted	Strictly positive to all corridors; preserves wrap integrity

2. FACILITY SPECIFIC SPACE ASSIGNMENT & DRAWING RECONCILIATION LOG

Room # / Tag	Nameplate on Drawing	Governing FGI / 170 Row	Req. Press.	Req. Total ACH	Req. OA ACH	AHU Servicing
OR-01	Class B Operating Room	Operating Room (General)	**+ Positive**	20	4	AHU-04 (Surg)
AIIR-304	Negative Isolation Room	Airborne Infection Isolation	**- Negative**	12	2	AHU-02 / EF-06
PE-412	Bone Marrow Transplant Room	Protective Environment	**+ Positive**	12	2	AHU-03 (BMT)

Pressure Differential Standard: Minimum **0.01 in. w.g. (2.5 Pa)** across closed doors. Verified via mechanical Magnehelic, electronic digital monitor, and calibrated ball/tissue test.

1. PRESSURE DIRECTIONAL LOGIC & ENGINEERING PRINCIPLES

Positive Pressure Rooms (+)

- **Clinical Goal:** Prevent corridor dust, bioaerosols, and pathogens from entering clean space.
- **Airflow Physics:** Supply CFM exceeds Return/Exhaust CFM by 10%–15% (commonly 100–150 CFM offset minimum).
- **Key Spaces:** General ORs, Specialty ORs, Protective Environments, Sterile Storage, Clean Assembly.

Negative Pressure Rooms (-)

- **Clinical Goal:** Contain hazardous bioaerosols, tuberculosis nuclei, viral plume, and odors within the space.
- **Airflow Physics:** Exhaust CFM exceeds Supply CFM by 10%–15% (100–150 CFM negative offset).
- **Key Spaces:** Airborne Infection Isolation (AIIR), ED Triage, ED Waiting, SPD Decontamination.

2. PHYSICAL ROOM ENVELOPE & MONITORING VERIFICATION CHECKLIST

Inspection Element	Field Verification Standard (Standard 170 / ASHE Guideline 43)	Result	Notes / Date
Door Hardware & Closers	Automatic door closers operational; door latches fully without manual assist. Door sweeps intact with < 1/4" floor gap.	☐ Pass ☐ Fail	
Envelope Air Barrier	Ceiling tiles clipped / caulked in AIIR/PE; wall penetrations, medical gas headwalls, and conduit sleeves sealed airtight.	☐ Pass ☐ Fail	
Magnehelic / Sensor Calibration	Differential pressure gauge zeroed; digital sensor calibrated within 12 months against micro-manometer (± 0.001 in. w.g.).	☐ Pass ☐ Fail	
Visual / Audible Alarm Test	Open door for > 30 sec: alarm triggers. Close door: room recovers ≥ 0.01 in. w.g. and green status LED illuminates.	☐ Pass ☐ Fail	
Anteroom Pressure Cascade	Where anterooms exist, verify sequential cascade (e.g. Corridor < Anteroom < PE room, or Corridor > Anteroom > AIIR).	☐ Pass ☐ Fail	

3. UNOCCUPIED SETBACK / TURNDOWN VERIFICATION LOG (NORMAL VS. SETBACK)

Mandatory Rule: Unoccupied airflow turndown is permitted in surgical suites only if directional positive pressure (≥ 0.01 in. w.g.) is maintained at all times. Never turn an acute hospital suite into a shut-down commercial office schedule.

Room ID	Normal Supply CFM	Normal Diff. (in. w.g.)	Setback Supply CFM	Setback Diff. (in. w.g.)	Direction Maintained?
OR-01	2,400 CFM (22 ACH)	+0.025 in. w.g.	1,200 CFM (11 ACH)	+0.014 in. w.g.	☐ YES ☐ NO
OR-02	2,550 CFM (23 ACH)	+0.028 in. w.g.	1,300 CFM (12 ACH)	+0.015 in. w.g.	☐ YES ☐ NO
					☐ YES ☐ NO
					☐ YES ☐ NO

ASHRAE 170 Field Sheet Pack

Sheet 3: TAB & Commissioning Proof Log — Airflows, OA Trace & HEPA Location

TAB & Commissioning Protocol: Total ACH derived from measured supply airflow and surveyed room volume: $\text{ACH} = (\text{Supply CFM} \times 60) / \text{Room Volume}$. Certified by NEBB / TABB / AABC.

1. ROOM AIRFLOW & ACH COMMISSIONING MEASUREMENT LOG

Room #	Dimensions (L×W×H)	Volume (cu ft)	Design Supply	Measured Supply	Measured Exh/Ret	Calculated ACH	Status
OR-01	24' × 22' × 10'	5,280 cu ft	2,200 CFM	2,350 CFM	2,100 CFM	**26.7 ACH**	**PASS (≥20)**
AIIR-304	15' × 14' × 9'	1,890 cu ft	400 CFM	420 CFM	520 CFM	**13.3 ACH**	**PASS (≥12)**
PE-412	16' × 15' × 9'	2,160 cu ft	500 CFM	515 CFM	410 CFM	**14.3 ACH**	**PASS (≥12)**

2. OUTDOOR AIR (OA) DAMPER & ECONOMIZER TRACE (SYSTEM SPLIT: 170 VS 62.1)

- **AHU Tag / Identifier:** _____
- **Total Measured Supply:** _____ CFM | **Total Outdoor Air:** _____ CFM
- **Mixed Air Handler?:** ☐ Yes (serves 170 & 62.1 spaces) ☐ No (dedicated 170)
- **Minimum OA Damper Setpoint:** _____% (meets min. required OA)
- **Economizer Interlock Check:** OA never modulates below code min.
- **Healthcare OA Proportion Verified:** ☐ Pass ☐ Fail

3. HEPA & HIGH-EFFICIENCY FILTER TRACKING SHEET

Unit / Room	Filter Location	Filter Efficiency	Initial ΔP (in. w.g.)	Loaded ΔP (in. w.g.)	Install Date	Post-Change TAB
AHU-04 (ORs)	Bank 1 (Pre)	MERV 8 (2")	0.25 in. w.g.	0.65 in. w.g.	2026-08-15	Flow verified
AHU-04 (ORs)	Bank 2 (Final)	MERV 14 (12")	0.45 in. w.g.	1.10 in. w.g.	2026-08-15	Flow verified
PE-412 Terminal	Ceiling Diffuser	HEPA 99.97%	0.60 in. w.g.	1.40 in. w.g.	2026-05-10	Aerosol leak tested

4. TEST & BALANCE CERTIFICATION & SIGN-OFF

Certified TAB Firm: _____ **Certifying Body:** ☐ NEBB ☐ TABB ☐ AABC **Tech Certification #:** _____

TAB Supervisor Signature: _____ **Facility Engineer Sign-off:** _____ **Test Date:** _____