SVB (Shut-off Valve Box)
Installation manual

V2SOB01HP / V2SOB02HP / V2SOB04HP / V2SOB06HP / V2SOB08HP / V2SOB12HP

- Thank you for purchasing this Lennox Product.
- Before operating this unit, please read this manual carefully and retain it for future reference.

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Safety Information

California Proposition 65 Warning (US)

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

⚠ WARNING

- Hazards or unsafe practices that may result in severe personal injury or death.

⚠ CAUTION

- Hazards or unsafe practices that may result in minor personal injury or property damage.
- Carefully follow the precautions listed below because they are essential to guarantee the safety of the equipment.

⚠ WARNING

- Always disconnect the air conditioner from the power supply before servicing it or accessing its internal components.
- Verify that installation and testing operations are performed by qualified personnel.
- Verify that the air conditioner is not installed in an easily accessible area.

Symbol	Meaning
	Flammable gas
	Flammable materials
	Refrigerant safety group
	Read installation manual
	Refer to installation manual
	Read service manual

⚠ WARNING

The installation and testing of this appliance must be performed by a qualified technician.

- The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe installation of the appliance.

Always install the air conditioner in compliance with current local, state, and federal safety standards.

Do not use means to accelerate the defrost operation or to clean, other than those recommended by Lennox.

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.

Safety Information

General information

⚠ WARNING

- Carefully read the content of this manual before installing the air conditioner and store the manual in a safe place to be able to use it as a reference after installation.
- For maximum safety, installers should always carefully read the following warnings.
- Store the operation and installation manual in a safe location and remember to hand it over to the new owner if the air conditioner is sold or transferred.
- This manual explains how to install an indoor unit with a split system with two Lennox units. Using other types of units with different control systems may damage the units and invalidate the warranty. The manufacturer shall not be responsible for damages arising from the use of non-compliant units.
- The manufacturer shall not be responsible for damage from unauthorized changes or improper electrical connections. The requirements outlined in the "Operating limits" table, included in the manual, shall immediately invalidate the warranty.
- The air conditioner should be used only for the applications for which it has been designed: the indoor unit is not suitable to be installed in areas used for laundry.
- Do not use the units if damaged. If problems occur, switch the unit off and disconnect it from the power supply.
- To prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact Lennox's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.
- Inspect the unit, electrical connections, refrigerant tubes and protections regularly. These operations should be performed by qualified personnel only.
- The unit contains moving parts, which should always be kept out of the reach of children.
- After unpacking the air conditioner, keep all packaging materials well out of the reach of children, as packaging materials can be dangerous to children.
  - If a child places a bag over its head, it may result in suffocation.
- Do not attempt to repair, move, alter or reinstall the unit. If performed by unauthorized personnel, these operations may cause electric shocks or fires.
- Do not place containers with liquids or other objects on the unit.
- The air conditioner contains a refrigerant that must be disposed of as special waste. At the end of its life cycle, the air conditioner must be disposed of in authorized centers or returned to the retailer so it can be disposed of correctly and safely.
- Wear protective equipment (such as safety gloves, goggles, and headgear) during installation and maintenance work. Installation/repair technicians may be injured if protective equipment is not properly equipped.
- This unit is a partial unit air conditioner, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying with corresponding partial unit requirements of this International Standard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.
  Children should be supervised to ensure they do not play with the appliance.

Installing the unit

⚠ WARNING

IMPORTANT: When installing the unit, always connect the refrigerant tubes first, and then the electrical lines.

- Always disassemble the electric lines before the refrigerant tubes.
- Upon receipt, inspect the product to verify that it has not been damaged during transport. If the product appears damaged, DO NOT INSTALL it, and immediately report the damage to the carrier or retailer (if the installer or the authorized technician has collected the material from the retailer.)
- During the transportation of the indoor unit, the pipelines shall be covered with brackets for protection. Do not move the product by holding the refrigerant or drain pipe connections.
  - It may cause gas leakage.
- After completing the installation, always carry out a functional test and provide instructions on how to operate the air conditioner to the user.
- Do not use the air conditioner in environments with hazardous substances or close to equipment that releases free flames to avoid the occurrence of fires, explosions or injuries.
- Do not install the product on a ship or a vehicle (such as a campervan). Salt, vibration or other environmental factors may cause the product to malfunction, electric shock or fire.
- Excessive indoor humidity or clogged condensate drain lines may cause water to drip from indoor units. Do not install the indoor unit where dripping could result in property damage, such as over electronic equipment or other sensitive instruments.
- Our units must be installed in compliance with the space specifications presented in the installation manual to ensure accessibility from both sides and allow repairs or maintenance operations to be carried out.
  The unit's components must be accessible and easy to disassemble without endangering people and objects.
- For this reason, where it is not observed as indicated in the Installation Manual, the cost necessary to reach and repair the unit (safely as required by local regulations) with slings, trucks, scaffolding or any other means of elevation won't be considered in-warranty and charged to end user.
- If any gas or impurities, except R-32 refrigerant, come into the refrigerant pipe, a serious problem may occur and it may cause injury.
  Use the supplied accessories, specified components and tools for the installation.
  - Do not use the pipe and the installation product used for the R-22, R-410A refrigerant.
  - Failure to use the specified components can cause the product to fall, water leakage, electrical shock, and fire. (The pipe and flare components used for R-22, R-410A refrigerant must not be used)

Power supply line, fuse or circuit breaker

⚠ WARNING

- Always make sure that the power supply is compliant with current safety standards. Always install the air conditioner following current local safety standards.
- Always verify that a suitable grounding connection is available.
- Verify that the voltage and frequency of the power supply comply with the specifications and that the installed power is sufficient to ensure the operation of any other domestic appliance connected to the same electric lines.
- Always verify that the cut-off and protection switches are suitably dimensioned.
- Verify that the air conditioner is connected to the power supply following the instructions provided in the wiring diagram included in the manual.
- Always verify that electric connections (cable entry, section of leads, protections...) are compliant with the electric specifications and with the instructions provided in the wiring scheme. Always verify that all connections comply with the standards applicable to the installation of air conditioners.
- Devices disconnected from the power supply should be completely disconnected in the condition of overvoltage category.
- Fix the outdoor unit firmly so that the electric part of the outdoor unit is not exposed.
  - Failing to do so may result in electric shock or fire.
- Do not pull or excessively bend the power line. Do not twist or tie the power line. Do not hook the power line over a metal object, place a heavy object on the power line, insert the power line between objects, or push the power line into the space behind the appliance.
  - This may result in electric shock or fire.

Safety Information

- Use the power line with the power specifications of the product or higher and use the power line for this appliance only. In addition, do not use an extension line.
  - Extending the power line may result in electric shock or fire.
  - Do not use an electric transformer. This may result in electric shock or fire.
  - If the voltage/frequency/rated current condition is different, it may cause fire.

⚠ CAUTION

- Make sure that you ground the cables.
  - Do not connect the earth wire to the gas pipe, water pipe, lightning rod or telephone wire. If grounding is not complete, electric shock or fire may occur.
- Install the circuit breaker.
  - If the circuit breaker is not installed, electric shock or fire may occur.
- Make sure that the condensed water dripping from the drain hose runs out properly and safely.
- Install the power cable and communication cable of the indoor and outdoor unit at least 1m away from the electric appliance.
- Install the indoor unit away from a lighting apparatus using the ballast.
  - If you use the wireless remote control, reception error may occur due to the ballast of the lighting apparatus.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons to avoid a hazard.
- Do not use the indoor unit for the preservation of food items, plants, equipment, and artwork. This may cause deterioration of their quality.
- Do not install the indoor unit if it has any drainage problems.
- This unit is equipped with electrically powered safety measures. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.
- LEAK DETECTION SYSTEM installed. Unit must be powered except for service.

Precautions for using R-32 refrigerant

General

- This product is pre-charged with mildly flammable gas classified as A2L by ASHRAE. The following precautions and instruction manuals must be followed during installation, operation, servicing and decommissioning of the product.
- The appliance shall be stored in a room without continuously operating ignition sources, like open flames or a gas appliance or an electric heater.
- All national and local regulations shall be observed at all times.
- All pipe-work including piping material, pipe routing and installation shall include protection from physical damage in operation and service, and comply with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection before being covered or enclosed.
- All field piping and joints shall be pressure tested with an inert gas according to prevalent industry standards before refrigerant charging and system commissioning.
- Where additional field charging is required. The installer shall write with a permanent marker the field charge added on the ODU label provided, such that the Total Charge = Factory 'Pre-charge' + field charge.
- For ducted systems, any auxiliary systems that are potential ignition sources shall not be installed in the duct work. Examples of ignition sources are hot surfaces with temperatures exceeding 700°C and electric switching devices.
- Any auxiliary device installed must be approved by Lennox and must be suitable for operating with the refrigerant marked on the label.
- For mechanical ventilation the lower edge of the air extraction opening shall not be more than 100mm above the floor. The exhaust location outside the building must be at least 3 m away from the building opening and mechanical air intake openings.
- To handle, purge, and dispose of the refrigerant, or break into the refrigerant circuit, the worker should have a certificate from an industry-accredited authority.
- Non-ducted systems may be installed in areas such as false ceilings not being used as return air plenum if the conditioned air does not mix with the air in the false ceilings.
- For ducted appliances false ceilings or drop ceilings may be used as return air plenum if a refrigerant leak detection system is provided in the system and any external connections are also provided with a sensor immediately below the return air plenum duct joint.

- Installation, servicing, and any type of maintenance or repair must be performed by certified personnel who are competent to carry out such activity following national and local regulations.

General information on Servicing

- Do not work in a confined space. Ensure adequate ventilation is provided at the workspace during the entirety of the duration of the work to safely disperse any released refrigerant.
- All maintenance staff and others working in the local area shall be instructed on the nature of the work being performed and instructed to follow all instructions provided by Lennox, national and local authorities.
- The area shall be checked with an approved refrigerant detector before and during any work on the system.
- Have a dry CO_2 fire extinguisher adjacent to the charging area and workspace.
- The service personnel shall not use any ignition sources in a manner that may lead to the risk of fire or explosion.
- Potential ignition sources shall be kept away from the work area where the flammable refrigerant can be released into the surrounding area.
- The work area should be checked to ensure that there are no flammable hazards or ignition risks. The "No Smoking" sign shall be attached.
- Under no circumstances shall potential sources of ignition be used upon detection of leakage.

The following checks shall be applied to installations and maintenance operations.

- The actual total refrigerant charge is in accordance with the room size.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- Markings on the equipment are visible and legible.
- Refrigerant pipes or components are installed in a position where they are unlikely to be exposed to any substance that may corrode refrigerant containing components.

Initial checks of electrical devices shall include the following.

- that capacitors are discharged safely to avoid sparking.
- that no live electrical components and wiring are exposed while charging, recovering or purging the system.
- That there is continuity to earth bonding.
- Check that cabling is not worn, corroded or damaged in any manner.

Electrical repair safety measures

- All electrical components used or replaced must be to Lennox's specifications.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- Sealed electrical components and intrinsically safe components shall be replaced and not repaired.
- Cabling should be protected from excessive vibration, pressure, sharp edges, and other adverse environmental factors.

Detection of flammable refrigerants

- Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Make sure that the detector is not a potential source of ignition.
- Leak detection equipment shall be set at a percentage of the LFL (Lower flammable limit) of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) is confirmed.
- The use of detergents containing chlorine shall be avoided for cleaning because the chlorine may react with the refrigerant and corrode the piping.
- If leakage is suspected, naked flames shall be removed.
- If a leakage is found while brazing, the entire refrigerant shall be recovered from the product or isolated (e.g. using shut-off valves). It shall not be directly released into the environment. Oxygen-free nitrogen (OFN) shall be used for purging the system before and during the brazing process.
- The work area shall be checked with an appropriate refrigerant detector before and during work.
- Ensure that the leakage detector is appropriate for use with flammable refrigerants.

Safety Information

Removal and Evacuation

- When removing refrigerant for servicing it is recommended to remove the entire quantity.
- When removing refrigerant follow local and national regulations and follow best practices including;
  - evacuate;
  - purge the circuit with inert gas (optional for A2L);
  - evacuate (optional for A2L);
  - continuously flush or purge with inert gas when using a flame to open the circuit; and
  - open the circuit.
- Use proper recovery cylinders appropriate for the type of refrigerant.
- Follow prescribed industry best practices for purging and evacuation.
- Oxygen free nitrogen shall be used for purging the system.

Charging procedure

- Follow industry standard refrigerant charging best practices.
- Before recharging the system shall be pressure tested with oxygen free nitrogen gas.
- Ensure that contamination of different refrigerants does not occur when charging.
- Cylinders shall be kept in the appropriate position as per instructions.
- The refrigerant system should be grounded before charging the system.
- Label the system when charging is completed.
- Take extreme care not to overfill the refrigeration system.
- The system shall be leak tested on completion of charging before commissioning.

Decommissioning

- Only qualified licensed professionals shall perform refrigerant recovery and decommissioning.
- Isolate the system electrically.
- All recovery equipment and cylinders shall conform to appropriate standards. Only approved cylinders, with pressure relief valves, for the type of refrigerant shall be used.
- Recover refrigerant following industry standard procedure for flammable refrigerants.
- When draining compressors oil care must be taken that there is no flammable refrigerant in the compressor and that the compressor is not hot. Oil should be handled according to local and federal regulations.
- After decommissioning, the system shall be labeled stating that it has been decommissioned. The label shall be dated and signed. The label should state that it “contains flammable refrigerant”.
- Ensure that there are labels on the equipment indicating the equipment contains flammable refrigerant.
- Recovered refrigerant shall not be mixed or reused. It shall be processed according to national, state and local regulations.

About Refrigerant Detection System(RDS)

- This system includes a refrigerant detection system (RDS) and automatic leak mitigation controls.
- When a leak is detected, the RDS will stop the compressor and energize the indoor unit(s) fan for air circulation to disperse the leaked gas and display an error code .
- The RDS sensor does automatic self-test each hour and does not require any periodic maintenance.
- The sensor should be replaced upon end of life when error code E700 is displayed.
- For complete replacement instructions, please refer to the Service Manual.
- The RDS sensor must only be replaced with sensors as specified by Lennox. Sensor replacement must be performed by a certified technician.
- The R-32 sensor’s lifespan is 10 years 3 months.

R-32 General Guidelines for Compliance

DISCLAIMER: This section is provided as a general guideline to assist with compliance for VRF system installations.It is not intended to serve as a substitute for a comprehensive code compliance document. The responsibility for ensuring that all designs, installations, and operations meet applicable regulations, codes, and standards rests solely with the project's licensed engineer or other qualified design professional.

The VRF uses R-32, a mildly flammable gas classified as A2L by ASHRAE. The system is certified as Enhanced Tightness Refrigeration System (ETRS) and allows for connection with shut off valve box and remote-control alarm to alert the users and limit the refrigerant leakage in case of a leak. Follow the installation requirement presented in this manual, and ensure system is compliant with relevance regulations and codes.

Installing the outdoor unit

For full details on outdoor unit installation, see the installation manual supplied with the outdoor unit.

Installing the indoor unit

The space for indoor unit installation is limited. For full details, see the installation manual supplied with the outdoor unit.

For full details on indoor unit installation, see the installation manual supplied with the indoor unit.

Installing the SVB

The SVB supports a wide range of safety measures that can be implemented to help meet compliance requirements.

For full details on the system's total refrigerant charge, see the installation manual supplied with the outdoor unit.

The SVB supplies additional output signals intended for external devices. Such output signals are generated when the indoor unit's R-32 sensor detects a refrigerant leak, or when the R-32 sensor fails or becomes short-circuited.

The signals enable additional operations of the ventilation system or alarm.

R-32 General Guidelines for Compliance

Deciding on the Safety Measures for SVB

- Step 1: Determine the system's total refrigerant charge.
  Refer to the installation manual supplied with the outdoor unit.
- Step 2: Determine the area of the room the SVB is installed in.
  Calculate the area of the room with walls, doors, and partitions excluded.
  Spaces connected by false ceilings, ducts, or similar connections are not considered a single space.
- Step 3: Referring to the total refrigerant charge determined in Step 1, determine the minimum required room area from the table below.
- Step 4: If the area of the room determined in step 2 is larger than the minimum required room area determined in step 3, no additional measures are necessary. However, if the area of the room determined in step 2 is smaller than that minimum required room area, take additional safety measures (e.g., changing installation conditions, ventilation, ventilated enclosure).

m[lbs(kg)]	Minimum required room area [A, ft²(m²)]		
Installation Height[ft(m)]	5.9(1.8)	7.2(2.2)	8.2(2.5)
11.02(5)	195(18.16)	160(14.85)	141(13.07)
13.23(6)	235(21.79)	192(17.83)	169(15.69)
15.43(7)	274(25.42)	224(20.8)	197(18.3)
17.64(8)	313(29.05)	256(23.77)	225(20.92)
19.84(9)	352(32.68)	288(26.74)	253(23.53)
22.05(10)	391(36.31)	320(29.71)	281(26.14)
24.25(11)	430(39.94)	352(32.68)	310(28.76)
26.46(12)	469(43.57)	384(35.65)	338(31.37)
28.66(13)	508(47.2)	416(38.62)	366(33.99)
30.86(14)	547(50.84)	448(41.59)	394(36.6)
33.07(15)	586(54.47)	480(44.56)	422(39.22)
35.27(16)	625(58.1)	512(47.53)	450(41.83)
37.48(17)	664(61.73)	544(50.51)	478(44.44)
39.68(18)	704(65.36)	576(53.48)	507(47.06)
41.89(19)	743(68.99)	608(56.45)	535(49.67)
44.09(20)	782(72.62)	640(59.42)	563(52.29)
46.3(21)	821(76.25)	672(62.39)	591(54.9)
48.5(22)	860(79.88)	704(65.36)	619(57.52)
50.71(23)	899(83.51)	736(68.33)	647(60.13)
52.91(24)	938(87.15)	767(71.3)	675(62.75)
55.12(25)	977(90.78)	799(74.27)	704(65.36)
57.32(26)	1016(94.41)	831(77.24)	732(67.97)
59.52(27)	1055(98.04)	863(80.21)	760(70.59)
61.73(28)	1094(101.67)	895(83.18)	788(73.2)
63.93(29)	1133(105.3)	927(86.16)	816(75.82)
66.14(30)	1173(108.93)	959(89.13)	844(78.43)
68.34(31)	1212(112.56)	991(92.1)	872(81.05)

m[lbs(kg)]	Minimum required room area [A, ft²(m²)]		
Installation Height[ft(m)]	5.9(1.8)	7.2(2.2)	8.2(2.5)
70.55(32)	1251(116.19)	1023(95.07)	901(83.66)
72.75(33)	1290(119.83)	1055(98.04)	929(86.27)
74.96(34)	1329(123.46)	1087(101.01)	957(88.89)
77.16(35)	1368(127.09)	1119(103.98)	985(91.5)
79.37(36)	1407(130.72)	1151(106.95)	1013(94.12)
81.57(37)	1446(134.35)	1183(109.92)	1041(96.73)
83.78(38)	1485(137.98)	1215(112.89)	1069(99.35)
85.98(39)	1524(141.61)	1247(115.86)	1097(101.96)
88.18(40)	1563(145.24)	1279(118.84)	1126(104.58)
90.39(41)	1602(148.87)	1311(121.81)	1154(107.19)
92.59(42)	1642(152.51)	1343(124.78)	1182(109.8)
94.8(43)	1681(156.14)	1375(127.75)	1210(112.42)
97(44)	1720(159.77)	1407(130.72)	1238(115.03)
99.21(45)	1759(163.4)	1439(133.69)	1266(117.65)
101.41(46)	1798(167.03)	1471(136.66)	1294(120.26)
103.62(47)	1837(170.66)	1503(139.63)	1323(122.88)
105.82(48)	1876(174.29)	1535(142.6)	1351(125.49)
108.03(49)	1915(177.92)	1567(145.57)	1379(128.1)
110.23(50)	1954(181.55)	1599(148.54)	1407(130.72)
112.44(51)	1993(185.19)	1631(151.52)	1435(133.33)
114.64(52)	2032(188.82)	1663(154.49)	1463(135.95)
116.85(53)	2071(192.45)	1695(157.46)	1491(138.56)
119.05(54)	2111(196.08)	1727(160.43)	1520(141.18)
121.25(55)	2150(199.71)	1759(163.4)	1548(143.79)
123.46(56)	2189(203.34)	1791(166.37)	1576(146.41)
125.66(57)	2228(206.97)	1823(169.34)	1604(149.02)
127.87(58)	2267(210.6)	1855(172.31)	1632(151.63)

m[lbs(kg)]	Minimum required room area [A, ft²(m²)]		
Installation Height[ft(m)]	5.9(1.8)	7.2(2.2)	8.2(2.5)
130.07(59)	2306(214.23)	1887(175.28)	1660(154.25)
132.28(60)	2345(217.86)	1919(178.25)	1688(156.86)
134.48(61)	2384(221.5)	1951(181.22)	1717(159.48)
136.69(62)	2423(225.13)	1983(184.19)	1745(162.09)
138.89(63)	2462(228.76)	2015(187.17)	1773(164.71)
141.1(64)	2501(232.39)	2047(190.14)	1801(167.32)
143.3(65)	2541(236.02)	2079(193.11)	1829(169.93)
145.51(66)	2580(239.65)	2111(196.08)	1857(172.55)
147.71(67)	2619(243.28)	2143(199.05)	1885(175.16)
149.91(68)	2658(246.91)	2175(202.02)	1914(177.78)
152.12(69)	2697(250.54)	2207(204.99)	1942(180.39)
154.32(70)	2736(254.18)	2238(207.96)	1970(183.01)
156.53(71)	2775(257.81)	2270(210.93)	1998(185.62)
158.73(72)	2814(261.44)	2302(213.9)	2026(188.24)
160.94(73)	2853(265.07)	2334(216.87)	2054(190.85)
163.14(74)	2892(268.7)	2366(219.85)	2082(193.46)
165.35(75)	2931(272.33)	2398(222.82)	2111(196.08)
167.55(76)	2970(275.96)	2430(225.79)	2139(198.69)
169.76(77)	3010(279.59)	2462(228.76)	2167(201.31)
171.96(78)	3049(283.22)	2494(231.73)	2195(203.92)
174.17(79)	3088(286.86)	2526(234.7)	2223(206.54)
175.40(79.56)	3110(288.89)	2544(236.36)	2239(208)

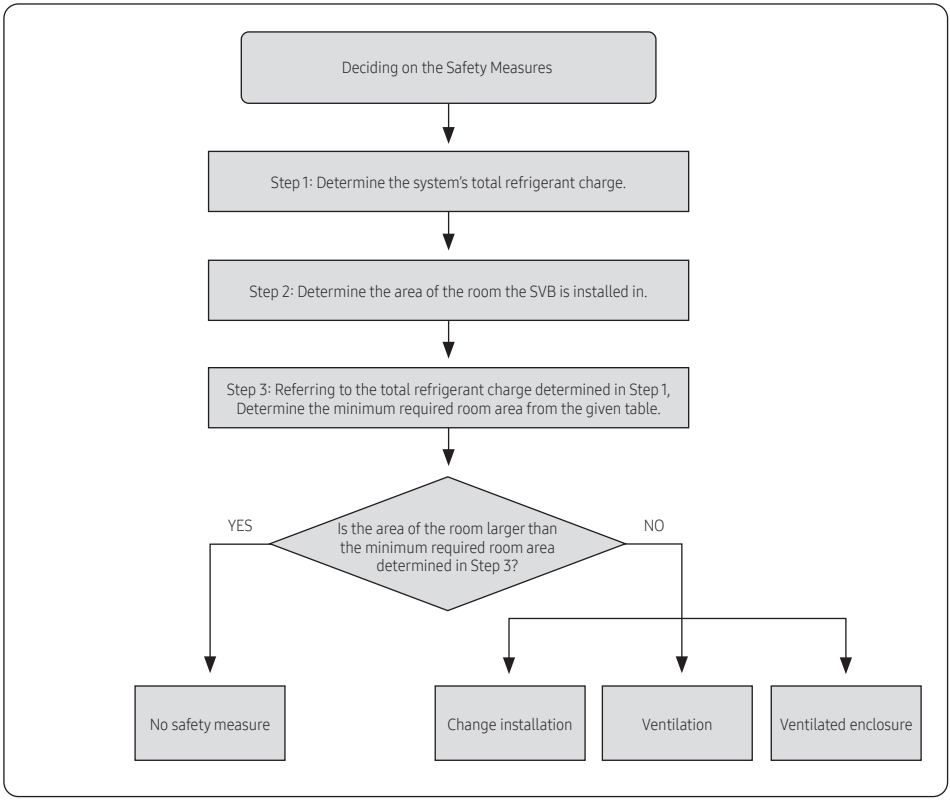
※ If the total refrigerant charge for your system is not shown, use linear interpolation to calculate it using the closest smallest and largest area values in the table.
And If the height for your installation is not shown, use the closest lower height value in the table.
To get a more accurate confirmation, consult the appropriate experts.

m Total refrigerant charge in the system [lb(kg)]

A_{min} Minimum room area [ft^2(m^2)]

R-32 General Guidelines for Compliance

Flowchart



Safety measures

No safety measure

If the room is of a sufficient size, no particular safety measures are required.

This applies to a SVB installed in the lowest underground floor of a building also.

External Alarm

The SVB allows for connection with External Alarm for auditory and visual alerts. Connect External alarm circuit to SVS output of the SVB.

When the SVB R-32 sensor detects a refrigerant leak, the SVS output will close and activate the alarm. An error message is displayed on the remote controller of the connected indoor unit if one is installed.

Change Installation

By changing the installation conditions, the safety measure decision step can be re-executed.

Re-execute the decision step after the following actions:

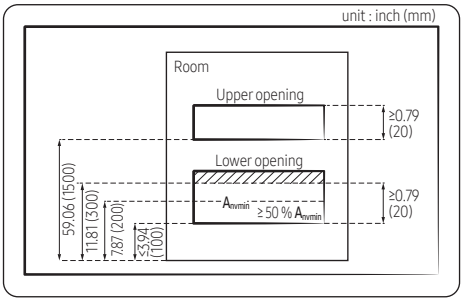
1. Increase the area of the room where the SVB is installed.
2. Reduce the length of the piping to decrease the total refrigerant charge of system.
3. Increase the installation height of the product.

Natural ventilation

Natural ventilation is a safety measure involving ventilation through a large space with enough air to dilute leaked refrigerant.

If natural ventilation to indoors are implemented, the installation area can be determined by the sum of the area of the room where the SVB is installed and the area of the ventilated room.

If natural ventilation is applied, the following conditions must be met to be considered a safety device.



A_{nvmin} Minimal natural ventilation area

Lower opening:

- Not an opening leading to the outside.
- Not an opening that can be closed.
- Area of the opening is ≥0.129 ft^2 (0.012 m^2) (A_{nvmin}).
- Area of an opening from the floor that is 11.81" (300 mm) or greater is not included in the calculation of A_{nvmin}.
- A minimum of 50% of A_{nvmin} must be located below 7.87" (200 mm) from the floor.
- The bottom of the lower opening must be located at ≤3.94" (100 mm) from the floor.
- The height of the opening is ≥0.79" (20 mm).

Upper opening:

- Not an opening leading to the outside.
- Not an opening that can be closed.
- The area of the opening is ≥0.065 ft^2 (0.006 m^2) (50% of A_{nvmin}).

R-32 General Guidelines for Compliance

- The bottom of the lower opening must be located at ≥59.06" (1500 mm) from the floor.
- The height of the opening is ≥0.79" (20 mm).

※ Upper opening requirements can be satisfied through false ceilings, ventilation ducts, or similar arrangements for airflow between connected rooms.

⚠ CAUTION

- Natural ventilation to outdoors is not allowed below ground level.
- Natural ventilation from an occupied space shall not be made to outdoors.

Mechanical ventilation

The SVB provides an additional output signal for external devices.

This output signal occurs if the R-32 sensor in the SVB detects a refrigerant leak, or the R-32 sensor has a malfunction or short circuit.

Based on this signal, an mechanical ventilation system can be activated.

If mechanical ventilation is applied, the following conditions must be met to be considered a safety device.

- The upper edge of the air outlet must be located at the same level as or below the refrigerant release point.
- The mechanical ventilation air extracted from the space must be positioned relative to the mechanical ventilation air intake openings to ensure that the supplementary air mixes with the leaked refrigerant.
- Required airflow(Please refer to the technical data for the exact required airflow value.)

Ventilated enclosure

For the ventilated enclosure safety measure, ductwork and extraction fan must be installed for the SVB.

Such ductwork must not be combined with ducting for other purposes.

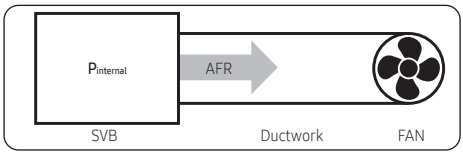
A ventilated enclosure is required as a safety measure in instances where other safety measures (external alarm, natural ventilation, etc.) are not permitted.

(* As an additional safety measure, SVS output can be used to install external alarm circuits.)

If the SVB's R-32 sensor detects a refrigerant leak, the safety measure is activated. It includes the opening of the SVB's damper to bring in air, the activation of fan output signals to operate the extraction fan to discharge the leaked refrigerant, and the display of an error message on the remote controller of the connected indoor unit.

NOTE

- Keep the ductwork from becoming blocked by dust, foreign matter, and small animals.



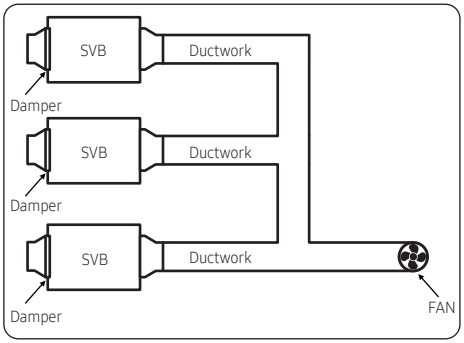
To select the fan of the appropriate specifications, consider the legal requirements and the total pressure drop in the duct system.

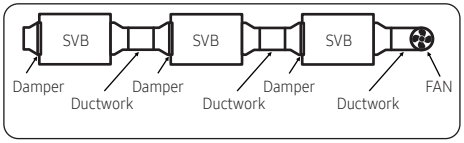
The minimum airflow rate required of ductwork by law is 11.1 CFM (18.8 m^3/h). The resulting pressure drop must lower the pressure inside the SVB to at least 0.0029 psi (20 Pa) lower than the ambient pressure.

(* The internal pressure of the SVB must not be lower than the ambient pressure by more than 0.0508 psi (350 Pa)).

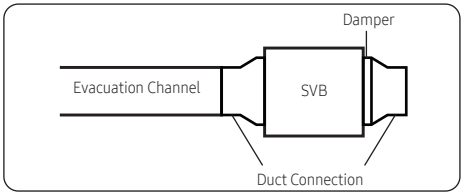
When treating the total pressure drop in the duct system, calculate the sum of the pressure drops induced by all components of the exhaust channel (e.g. ducts, bends, reducers). If an accurate calculation of pressure drops is required, consult the appropriate experts.

If multiple SVBs are installed, the ductwork can be connected in parallel/serial as shown below.



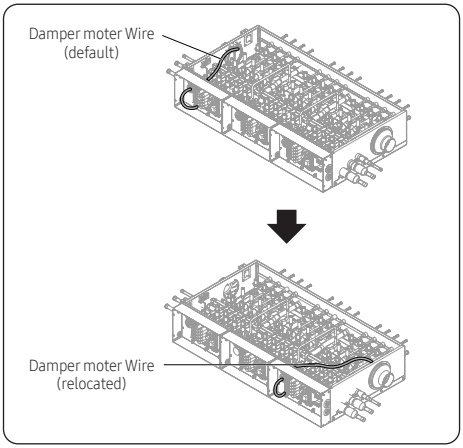


The evacuation channel and the damper must be installed on opposite sides.

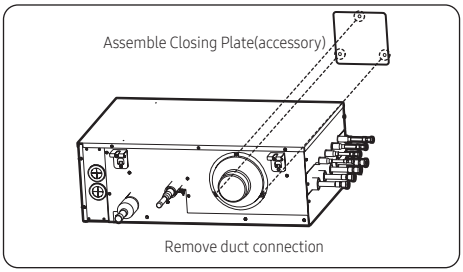


The damper is designed to allow its installation on either side.

If you want to reposition the damper, you need to unscrew and disassemble the damper assembly, then unplug the damper motor wire from the connector and move it. Reassemble the damper assembly on the opposite side and plug the damper motor wire back into the nearest PBA.

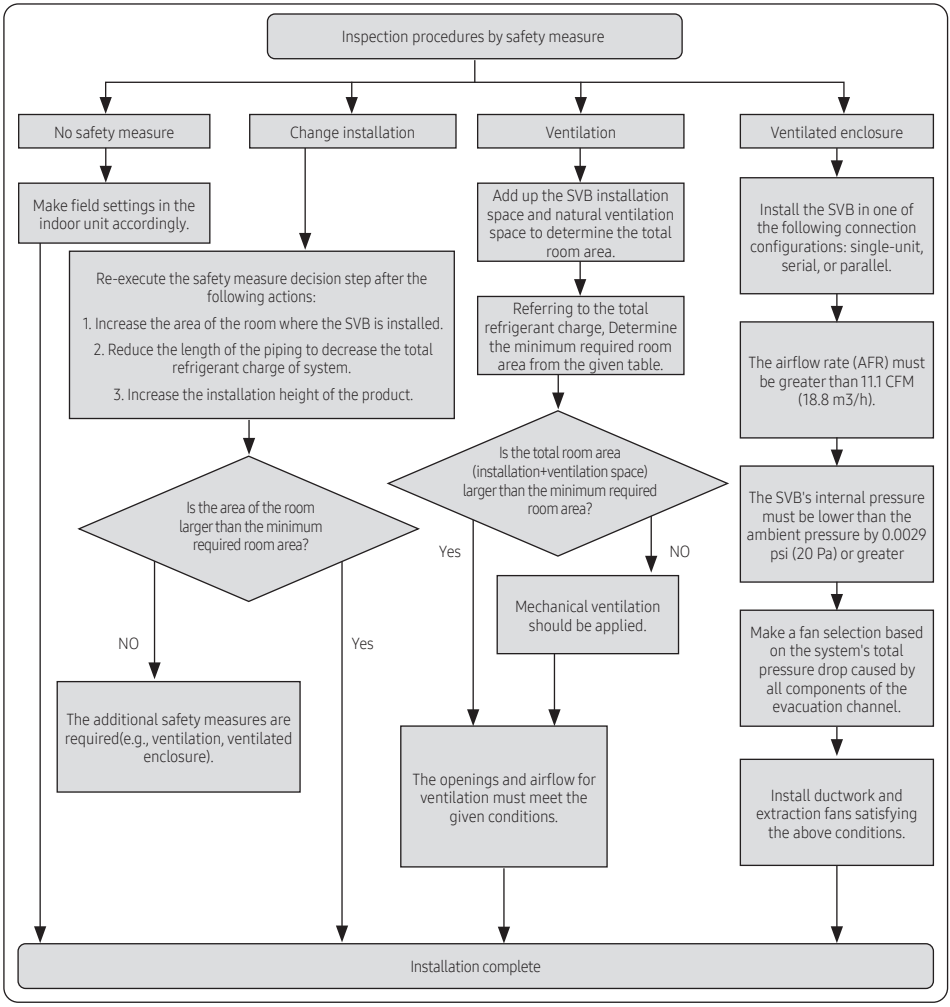


If a ventilated enclosure is not applied as a safety measure, replace the duct connection on the side without the damper with the closing plate provided as an accessory.
It can be replaced by loosening three screws.



R-32 General Guidelines for Compliance

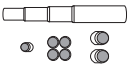
Flowchart



Preparing the installation

Accessories

Please check if items below are included in installation accessories.

Insulation (for pipe)	Insulation (for base)
	
Installation manual	**Pattern sheet**
	
Pipe socket	**Cable tie**
	
Closing Plate	
	

※ Soundproof and soundproofing materials

V1MSBP01HR


Selecting the refrigerant pipe for installation

The design pressure of SVB for R-32 is about 4.1 MPa (594.6psi). For safe use of the product, please refer to the table below in selecting the installation pipe.

Temper grade	Outer diameter		Minimum thickness	
	mm	inch	mm	inch
Annealed	6.35	1/4	0.70	0.028
	9.52	3/8	0.70	0.028
	12.70	1/2	0.80	0.031
	15.88	5/8	1.00	0.039
Drawn	19.05	3/4	0.90	0.035
	22.22	7/8	0.90	0.035
	25.40	1	1.00	0.039
	28.58	1 1/8	1.10	0.043
	31.75	1 1/4	1.10	0.043
	34.92	1 3/8	1.21	0.048
	38.10	1 1/2	1.35	0.053
	41.28	1 5/8	1.43	0.056
	44.45	1 3/4	1.60	0.063
	50.80	2	2.00	0.079
	53.98	2 1/8	2.10	0.083

⚠ CAUTION

- For pipes larger than Ø 3/4" (19.05 mm), drawn type (C1220T-1/2H or C1220T-H) type copper pipe must be used. If an annealed type (C1220T-O) copper pipe is used, pipe may break due to its low pressure resistance and cause personal injury.

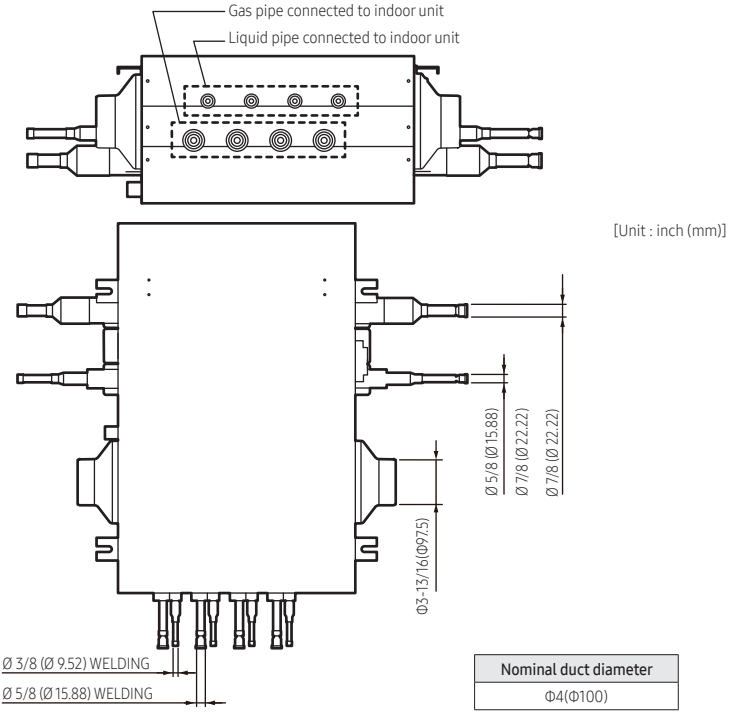
Preparing the installation

SVB indoor/outdoor unit compatible table

Before installing SVB, refer to the compatible table below and find the model before installation.

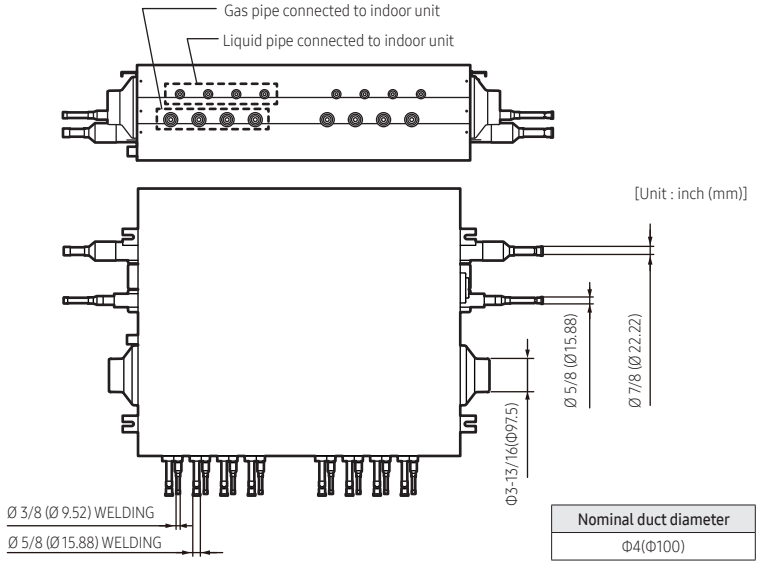
Outdoor unit	SVB	Indoor unit
VRF Outdoor	V2SOB01HP V2SOB02HP V2SOB04HP V2SOB06HP V2SOB08HP V2SOB12HP	VRF Indoor

	Model	Description
SVB Kit	V2SOB01HP	below 16 kW (54 MBH)
	V2SOB02HP	below 32 kW (108 MBH)
	V2SOB04HP	below 61.6 kW (216 MBH)
	V2SOB06HP	below 61.6 kW (216 MBH)
	V2SOB08HP	85.0 kW (290MBH)
	V2SOB12HP	85.0 kW (290MBH)



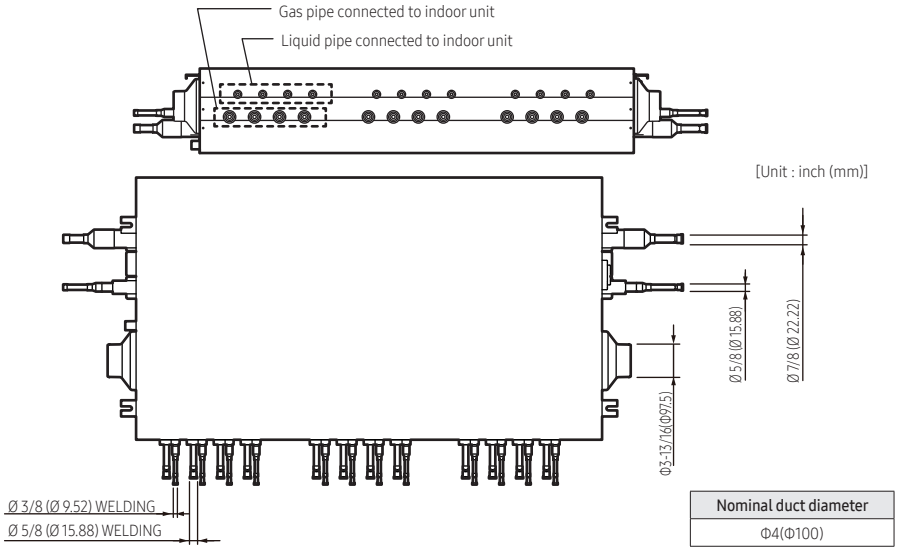
Nominal duct diameter
Φ4(Φ100)

<V2SOB01HP, V2SOB02HP, V2SOB04HP>



Nominal duct diameter
Φ4(Φ100)

<V2SOB06HP, V2SOB08HP>

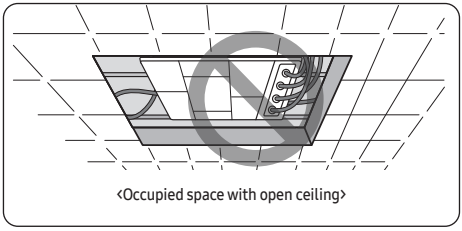


Nominal duct diameter
Φ4(Φ100)

<V2SOB12HP>

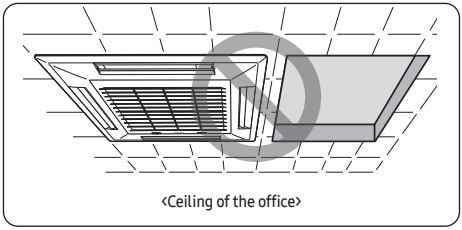
Space requirements

1 Refrigerant noise can be generated during SVB operation. Do not install the unit in spaces that require silence, such as bedrooms, libraries, hospitals, offices etc.



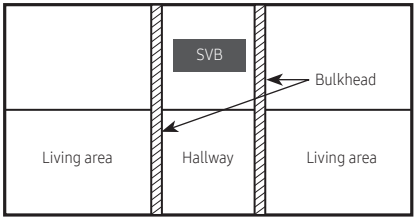
‹Occupied space with open ceiling›

2 Do not install the SVB in the ceiling of living spaces. Noise generated from the SVB may disrupt occupant comfort.

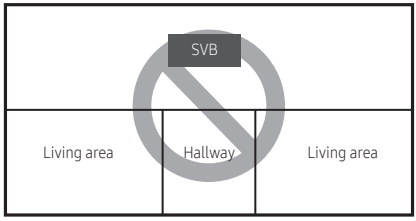


‹Ceiling of the office›

3 It is normally recommended to install SVB in a hallway but a bulkhead should be installed to minimize the noise from being transferred to living area. (Refer to the below figure)



‹There is no risk of noise transfer›



‹There is a risk of noise transfer›

※ Soundproof and soundproofing materials

- The place where SVB is installed and the interior walls should have a high soundproof ability. (Bricks, Concretes, Cement)
- The ceiling where SVB is installed should be coated with quality textile that has a good soundproof function.
- Minimize the size of the hole between the walls and the pipe connection. After the installation, block the gap to prevent noise from leaking.

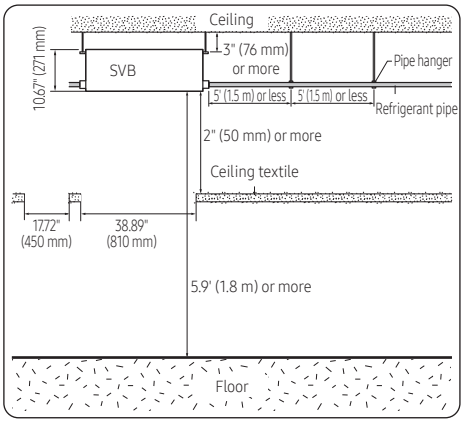
4 Secure over 0.82' (0.25 m) of space when SVB is being fixed to the concrete of the ceiling.

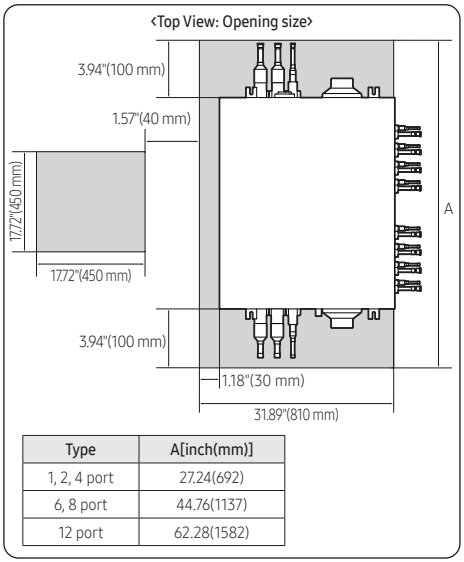
5 SVB may generate noise so don't install it too close to the ceiling textile.

6 Each pipe hanger should be placed at 4.92' (1.5 m) interval to support its weight firmly.
If the pipe or the hanger isn't fixed firmly, the unit may fall and cause a property damage or loss of life.

7 When 'Low temperature cooling range expansion' option is set for constant cooling operation throughout the year, noise of the SVB may get louder during wintertime. Therefore, above installation requirements must be followed.

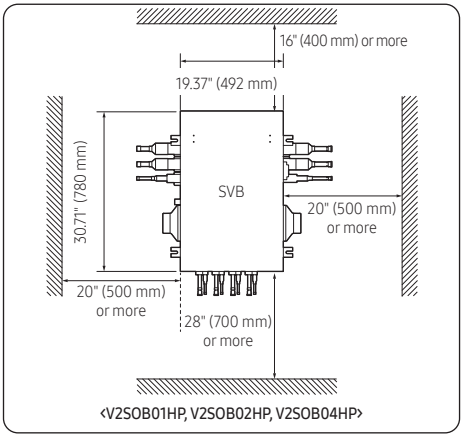
8 Select a place where the structure can support the weight of the SVB and indoor units that also have strong vibration resistance without any slope.
If the structure is not strong enough, SVB may fall down and cause injury.



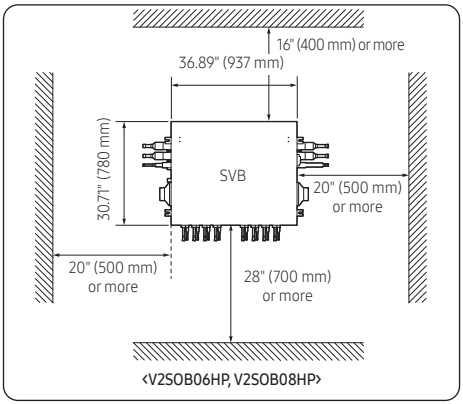


Type	A[inch(mm)]
1, 2, 4 port	27.24(692)
6, 8 port	44.76(1137)
12 port	62.28(1582)

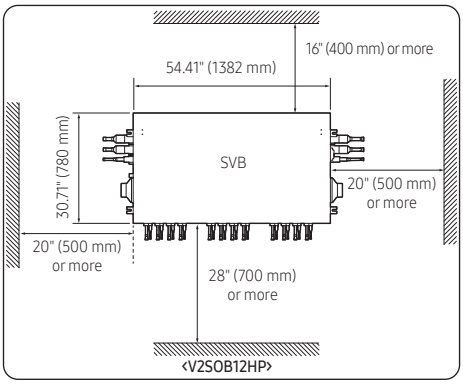
9 Select an installation location with enough space for service and repair.
Leave enough space between adjacent walls and structures. Refer to the examples below.



‹V2SOB01HP, V2SOB02HP, V2SOB04HP›



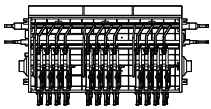
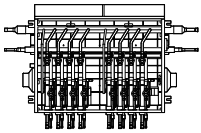
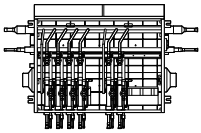
‹V2SOB06HP, V2SOB08HP›

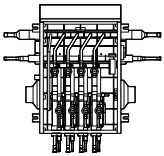
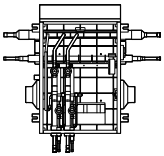
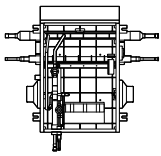


‹V2SOB12HP›

Space requirements

1 SVB specification

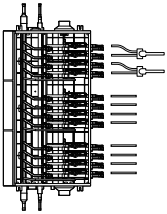
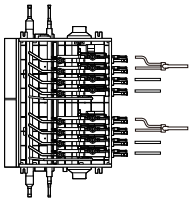
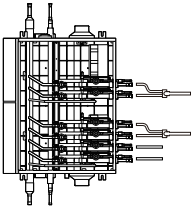
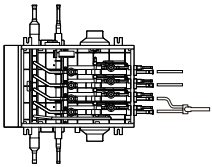
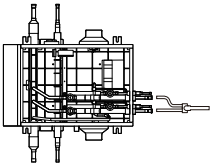
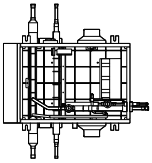
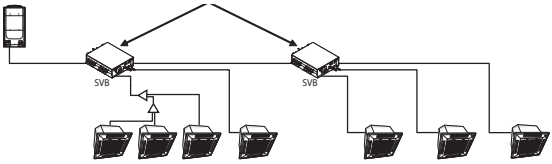
Model	V2SOB12HP	V2SOB08HP	V2SOB06HP
Exterior of SVB			
Number of connectable indoor units at one port	Up to 8 units	Up to 8 units	Up to 8 units
Maximum number of indoor units (Total)	64	64	32
The maximum capacity of the connectable indoor units at one port	16 kW (54MBH)	16 kW (54MBH)	16 kW (54MBH)
The maximum capacity of the connectable indoor units at one port (with Y-JOINT)	32.0 kW (108 MBH)	32.0 kW (108 MBH)	32.0 kW (108 MBH)
The maximum capacity of the connectable indoor units	85.0 kW (290MBH)	85.0 kW (290MBH)	61.6 kW (216MBH)

Model	V2SOB04HP	V2SOB02HP	V2SOB01HP
Exterior of SVB			
Number of connectable indoor units at one port	Up to 8 units	Up to 8 units	Up to 8 units
Maximum number of indoor units (Total)	32	16	8
The maximum capacity of the connectable indoor units at one port	16 kW (54MBH)	16 kW (54MBH)	16 kW (54MBH)
The maximum capacity of the connectable indoor units at one port (with Y-JOINT)	32.0 kW (108 MBH)	32.0 kW (108 MBH)	-
The maximum capacity of the connectable indoor units	61.6 kW (216MBH)	32.0 kW (108MBH)	16 kW (54MBH)

⚠ CAUTION

- If the sum of the connected indoor unit capacity connected to the SVB is greater than 67.2kW (228 MBH), performance may vary depending on operating conditions.
- The incoming pipe diameters supplying refrigerant to the SVB are determined based on the sum of the connected indoor units. If these pipe diameters are different than the SVB pipe diameters, use the provided reducers to connect to the SVB. If the provided reducers are not the correct size, field supplied reducers must be used.

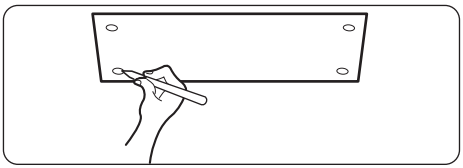
2 Installing the indoor units

<table>
<tr><td>Model</td><td>V2SOB12HP</td><td>V2SOB08HP</td><td>V2SOB06HP</td></tr>
<tr><td rowspan="3">Example installing (Each port connection)</td><td>  </td><td>  </td><td>  </td></tr>
<tr><td>V2SOB04HP</td><td>V2SOB02HP</td><td>V2SOB01HP</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Example installing
(SVB series connection)</td><td colspan="3">SVB series connection
  </td></tr>
<tr><td>Installing indoor units</td><td colspan="3">Indoor units under 16.0 kW (54 kBtu/h): Y-connector is not required
Indoor units 16.0 kW ~ 32.0 kW (54 ~ 108 kBtu/h): Y-connectors at the gas and liquid lines are required
Only one indoor unit can be connected after connecting two SVB ports with a Y-joint.
If continuous cooling operation is required when outside temperature is below 23 °F (-5 °C), set outdoor option setting "Expand operational temperature range for cooling operation (HR only)", and use Y-connector on the liquid and gas pipes for indoor units 5.0 ~ 16 kW (18 ~ 54 kBtu/h).
When SVBs are connected in series, the maximum capacity of all indoor units in SVB series connection is the larger value of SVB which are connected in series.
Example: V2SOB12HP + V2SOB06HP → 85.0 kW (290MBH)</td></tr>
</table>

Space requirements

3 Preparation before installation.

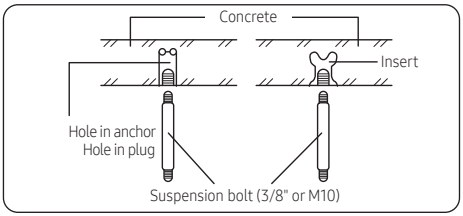
a Place the pattern sheet on the ceiling at the spot where you want to install the indoor unit.



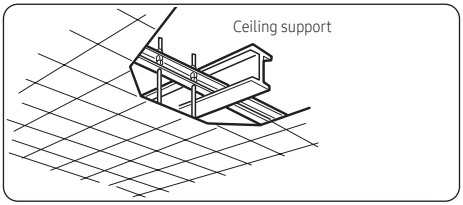
NOTE

- Since the diagram is made of paper, it may shrink or stretch slightly due to temperature or humidity. For this reason, before drilling the holes maintain the correct dimensions between the markings.

b Insert bolt anchors, use existing ceiling supports or construct a suitable support as shown in figure.



c Install the suspension bolts depending on the ceiling type.



⚠ CAUTION

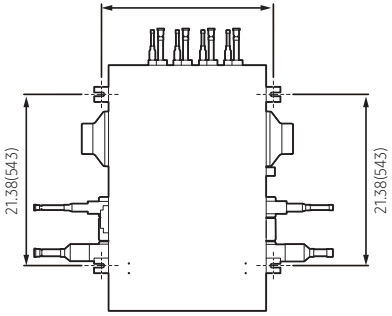
- Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the unit, test the strength of each attached suspension bolt.
- If the length of suspension bolt is more than 4.92' (1.5 m), it is required to prevent vibration.
- If this is not possible, create an opening on the false ceiling in order to be able to use it to perform the required operations on the indoor unit.

4 Cautions about SVB installation.

- When fixing the unit at the upper place using suspension bolts, use a nut and washer to vertically fasten the unit.
- The SVB has four suspension points to secure the SVB. All four suspension points must be used.
- Take care to ensure that the unit is installed in the correct orientation. If the SVB is installed upside down, noise will be generated and the unit may be damaged.
- Level the unit at all 4 corners by turning nuts or washers. A deviation of maximum 1 degree is allowed in the direction away from the control box.

Unit : inch (mm)

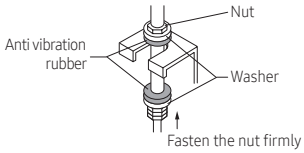
*Length (Between the locations of suspension bolts)



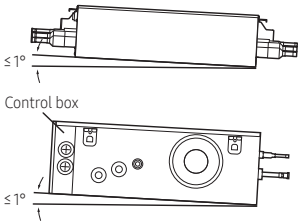
‹Location and intervals of fixed suspension bolts›

*Length Unit : inch (mm)

V2SOB01HP	21.18(538)
V2SOB02HP	
V2SOB04HP	
V2SOB06HP	38.7(983)
V2SOB08HP	
V2SOB12HP	56.22(1428)



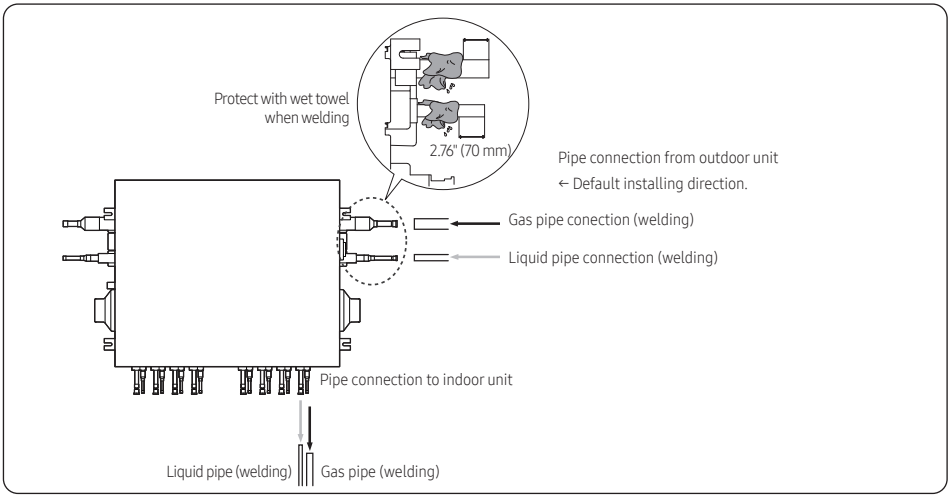
‹Fixing the bolt›



‹Allowable horizontal deviation›

Space requirements

5 How to connect the pipe line.



※ When installing SVB, use the pattern sheet for installation that is provided with the product.

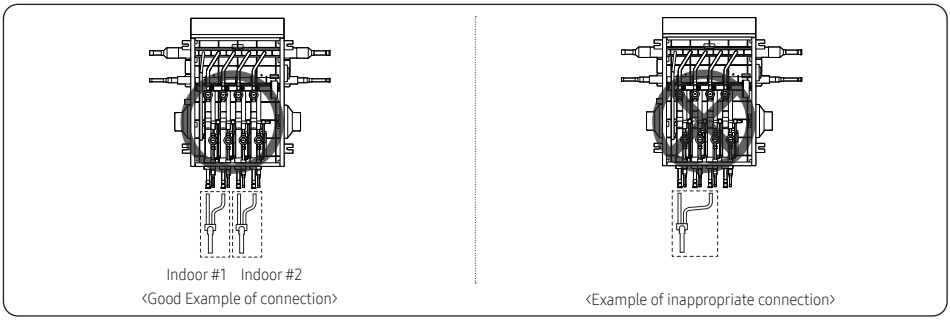
※ When welding the pipes, protect the product with the flame-proof sheet.

※ When connecting the SVB with outdoor units, default direction is set in the SVB.
If installing opposite direction, weld the enclosed copper cap to each high pressure, low pressure and liquid pipes.

※ When there are remaining ports not connected to the indoor unit, pinch them with pliers and then weld them to completely seal them.

6 How to connect Y-connector

- In case of connecting one indoor with Y-Connector to SVB, Y-Connector must be connected in series.



Refrigerant piping

Pipe brazing instructions and cautions

Keeping refrigerant pipe clean and dry

- To prevent foreign materials or water from entering the pipe, it is important to keep the refrigerant pipe clean, dry and sealed during installation.

Exposure place	Exposure time	Sealing type
Outside exposure	Longer than one month	Pipe pinch
	Shorter than one month	Taping
Inside exposure	-	Taping

Brazing the pipe

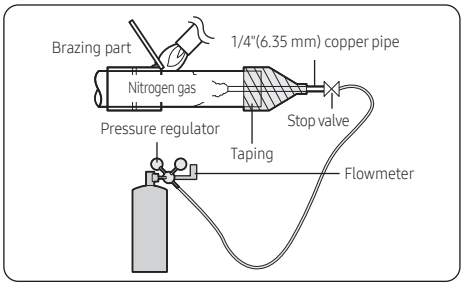
- Make sure that there is no moisture inside the pipe.
- Make sure that there are no foreign materials and impurities in the pipe.
- Make sure that there is no leak.
- Make sure to follow the instruction when brazing the pipe.

The use of Nitrogen gas

1 Use Nitrogen gas when brazing the pipes as shown in the picture.

2 If you don't use Nitrogen gas when brazing the pipes, oxide may form inside the pipe. It can cause the damage of the compressor and valves.

3 Adjust the flow rate of the nitrogen gas with a pressure regulator to maintain 1.77 ft^3/h (0.05 m^3/h) or less.



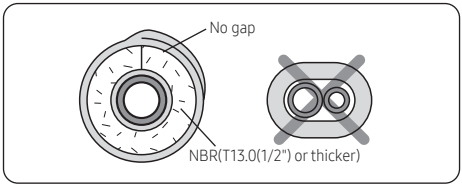
Direction of the pipe when brazing

- Performing the brazing of the pipe should be headed downwards or horizontally.

Pipe insulating instructions and cautions

Make sure to check for gas leakage before completing the installation (hose and pipe insulation) and insulate hoses and pipes when there is no sign of leakage.

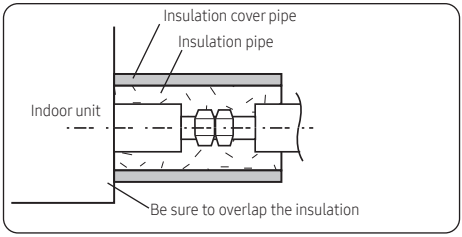
1 To avoid condensation problems, place T13.0 (1/2") or thicker Acrylonitrile Butadien Rubber separately around each refrigerant pipe.



⚠ CAUTION

- When installing pipe insulation, make sure that the insulation seam is on the top of the pipes.

2 Wrap insulating tape around the pipes. Avoid compressing the pipe insulation while wrapping.



⚠ CAUTION

- Must fit tightly against body without any gap.

3 Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.

4 Pipes and electrical cables connecting the unit with the outdoor unit must be secured to the structure with appropriate straps/hangers.

Refrigerant piping

⚠ CAUTION

- All refrigerant connection must be accessible, in order to permit either unit maintenance or removing it completely.

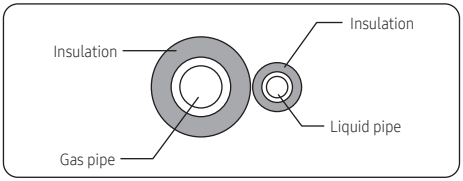
5 Select the insulation of the refrigerant pipe.

- Insulate the gas side and liquid side pipe referring to the thickness according to the pipe size.
- Indoor temperature of 86 °F (30 °C) and humidity of 85% is the standard condition. If install in a high humidity condition, use one grade thicker insulator by referring to the table below. If installing in an unfavorable conditions,use thicker one.
- Insulator's heat-resistance temperature should be more than 248 °F (120 °C).

Pipe	Outer diameter		Insulator (Cooling, Heating)				Remarks
			General [86 °F (30 °C), 85%]		High humidity [86 °F (30 °C), over 85%]		
			EPDM, NBR				
	mm	inch	mm	inch	mm	inch	
Liquid pipe	6.35~9.52	1/4~3/8	9	3/8	9	3/8	Heating resisting temperature over 248 °F (120 °C)
	12.70~50.80	1/2~2	13	1/2	13	1/2	
Gas Pipe	6.35	1/4	13	1/2	19	3/4	
	9.52~25.4	3/8~1	19	3/4	25	1	
	28.58~44.45	1 1/8~1 3/4	19	3/4	32	1 1/4	
	50.80	2	25	1	38	1 1/2	

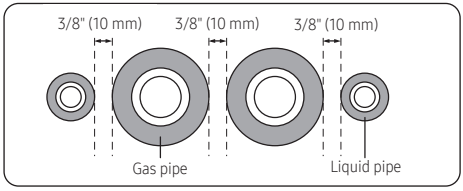
Refrigerant pipe before SVB or without SVB

- You can contact the gas side and liquid side pipes but the pipes should not be pressed.
- When contacting the gas side and gas side pipe, use 1 grade thicker insulator.



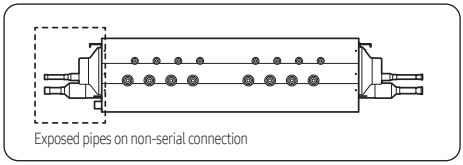
Refrigerant pipe after SVB

- Install the gas side and liquid side pipes, leave 3/8" (10 mm) of space.
- When contacting the gas side and liquid side pipe, use 1 grade thicker insulation.



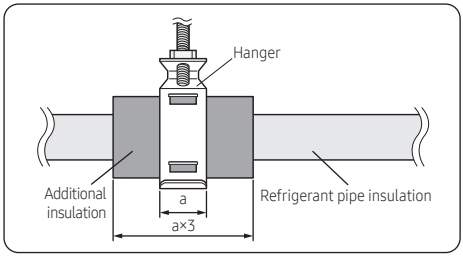
Insulation for non-serial connection of SVB

- Exposed pipes should be insulated.



⚠ CAUTION

- Prevent insulation thickness from getting thinner at the pipe hanger. Use adhesives on the seams to prevent moisture from entering.
- Wrap the refrigerant pipe with insulation tape if it is exposed to outside sunlight.
- Install the refrigerant pipe ensuring that the insulation does not get thinner on the bent part or hanger of pipe.
- Add the additional insulation if the insulation plate gets thinner.



Wiring

Installing the circuit breaker and wires

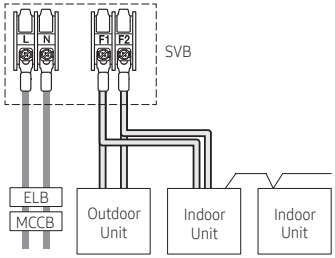
Power supply	MCCB	ELB	Power cable	Earth cable	Communication cable
Max : 242V Min : 198V	x [A]	x [A], 30mmA 0.1 sec	AWG 12 (2.5 mm^2)	AWG 12 (2.5 mm^2)	AWG 14 (0.75~1.5 mm^2)

※ x [A] ≥ 1.25 X 1.1 X ∑Ai
(x [A] : MCCB/ELB ampheres, ∑Ai : Sum of the rated current ampheres of indoors)

Installing the wire

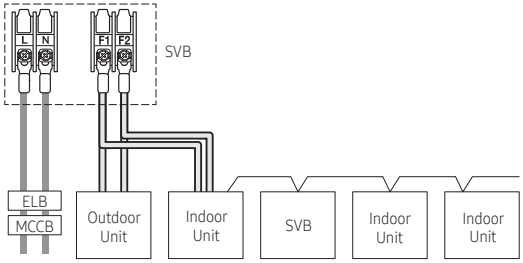
- Supply the 220-240V/208-230V power to L1, L2 (L, N) of SVB separately.
- Connect the communication cable from the outdoor unit to F1, F2 of SVB.
- Power Line and communication line must be connected as shown in drawing.

Case 1



220-240V/208-230V / Single Phase (Supply separately)

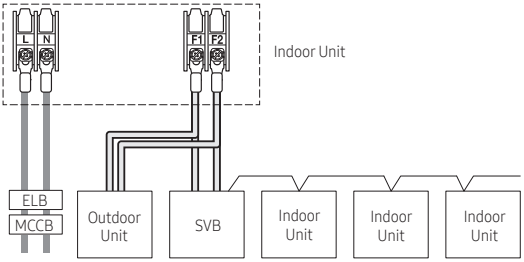
Case 2



220-240V/208-230V / Single Phase (Supply separately)

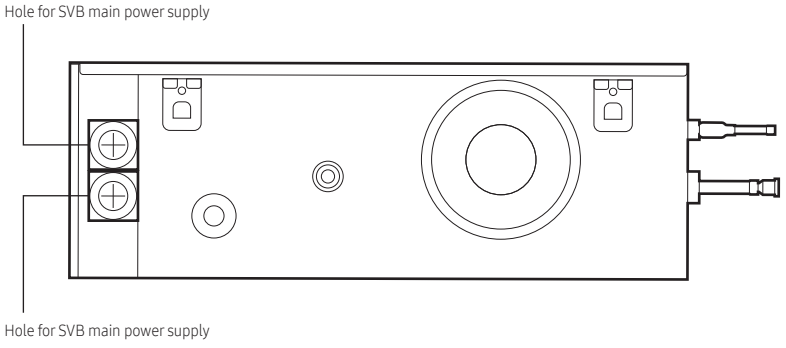
Wiring

Case 3

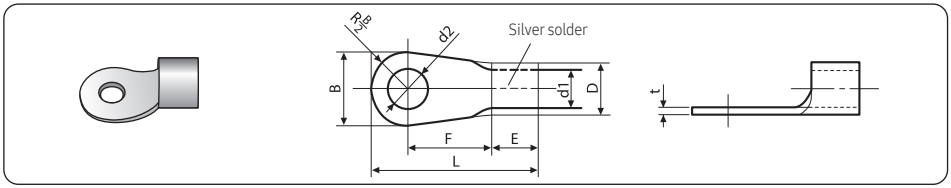


220-240V/208-230V / Single Phase (Supply separately)

- Power line and communication line must be installed as shown in drawing
  ※ Hole size is Ø1.72 inches (43.7 mm)



- Choose the compressed socket based on the cross-section of the connecting wire.



Nominal dimensions for cable [mm² (inch²)]		1.5 (0.002)		2.5 (0.003)		4 (0.006)
Nominal dimensions for screw [mm (inch)]		4 (0.157)	4 (0.157)	4 (0.157)	4 (0.157)	4 (0.157)
B	Standard dimension [mm (inch)]	6.6 (0.259)	8 (0.314)	6.6 (0.259)	8.5 (0.334)	9.5 (0.374)
	Allowance [mm (inch)]	±0.2 (0.007)		±0.2 (0.007)		±0.2 (0.007)
D	Standard dimension [mm (inch)]	3.4 (0.134)		4.2 (0.165)		5.6 (0.220)
	Allowance [mm (inch)]	+0.3 (0.011) -0.2 (-0.007)		+0.3 (0.011) -0.2 (-0.007)		+0.3 (0.011) -0.2 (-0.007)
d1	Standard dimension [mm (inch)]	1.7 (0.066)		2.3 (0.090)		3.4 (0.133)
	Allowance [mm (inch)]	+0.2 (±0.007) 0		+0.2 (±0.007) 0		+0.2 (±0.007) 0
E	Min. [mm (inch)]	4.1 (0.161)		6 (0.236)		6 (0.236)
F	Min. [mm (inch)]	6 (0.236)		6 (0.236)		5 (0.196)
L	Max. [mm (inch)]	16 (0.629)		17.5 (0.688)		20 (0.787)
d2	Standard dimension [mm (inch)]	4.3 (0.169)		4.3 (0.169)		4.3 (0.169)
	Allowance [mm (inch)]	+0.2 (±0.007) 0		+0.2 (±0.007) 0		+0.2 (±0.007) 0
t	Min. [mm (inch)]	0.7 (0.027)		0.8 (0.031)		0.9 (0.035)

Setting SVB address and port

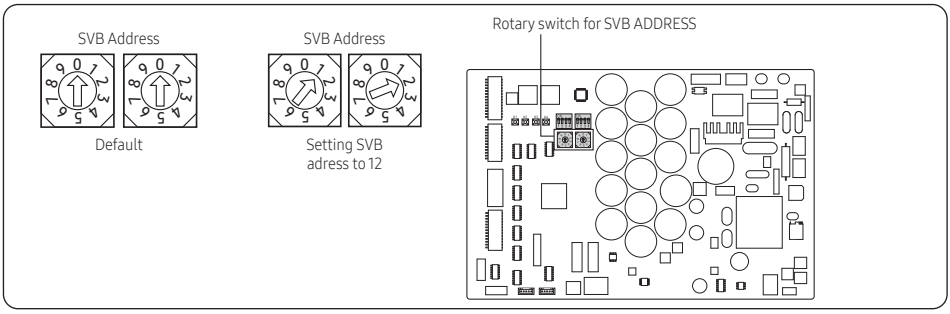
※ When counting the quantity of SVBs while outdoor unit installation, one SVB is one.
However, in the case of V2SOB06HP and V2SOB08HP, one SVB must be counted as two SVBs.
In the case of V2SOB12HP, one SVB must be counted as three SVBs.

Wiring

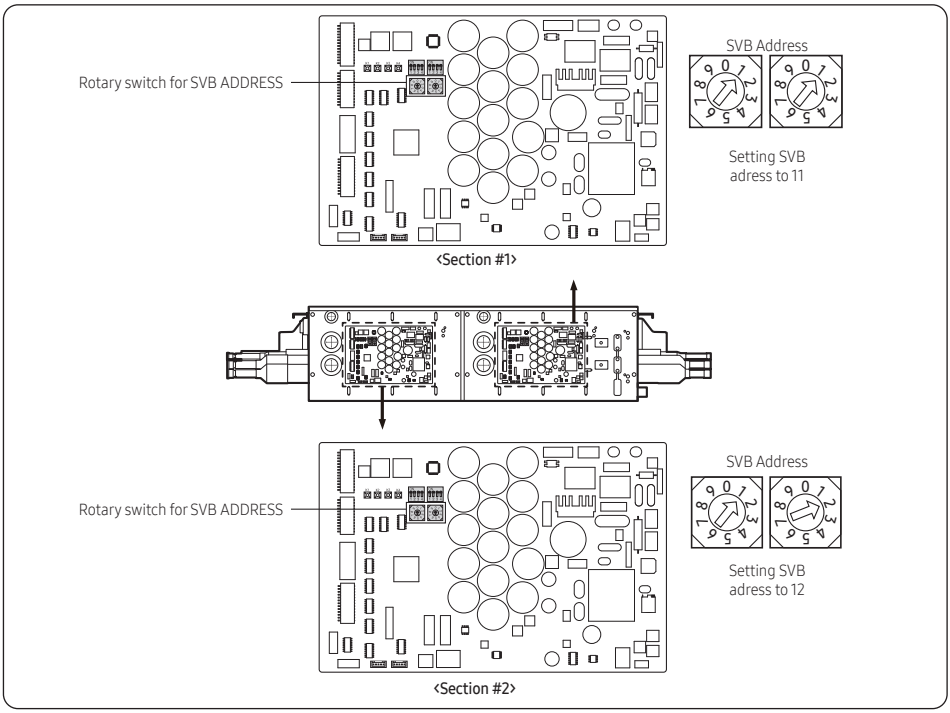
SVB address setting

Set SVB address by rotary switch. The left switch sets the tens digit, and the right switch sets the ones digit.

Example› If you want to set SVB address to 12, set left rotary switch to 1 and set right rotary switch to 2.



※ V2SOB12HP model has three PBAs, and V2SOB08HP & V2SOB06HP models have two PBAs in the control box.
The SVB addresses of the PBAs must be set differently.
Example› If you set SVB addresss of the section #1 PBA to 11, then set the section #2 PBA address to 12.

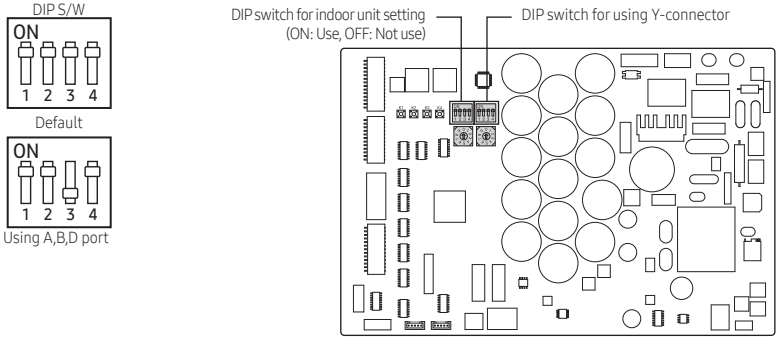


DIP switch setting for using each port

Set using each port (connected to indoor unit) by DIP switch

Example› If you want to connect indoor units at A,B,D port, set DIP switch 1,2,4 to 'ON'

※ If all DIP switches are turned off, the 7SEG will display "----", so please set the DIP switches according to the appropriate port configuration.



DIP switch setting for using Y-connetor

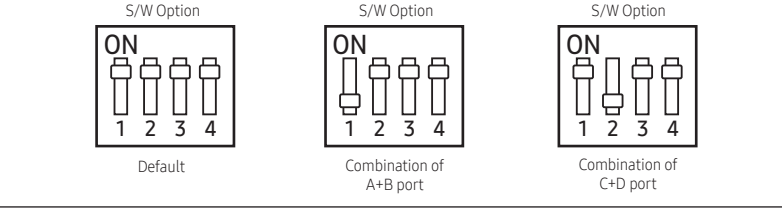
[V2SOB04HP, V2SOB02HP, V2SOB01HP]

When twinning 2 adjacent ports, Y-connectors can only be connected to the port combinations noted below.

Allowed Y-connector port combinations: A + B, C + D ports

Y-connector port combinations that are NOT allowed: B + C port, any non-continuous port (example: A+C)

Set Dip Switch Settings when using Y-connector

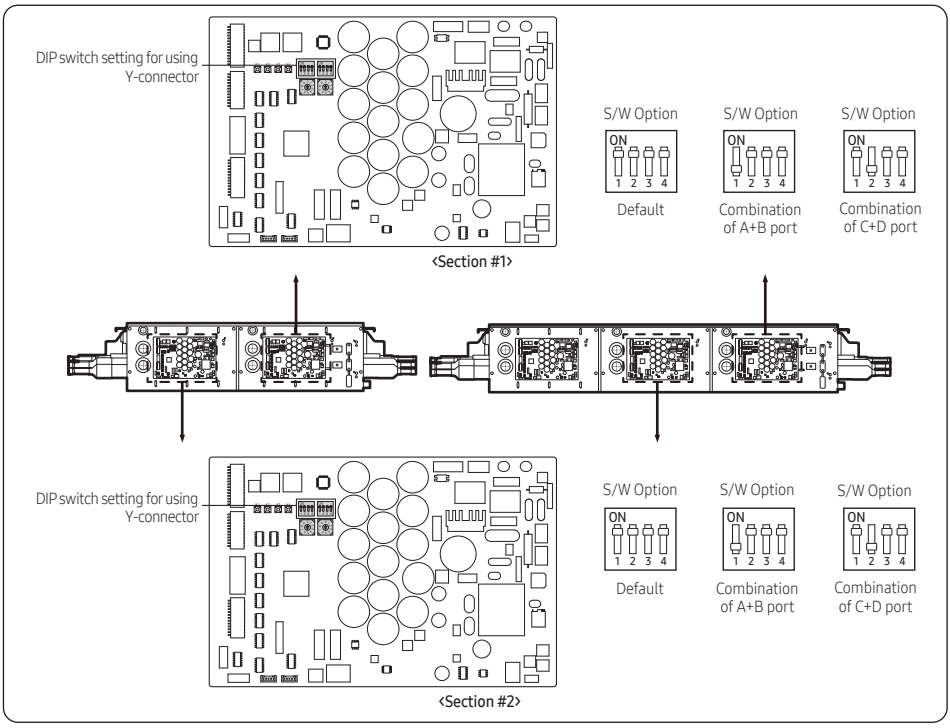


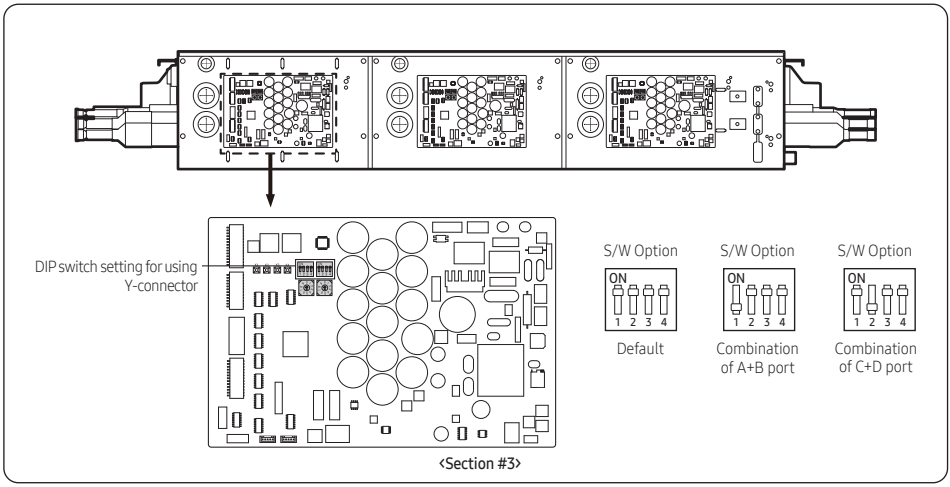
Wiring

[V2SOB12HP, V2SOB08HP, V2SOB06HP]
When twinning 2 adjacent ports, Y-connectors can only be connected to the port combinations noted below.:
[#1-A] + [#1-B] port, [#1-C] + [#1-D] port
[#2-A] + [#2-B] port, [#2-C] + [#2-D] port
[#3-A] + [#3-B] port, [#3-C] + [#3-D] port (only V2SOB12HP Model)

Y-connector port combinations that are NOT allowed: #1 Ports: B + C port, any non-continuous port (example: A+C)
#2 Ports: B + C port, any non-continuous port (example: A+C)
#3 Ports: B + C port, any non-continuous port (example: A+C)
(only V2SOB12HP Model)

Set Dip Switch Settings when using Y-connector




DIP switch setting for using
Y-connector
S/W Option
ON
1 2 3 4
Default
S/W Option
ON
1 2 3 4
Combination
of A+B port
S/W Option
ON
1 2 3 4
Combination
of C+D port

<Section #3>

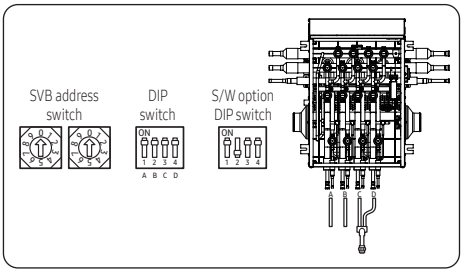
Wiring

Setting the SVB and Pipe Addresses

You can set the SVB address, the SVB ports to use, and the address for each SVB port connected to each indoor unit.

Setting the SVB address and the SVB ports to use

You can set the SVB address and the SVB ports on the SVB PBA.



1 Set the SVB address switch to a value. If two or more SVBs are installed, be sure to set a unique value for each SVB. For the SVB address, you can set a value from 0 to 15.

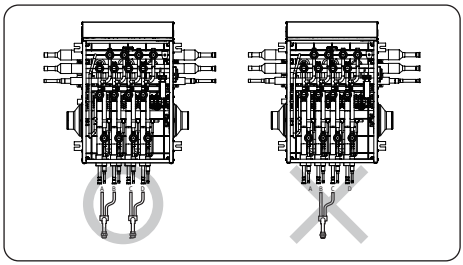
* When counting the quantity of SVBs, one SVB is one. However, for V2SOB06HP and V2SOB08HP, one SVB must be counted as two SVBs, and V2SOB12HP must be counted as three SVBs.

2 For each SVB ports that are connected to an indoor unit through piping, set their DIP switch to ON. For other SVB ports, set their DIP switches to OFF.
You can find the address (A to F) of an SVB port on the indoor unit piping connection.

3 If two SVB ports are connected to an indoor unit through a Y-joint, set the relevant S/W option DIP switch to the settings given in the following table:

S/W option DIP switch No.	ON (Individual connection)	OFF (Shared connection)
1	Each of ports A and B	Both ports A and B
2	Each of ports C and D	Both ports C and D
3	Each of ports E and F	Both ports E and F

- You cannot make a shared connection for the two ports B and C, and D and E at the same time.



4 Set the address of each SVB port that is connected to an indoor unit by taking the procedures in Setting the Pipe Addresses Manually.

Setting the Pipe Addresses Manually

You can use the wired or wireless remote control or the Lennox Service Software to set the pipe addresses for each indoor unit.

Setting by using the wired or wireless remote control (For how to operate the remote control buttons, see the remote control user manual.)

1 Turn on both the indoor unit and the remote control.

2 Enter the "Option setting mode" on the remote control.

3 Set the address of each SVB port that is connected to an indoor unit by referring to the following table. (You can also set the address of each indoor unit.)

NOTE

- Auto setting: refer to 'auto pipe pairing' in outdoor installation manual.

Option	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
Value	0	A: Address setting mode	0: The address of the indoor unit will not be set. 1: The address of the indoor unit will be set.	0 to 9: Hundreds digit of the indoor unit address	0 to 9: Tens digit of the indoor unit address	0 to 9: Units digit of the indoor unit address
Option	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
Value	1	0	0: The RMC address will not be set. 1: The RMC address will be set.	0	0 to F: RMC group channel	0 to F: RMC group address
Option	SEG13	SEG14	SEG15	SEG16	SEG17	SEG18
Value	2	0	0: The SVB address will not be set. 1: The SVB address will be set.	0 to 1: Tens digit of the SVB address	0 to 9: Units digit of the SVB address	A to F: SVB port address
Option	SEG19	SEG20	SEG21	SEG22	SEG23	SEG24
Value	3	0	0	0	0	0

Examples› If the indoor unit whose address is not yet set is connected to port A on the SVB 1, set 0A0000-100000-20101A-300000.

If the indoor unit whose address is set to 9 is connected to port B on the SVB 2, set 0A1009-100000-20102B-300000.

Setting by using Lennox Service Software.

- Set the pipe addresses by using Add-on › Change address on Lennox Service Software. (For more information, see the Lennox Service Software Help.)

SVB address and port setting for indoor unit (for wired remote controller)

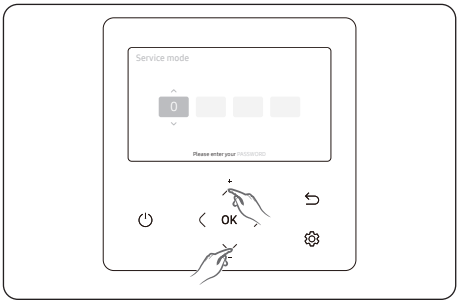
1 Wired remote controller
- Setting for VSTAT04P-1

a Press the ∧ and ∨ buttons at the same time for more than 3 seconds. Then you can enter the password(0202) and press the OK button.

b Assign an indoor unit SVB port address with [Major] General → [Step1] Indoor unit/Ventilator option → [Step2] SVB port → [Step3] SVB address & SVB port.

※ For more information, please refer to the installation manual of VSTAT04P-1

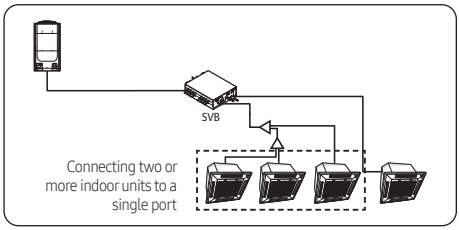
Major	Step1	Step2	Step3	Description
General	Indoor unit/ Ventilator option	SVB port	SVB address	00 to 15
			SVB port	A to D



2 Setting by using Lennox Service Software.
Set the pipe addresses by using Add-on > Change address on Lennox Service Software. (For more information, see the Lennox Service Software Help.)

NOTE

- If two or more indoor units are connected to a single port, switching between cooling and heating mode does not work while in auto mode. It is recommended to select the cooling or heating mode.



Set to Cooling Only Unit

1 Check whether power is supplied or not.
- When the indoor unit is not plugged in, there should be additional power supply in the indoor unit.

2 The panel(display) should be connected to an indoor unit to receive option.

3 Enter mode to set option (※ Detail method of entering option mode refer to indoor unit installation manual)

4 Set the 05 series installation option at SEG3 to '2' like this '052000 - 100000 - 20000 - 30000'.
(The default setting of an indoor unit 05 series installation is '050000 - 100000 - 20000 - 30000')

⚠ CAUTION

- When setting the "Cooling only unit" option, be sure to set the SEG 9 (Hot water heater) of 02 Series installation to "0".
- When "Cooling only unit" option is set, heating operation is not performed when the controller (wireless remote controller, central controller) is set to the heating mode.

Option No. : 05XXXX-1XXXXX-2XXXXX-3XXXXX

Option	SEG1		SEG2		SEG3		SEG4		SEG5		SEG6	
Explanation	PAGE		MODE		Use of Auto Change Over for HR only in Auto mode / Cooling only unit setting		(When setting SEG3) Standard heating temp. Offset		(When setting SEG3) Standard cooling temp. Offset		(When setting SEG3) Standard for mode change Heating → Cooling	
Indication and Details	Indication	Details	Indication	Details	Indication	Details	Indication	Details	Indication	Details	Indication	Details
	0		5		**0**	Follow product option	0	0	0	0	0	1
					1	Use Auto Change Over for HR only	1	0.5	1	0.5	1	1.5
							2	1	2	1	2	2
							3	1.5	3	1.5	3	2.5
					2	Cooling only unit setting	4	2	4	2	4	3
							5	2.5	5	2.5	5	3.5
							6	3	6	3	6	4
							7	3.5	7	3.5	7	4.5

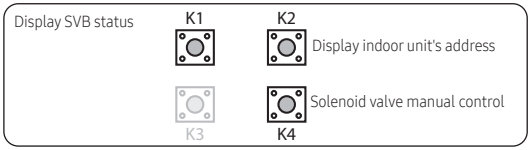
Option	SEG7		SEG8		SEG9		SEG10	
Explanation	PAGE		(When setting SEG3) Standard for mode changing Cooling → Heating mode		(When setting SEG3) Time required for mode change		Compensation option for Long pipe or height diffference between indoor units	
Indication and Details	Indication	Details	Indication	Details	Indication	Details	Indication	Details
	1		0	1	0	5 min.	0	Use default value
			1	1.5	1	7 min.	1	1) Height difference[1] is more than 98.42 ft (30 m) or 2) Distance[2] is longer than 360.89 ft (110 m)
			2	2	2	9 min.		
			3	2.5	3	11 min.		
			4	3	4	13 min.	2	1) Height difference[1] is 49.21~98.42 ft (15~30 m) or 2) Distance[2] is 164.04~360.89 ft (50~110 m)
			5	3.5	5	15 min.		
			6	4	6	20 min.		
			7	4.5	7	30 min.		

(*1) Height difference : The difference of the height between the corresponding indoor uint and the indoor unit installed at the lowest place. For example, When the indoor unit is installed 40m higher than the indoor unit installed at the lowest place, select the option "1".

(*2) Distance : The difference between the pipe length of the indoor unit istalled at farthest place from an outdoor unit and the pipe length of the corresponding indoor unit from an outdoor unit.
For example, when the farthest pipe length is 100 m and the corresponding indoor unit is 40 m away from an outdoor unit, select the option "2". (100 - 40 = 60m)

Key operation

※ V2SOB12HP model has three PBAs, and V2SOB08HP & V2SOB06HP models have two PBAs in the control box.
There are two or three sections in the SVB. So, key operation must be set differently for each section.



Wiring

K1 (Pushed time)	Display Contents	Display segment				Remarks
		1	2	3	4	
1	SVB address	0	Blank	0	0	SVB address 0
			Blank	0	1	SVB address 1
			Blank	0	2	SVB address 2
			Blank	1	1	SVB address 11
			Blank	1	5	SVB address 15
2	Mode switching EEV1 step	1	4	8	0	Ex) 480 steps
3	Mode switching EEV2 step	2	4	8	0	Ex) 480 steps
4	Mode switching EEV3 step	3	4	8	0	Ex) 480 steps
5	Mode switching EEV4 step	4	4	8	0	Ex) 480 steps
6	Mode switching EEV5 step	5	4	8	0	Ex) 480 steps
7	Mode switching EEV6 step	6	4	8	0	Ex) 480 steps
8	Subcooler EEV step	7	4	8	0	Ex) 480 steps
9	Subcooler-in sensor temperature	8	-	0	1	Ex) 33.8 °F (-1 °C)
			Blank	1	0	Ex) 50 °F (10 °C)
10	Subcooler-out sensor temperature	9	-	0	1	Ex) 33.8 °F (-1 °C)
			Blank	1	0	Ex) 50 °F (10 °C)
11	On/Off for solenoid valve A_C, A_H	A	-	• ※_C : Cooling solenid valve of port ※ ※_H : Heating solenid valve of port ※ • 3rd segment : Cooling solenid valve On : 1 / Off : 0 • 4th segment : Heating solenoid valve On : 1 / Off : 0		
12	On/Off for solenoid valve B_C, B_H	B				
13	On/Off for solenoid valve C_C, C_H	C				
14	On/Off for solenoid valve D_C, D_H	D				
15	On/Off for solenoid valve E_C, E_H	E				
16	On/Off for solenoid valve F_C, F_H	F				
17	On/Off for liquid by pass solenoid valve	G	Blank	o	n	Ex) On
			o	F	F	Ex) Off
18	Version	8	A	2	0	Ex) October 20, 2008 → 8A 20
19	End of K1 display					

K2 (Pushed time)	Display Contents	Display segment				Remarks
		1	2	3	4	
1	Indoor unit main address for matching with port A	A	-	0	0	Indoor unit main address of port A : 0
2	Indoor unit main address for matching with port B	B	-	0	3	Indoor unit main address of port B : 3
3	Indoor unit main address for matching with port C	C	-	0	6	Indoor unit main address of port C : 6
4	Indoor unit main address for matching with port D	D	-	0	9	Indoor unit main address of port D : 9
5	Indoor unit main address for matching with port E	E	-	1	1	Indoor unit main address of port E : 11
6	Indoor unit main address for matching with port F	F	-	1	5	Indoor unit main address of port F : 15
7	End of K2 display					

※ When two or more indoor units are connected to one port, Indoor unit addresses are sequentially displayed at 2-second intervals from the lowest address indoor unit. (After displaying all, display the first indoor unit again)

K4 Switch (Solenoid Valve Manual Control)

- According to the push time of K4 Switch, A_C, A_H, ..., F_C, F_H, Liquid bypass solenoid valve opens in order.
- In Solenoid Valve Manual Control mode, valve operates by K4 Push time irrespective of indoor operation mode.
- In Solenoid Valve Manual Control mode, push K1 Switch makes DATA DISPLAY MODE to start and valves will operate following indoor operation mode.

K4 (Push time)	Display Contents	Display segment			
		1	2	3	4
1	A_C sol valve ON, other sol valve Off	P	A	1	0
2	A_H sol valve ON, other sol valve Off	P	A	0	1
3	B_C sol valve ON, other sol va lve Off	P	B	1	0
4	B_H sol valve ON, other sol valve Off	P	B	0	1
5	C_C sol valve ON, other sol valve Off	P	C	1	0
6	C_H sol valve ON, other sol valve Off	P	C	0	1
7	D_C sol valve ON, other sol valve Off	P	D	1	0
8	D_H sol valve ON, other sol valve Off	P	D	0	1
9	E_C sol valve ON, other sol valve Off	P	E	1	0
10	E_H sol valve ON, other sol valve Off	P	E	0	1
11	F_C sol valve ON, other sol valve Off	P	F	1	0
12	F_H sol valve ON, other sol valve Off	P	F	0	1
13	Liquid b/p sol valve ON, other sol valve Off	P	S	1	0
14	sol valve Manual Control MODE end	P	Communication DATA Display		

SVB Installation Checklist

	Item	Check
1	If the gas leaking test has been completed or not.	
2	If SVB has been fixed securely enough to avoid the danger of vibration and falling or not.	
3	The Insulation condition of the pipe. (Refrigerant pipe, Pipe connection.)	
4	If the R-32 refrigerant has been charged or not. If the subsidiary unit for R-32 has been used or not.	
5	Checking malfunction of the wire and the communication line.	
6	If the SVB frame has been installed upside-down or not.	
7	If the wire earthing work has been done or not.	
8	If the space between sidewalls, ceiling concrete, and the ceiling Tex has been secured enough or not to install the SVB frame.	
9	If the supporting tool of the SVB pipe has been safely placed in 1.5m intervals or not.	
10	If the prescribed wire has been used or not.	
11	If the supplied power is proper or not.	
12	If the additional refrigerant is proper or not. (Refer to the installation manual of the HR outdoor unit.)	

Memo