

Heat Pump Water Heater Location-and-Rough-In Comparison Worksheet

Use this worksheet to compare candidate heat-pump water-heater locations and electrical configurations before plumbing and electrical rough-in in a U.S. new home. It is a homeowner coordination tool. It is not an official inspection form, legal document, engineering load calculation, code determination, installation instruction or product test.

How to use it

1. Record the exact product model, rating-plate data, installation-manual title and revision. Do not use a brand, tank size or product family as a substitute. 2. Record the actual project city and state, or county and state where the AHJ is county-administered. Name the AHJ and permit path. If unknown, write "jurisdiction unresolved." 3. Create one row for every candidate room and electrical configuration. 4. Measure dimensions and calculate room volume. Record the manual's definition of free or unoccupied air space. 5. Draw airflow, hot/cold water, temperature-and-pressure relief, condensate, pan/leak protection and electrical routes. 6. Assign each check to the designer, builder, qualified plumber, licensed electrician or homeowner. 7. Mark Pass, Hold or No-go. A missing value is Hold. Reopen the row if the model, room, drain, panel or jurisdiction changes.

Pressure-path safety stop: If the temperature-and-pressure relief valve is leaking or discharging, do not cap, plug, obstruct, reset or diagnose it remotely. Keep people away from hot discharge and contact a qualified plumber or service professional. Do not combine the relief-discharge path with condensate.

Model and project record

Field	Entry
Project name/address	
Actual jurisdiction	City/state or county/state:
Authority having jurisdiction	
Permit/inspection path	
Candidate ID	
Brand and exact model	
Nominal tank size	
Rating-plate voltage/phase	
Rating-plate wattage or input	
Installation manual title	
Manual revision/date	

Field	Entry
Manual URL or saved file	
Worksheet version/date	

Candidate comparison table

Check	Input or question	Record/evidence	Owner	Status
Room dimensions	Usable length ____ ft x width ____ ft x height ____ ft	Dimensioned plan/field measurement	Homeowner/designer	
Free-air calculation	L x W x H = ____ ft ³ ; list objects deducted or excluded	Calculation plus manual page	Designer/installer	
Ambient range	Expected low ____ °F; typical ____ °F; high ____ °F	Design assumption/site record	Designer/HVAC professional	
Condition	Conditioned / unconditioned / garage / other	Plan and envelope note	Designer/builder	
Airflow	Door, grille, duct; net-free area ____ in ² ; exhaust destination	Airflow sketch and manual	Designer/HVAC professional	
Intake/exhaust	Faces, obstruction and cooled-air impact	Plan and comfort note	Designer/HVAC professional	
Service clearance	Minimum and preferred clearances in inches	Manual page and coordinated plan	Builder/installer	
Filter access	Can filter be removed without fixed construction?	Plan/photo	Builder/installer	
Noise sensitivity	Nearest bedroom/living/office; low/medium/high	Plan and homeowner note	Homeowner/designer	
Vibration	Floor/wall/pipe isolation concern	Installer/building note	Builder/installer	
Filled weight	Manual value ____ lb; supporting floor/platform	Manual and structural/builder record	Designer/builder	
Delivery/replacement	Upright route, door width, service removal route	Plan/site check	Builder	
Hot-water route	Routed length ____ ft; manifold/demand center; insulation	Plumbing plan	Qualified plumber	
Cold-water route	Shutoff location and access	Plumbing plan	Qualified plumber	

Check	Input or question	Record/evidence	Owner	Status
Relief discharge	Destination, independent route and freeze protection	Plumbing sketch/local review	Qualified plumber/AHJ	
Condensate outlet	Model size and outlet elevation	Manual and measurement	Qualified plumber	
Condensate route	Horizontal run ____ ft; required slope ____; actual fall ____	Elevation sketch	Qualified plumber	
Condensate destination	Drain/pump, termination and access	Manual/local review	Qualified plumber/AHJ	
Pump/overflow	Pump capacity, power, float and heat-pump shutoff	Pump submittal/wiring sketch	Plumber/electrician	
Pan/leak protection	Pan, drain, sensor, shutoff and alarm concept	Plan/local review	Plumber/designer/AHJ	
Supply	Voltage ____; phase ____; service ____	Utility/panel record	Licensed electrician	
Branch circuit	Proposed circuit/protection/disconnect	Electrical design	Licensed electrician	
Panel/service capacity	Whole-home load calculation, not empty-slot count	Dated calculation/panel schedule	Licensed electrician	
Conductor route	Length, environment and installation method	Electrical plan	Licensed electrician	
Utility requirements	Demand response, TOU or interconnection condition if any	Utility record	Electrician/builder	
Local requirements	Adopted code/permit/inspection items for named AHJ	AHJ or permit record	Builder/designer	
Responsible person	Name/company and role	Contact/project record	Homeowner/builder	
Verification	Date, document, page, drawing or photo	Evidence reference	Assigned owner	
Unresolved risk	Missing input or exception	Hold log	Homeowner/builder	
Final status	Pass / Hold / No-go	Dated decision	Homeowner/team	

Source-derived screening notes

- ENERGY STAR says manufacturers typically require 450 or 700 ft³ of free air and ample service space. Use the exact manual for the selected model:

https://www.energystar.gov/partner-resources/residential_new/educational_resources/sup_program_guidance/heat_pump_water_heater_guide/design_considerations

- ENERGY STAR identifies airflow, sound, cooled exhaust, climate, location, condensate and electrical requirements as design considerations. Its guide is not a local approval. - The supplied A. O. Smith FHPT-50 manual states 700 ft³, a 6-inch minimum at the outlet-side wall, a separate 6-inch-above-unit dimension for filter maintenance, a recommended 3-foot service space at the back, left and right, indoor vertical placement, 240 VAC single-phase 30 A and no 208 VAC for that model/manual; it does not state a 6-inch minimum at the sides and top:

<https://assets.hotwater.com/damroot/Original/10004/FHPT-50%20instruction%20manual.pdf> - The supplied Rheem AP23657

Rev 01 manual describes its own room, clearance, airflow, condensate and rating-plate electrical requirements:

https://files.rheem.com/blobazrheem/wp-content/uploads/sites/2/AP23657-Rev-01-Manual-HPWH-GEN-V-UNIVERSAL-CONNECT-ENGLISH_HALF-SIZE-3.pdf

- DOE's project description includes panel capacity, location and condensate as HPWH decision-tool dimensions:

<https://www.energy.gov/cmei/buildings/articles/field-validation-hps-and-hpwhs> - AHRI's program and directory can be

used to check certified performance for an exact product where applicable:

<https://www.ahrinet.org/certification/ahri-certification-programs>

Worked illustrative calculations

These values are modeled examples only. Replace them before using the worksheet for a real project.

Room volume

$$12 \text{ ft} \times 10 \text{ ft} \times 8 \text{ ft} = 960 \text{ ft}^3$$

If a model requires 700 ft³, the simple screening difference is:

$$960 \text{ ft}^3 - 700 \text{ ft}^3 = 260 \text{ ft}^3$$

This is not a safety factor and does not account for objects, airflow or service access.

Smaller-room sensitivity

$$10 \text{ ft} \times 8 \text{ ft} \times 8 \text{ ft} = 640 \text{ ft}^3$$

Against a 700-ft³ model-specific requirement:

$$640 \text{ ft}^3 - 700 \text{ ft}^3 = -60 \text{ ft}^3$$

Status: Hold or No-go until the exact manual and professional airflow design resolve the deficit.

Condensate fall for the supplied Rheem example

Only if the selected Rheem manual applies:

required fall = horizontal run x 1/8 in/ft

For 24 ft:

$$24 \text{ ft} \times 1/8 \text{ in/ft} = 3 \text{ in}$$

For 40 ft:

$$40 \text{ ft} \times 1/8 \text{ in/ft} = 5 \text{ in}$$

Replace these inputs if the model or manual changes. Do not apply this slope to another model without its manual.

Electrical comparison proxy

For a model/manual that names 240 V and 30 A:

$$240 \text{ V} \times 30 \text{ A} = 7,200 \text{ VA}$$

This is a simple apparent-power comparison, not a service-load calculation, conductor-sizing result, breaker selection or installation instruction. A licensed electrician must design and verify the circuit and whole-home capacity for the actual project.

Release gate

Do not authorize the related rough-in as complete until each item is attached or explicitly held:

- Exact model, rating plate and manual revision. - Named city/state or county/state and AHJ. - Room-volume calculation and temperature range. - Airflow and cooled-exhaust design. - Minimum and preferred service clearances. - Floor/support and delivery/replacement route. - Hot/cold water and relief-discharge plan. - Condensate elevation, slope, destination or pump/failure plan. - Pan/leak-protection and local review. - Licensed electrician's circuit and whole-home load record. - Named responsible person and dated verification for every field. - Change log for any model, room, drain, panel or jurisdiction change.

Final decision: Pass / Hold / No-go

Reason:

Owner of next action:

Next decision date: