



Toshiba RAS-13BKV-E Service Manual

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SERVICE MANUAL

TOSHIBA

Indoor Unit

RAS-07BKV-E

RAS-10BKV-E

RAS-13BKV-E

FILE NO. SVM-16003-2

AIR-CONDITI

SPLIT TYPE

Outdoor Unit

RAS-07BAV-E

RAS-10BAV-E

RAS-13BAV-E

Revised on April, 2016

TOSHIBA

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(315 pages)

[Air Conditioner Toshiba RAS-13BAV-E Owner's Manual](#)

(84 pages)

[Split air conditioner Toshiba RAS-05 Installation Manual](#)

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R32 inverter (148 pages)

[Air Conditioner Toshiba RAS-07BKVG-E Service Manual](#)

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Summary of Contents for Toshiba RAS-13BKV-E

[Page 1: Service Manual](#)

FILE NO. SVM-16003-2 SERVICE MANUAL SPLIT TYPE Indoor Unit Outdoor Unit RAS-07BKV-E
RAS-07BAV-E RAS-10BKV-E RAS-10BAV-E RAS-13BKV-E RAS-13BAV-E Revised on April, 201 6...

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[Page 3: Safety Precautions](#)

FILE NO. SVM-16003 1. SAFETY PRECAUTIONS For general public use Power supply cord of outdoor unit shall be more than 1.5 mm (H07RN-F or 60245IEC66) polychloroprene sheathed flexible cord. • Read this “SAFETY PRECAUTIONS” carefully before servicing. • The precautions described below include the important items regarding safety. Observe them without fail. •...

[Page 4](#) FILE NO. SVM-16003 • DO NOT INSTALL NEAR CONCENTRATIONS OF COMBUSTIBLE GAS OR GAS VAPORS. FAILURE TO FOLLOW THIS INSTRUCTION CAN RESULT IN FIRE OR EXPLOSION. • TO PREVENT THE INDOOR UNIT FROM OVERHEATING AND CAUSING A FIRE HAZARD, PLACE THE UNIT WELL AWAY (MORE THAN 2 M) FROM HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTORS, FURNACE, STOVES, ETC.

[Page 5: Specifications](#)

FILE NO. SVM-16003 2. SPECIFICATIONS 2-1. Specification RAS-07BKV-E Unit model Indoor RAS -10BKV-E RAS-07BAV-E RAS -10 BAV-E Outdoor 2.00 2.50 Cooling capacity (kW) 0.45-2.50 Cooling capacity range (kW) 0.65-3.00 2.50 Heating capacity (kW) 3.20 Heating capacity range (kW) 0.50-3.10 0.70-3.90 Power supply 1Ph/50Hz/220-240V Electric...

[Page 6](#) (Cooling / Heating) (dB-A) 33/34 (Cooling / Heating) (dB-A) 24/24 Outdoor (Cooling / Heating) (dB-A) 48/50 Indoor unit Unit model RAS-13BKV-E Dimension Height (mm) Width (mm) Depth (mm) Net weight (kg) Fan motor output Air flow rate (Cooling / Heating) 10.0/10.3...

[Page 7: Operation Characteristic Curve](#)

FILE NO. SVM-16003 2-2. Operation Characteristic Curve <Cooling> <Heating> 9.00 8.00 7.00 RAS-13BAV-E RAS-13BAV-E 6.00 RAS-10BAV-E 5.00 RAS-10BAV-E 4.00 3.00 RAS-07BAV-E Conditions Conditions RAS-07BAV-E Indoor : DB 27 C/WB 19 Indoor : DB 20 C/WB 15 2.00 Outdoor : DB 35 C/WB 24 Outdoor : DB 7 C/WB 6...

[Page 8: Refrigerant R410A](#)

FILE NO. SVM-16003 3. REFRIGERANT R410A This air conditioner adopts the new refrigerant HFC 6. When an air conditioning system charged with a (R410A) which does not damage the ozone layer. large volume of refrigerant is installed in a small room, it is necessary to exercise care so that, The working pressure of the new refrigerant R410A even when refrigerant leaks, its concentration...

[Page 9](#) FILE NO. SVM-16003 Table 3-2-1 Thicknesses of annealed copper pipes Thickness (mm) Nominal diameter Outer diameter (mm) R410A 6.35 0.80 0.80 9.52 0.80 0.80 12.70 0.80 0.80 15.88 1.00 1.00 2. Joints For copper pipes, flare joints or socket joints are used. Prior to use, be sure to remove all contaminants. a) Flare Joints Flare joints used to connect the copper pipes cannot be used for pipings whose outer diameter exceeds 20 mm.

[Page 10](#) FILE NO. SVM-16003 d) Flare Processing Make certain that a clamp bar and copper pipe have been cleaned. ØD By means of the clamp bar, perform the flare processing correctly. Use either a flare tool for R410A or conventional flare tool. Flare processing dimensions differ according to the type of flare tool.

[Page 11](#) FILE NO. SVM-16003 Table 3-2-6 Flare and flare nut dimensions for R22 Dimension (mm) Nominal Outer diameter Thickness Flare nut width diameter (mm) (mm) (mm) 6.35 9.52 13.0 13.5 12.70 16.2 16.0 12.9 15.88 19.7 19.0 16.0 19.05 23.3 24.0 19.2 Fig.

[Page 12](#) FILE NO. SVM-16003 3-3. Tools 3-3-1. Required Tools The service port diameter of packed valve of the outdoor unit in the air-water heat pump using R410A is changed to prevent mixing of other refrigerant. To reinforce the pressure-resisting strength, flare processing dimensions and opposite side dimension of flare nut (For Ø12.7 copper pipe) of the refrigerant piping are lengthened.

[Page 13: Recharging Of Refrigerant](#)

FILE NO. SVM-16003 3-4. Recharging of Refrigerant When it is necessary to recharge refrigerant, charge the specified amount of new refrigerant according to the following steps. Recover the refrigerant, and check no refrigerant remains in the equipment. When the compound gauge's pointer has indicated -0.1 Mpa (-76 cmHg), place the handle Low in the fully closed position, and turn off the vacuum pump's power switch.

[Page 14: Brazing Of Pipes](#)

FILE NO. SVM-16003 1. Be sure to make setting so that liquid can be charged. 2. When using a cylinder equipped with a siphon, liquid can be charged without turning it upside down. It is necessary for charging refrigerant under condition of liquid because R410A is mixed type of refrigerant. Accordingly, when charging refrigerant from the refrigerant cylinder to the equipment, charge it turning the cylinder upside down if cylinder is not equipped with siphon.

[Page 15](#) FILE NO. SVM-16003 2. Characteristics required for flux 3-5-3. Brazing • Activated temperature of flux coincides with the As brazing work requires sophisticated techniques, brazing temperature. experiences based upon a theoretical knowledge, it must be performed by a person qualified. •...

[Page 16: Construction Views](#)

FILE NO. SVM-16003 4. CONSTRUCTION VIEWS 4-1. Indoor Unit Air Inlet Air Filter Front Panel Grille Inlet Back Body Hertz Exchanger Air Outlet Knock Out System Knock Out System 66.5 55 66.5 Installation plate hanger 17.5 Wireless remote controller 64.5 Remote controller holder Drain hose (0.4m) Installation plate hanger...

[Page 17](#) FILE NO. SVM-16003 4-2. Outdoor Unit - 17 -...

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[Page 19: Specifications Of Electrical Parts](#)

FILE NO. SVM-16003 6. SPECIFICATIONS OF ELECTRICAL PARTS 6-1. Indoor Unit Parts name Type Specifications Fan motor (for indoor) SJM-240-25 AC 220~240V, 25W Room temp. sensor (TA-sensor) (-) 10kΩ at 25°C Heat exchanger temp. sensor (TC-sensor) (-) 10kΩ...

[Page 20: Refrigerant Cycle Diagram](#)

FILE NO. SVM-16003 7. REFRIGERANT CYCLE DIAGRAM 7-1. Refrigerant Cycle Diagram RAS-07BKV-E / RAS-07BAV-E Temp. measurement INDOOR UNIT Indoor heat exchanger Cross flow fan Max. : 15m Min. : 2m Pressure measurement Chargeless : 15m Deoxidized copper pipe Gauge attaching port Outer dia.

[Page 21](#) FILE NO. SVM-16003 RAS-10BKV-E / RAS-10BAV-E RAS-13BKV-E / RAS-13BAV-E Temp. measurement INDOOR UNIT Indoor heat exchanger Cross flow fan Max. : 15m Min. : 2m Pressure measurement Chargeless : 15m Deoxidized copper pipe Gauge attaching port Outer dia. : 6.35mm Vacuum pump connecting port Thickness : 0.8mm...

[Page 22](#) FILE NO. SVM-16003 7-2. Operation Data <Cooling> Temperature Heat exchanger Model name Standard Indoor Outdoor Compressor condition(°C) pipe temp. RAS- pressure fan mode fan mode revolution Indoor Outdoor P (MPa) T1 (°C) T2 (°C) (rps) High 27/19 35/- 0.9 to 1.1 47 to 48 High 07BKV-E...

[Page 23: Control Block Diagram](#)

FILE NO. SVM-16003 8. CONTROL BLOCK DIAGRAM 8-1. Indoor Unit Indoor Unit Control Panel M.C.U Functions Operation Heat Exchanger Sensor • Louver Control Display Timer • 3-minute Delay at Restart for Compressor Temperature Sensor Display • Motor Revolution Control Infrared Rays Signal Receiver •...

[Page 24](#) FILE NO. SVM-16003 8-2. Outdoor Unit (Inverter Assembly) - 24 -...

[Page 25: Operation Description](#)

FILE NO. SVM-16003-1 9. OPERATION DESCRIPTION 9-1. Outline of Air Conditioner Control • Detection of inverter input current and current release operation This air conditioner is a capacity-variable type air • Over-current detection and prevention operation conditioner. Its system can control the speed of to IGBT module (Compressor stop function) compressor motor according to load.

[Page 26](#) FILE NO. SVM-16003 9-2. Operation Description 1. Basic operation27
1. Operation control27 2. Cooling/Heating operation28 3. AUTO operation 28 4. DRY operation28 2. Indoor fan motor control 29 3. Outdoor fan motor control 31 4.

[Page 27: Basic Operation](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 1. Basic 1. Operation control operation Receiving the user's operation condition setup, the operation statuses of indoor/outdoor units are controlled. 1) The operation conditions are selected by the remote controller as shown in the below. 2) A signal is sent by ON button of the remote controller.

[Page 28: Cooling/Heating Operation](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 1. Basic 2. Cooling/Heating operation operation The operations are performed in the following parts by controls according to cooling/heating conditions. 1) Receiving the operation ON signal of the remote controller, the cooling or heating operation signal starts being transferred from the indoor controller to the outdoor unit.

[Page 29: Indoor Fan Motor Control](#)

1080 1080 1110 1110 1080 1080 1110 1110 1050 1030 1080 1060 1000 1030 SUL/SL-RAS-13BKV-E Mode Fan speed Cooling Heating Fan speed Air flow rate Fan speed Air flow rate level Cool Heat (rpm) /hr (rpm) /hr 1200 1200...

[Page 30](#) FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 2. Indoor fan <In heating operation> 1) When setting the fan speed to L, motor control L+, M, M+ or H on the remote controller, the operation is performed with the constant speed HEAT ON shown in Fig.

[Page 31: Outdoor Fan Motor Control](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 3. Outdoor fan The blowing air volume at the outdoor unit side is controlled. 1) The operation command sent motor control from the remote controller is Receiving the operation command from the controller of processed by the indoor unit indoor unit, the controller of outdoor unit controls fan speed.

[Page 32: Capacity Control](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 4. Capacity The cooling or heating capacity depending on the load is 1) The difference between set control adjusted. temperature on remote controller (Ts) and room temperature (Ta) According to difference between the setup value of tempera- is calculated.

[Page 33: Release Protective Control By Temperature Of Indoor Heat Exchanger](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 6. Release protective <In cooling/dry operation> 1) When temperature of the indoor control by temperature of indoor heat the compressor speed is In cooling/dry operation, the sensor of indoor heat exchanger...

[Page 34: Defrost Control \(Only In Heating Operation\)](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 7. Defrost control (This function removes frost adhered to the outdoor The necessity of defrost operation is (Only in heating heat exchanger.) detected by the outdoor heat exchanger operation) temperature.

[Page 35: Louver Control](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 8. Louver control This function controls the air direction of the indoor unit. • The position is automatically controlled according to the operation 1) Louver position mode (COOL/HEAT). • The set louver position is stored in memory by the microcomputer, and the louver returns to the stored position when the next operation is performed.

[Page 36: Eco Operation](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description When pressing [ECO] button on the remote controller, a 9. ECO <Cooling operation> Economic operation is performed. operation 1) The control target temperature <Cooling operation> increase 0.5°C per hour up to 2°C This function operates the air conditioner with the difference starting from the set temperature between the set and the room temperature as shown in the...

[Page 37: Temporary Operation](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 10. Temporary Pressing [RESET] button starts the temporary operation 1) When pressing [RESET] button, the operation of [AUTO] operation. When keeping [RESET] button pressed for 10 seconds or more, the temporary 2) When keeping [RESET] button pressed [COOL] operation is performed.

[Page 38: Pulse Modulating Valve \(P.M.v.\) Control](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 12. Pulse This function controls throttle amount of the 1) When starting the operation, move the Modulating refrigerant in the refrigerating cycle. valve once until it fits to the stopper. valve (P.M.V.) (Initialize) According to operating status of the air conditioner,...

[Page 39: Self-Cleaning Function](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 13. Self-Cleaning 1. Purpose The Self-Cleaning operation is to minimize the function growth of mold, bacteria etc. by running the fan and drying so as to keep the inside of the air conditioner clean. Unit now performing cooling or dry operation Self-Cleaning operation When the cooling or dry operation shuts...

[Page 40: Remote-A Or B Selection](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description • Self-Cleaning diagram 13. Self-Cleaning function Operation display FCU fan rpm is depend on presetting. (500RPM) FCU louver OPEN CLOSE OPEN (12.7°) ON or OFF ON or OFF Timer display depend on presetting of timer function.

[Page 41: Hi-Power Mode](#)

FILE NO. SVM-16003 Item Operation flow and applicable data, etc. Description 15. Hi-POWER ([Hi-POWER] button on the remote controller Mode is pressed) When [Hi-POWER] button is pressed while the indoor unit is in Auto, Cooling or Heating operation, Hi- POWER mark is indicated on the display of the remote controller and the unit operates as follows.

[Page 42: Auto Restart Function](#)

FILE NO. SVM-16003 9-3. Auto Restart Function This indoor unit is equipped with an automatic restarting function which allows the unit to restart operating with the set operating conditions in the event of a power supply being accidentally shut down. The operation will resume without warning three minutes after power is restored.

[Page 43: How To Cancel The Auto Restart Function](#)

FILE NO. SVM-16003 9-3-2. How to Cancel the Auto Restart Function To cancel auto restart function, proceed as follows : Repeat the setting procedure : the unit receives the signal and beeps three times. The unit will be required to be turned on with the remote controller after the main power supply is turned off. •...

[Page 44](#) FILE NO. SVM-16003 5. ECO OPERATION To automatically control room to save energy (except in DRY and FAN ONLY mode) Press : Start and stop the operation. Note: Cooling operation; the set temperature will increase automatically 1 degree/ hour for 2 hours (maximum

2 degrees increase). For heating operation the set temperature will decrease.

[Page 45: Remote Controller And Its Functions](#)

FILE NO. SVM-16003-2 9-4. Remote Controller and Its Functions 9-4-1. Parts Name of Remote Controller Infrared signal emitter Start/Stop button Mode select button (MODE) Temperature button (TEMP) Fan speed button (FAN) Swing louver button (SWING) Set louver button (FIX) Off timer button (OFF) High power button (Hi-POWER) Economy button (ECO) Clear button (CLEAR)

[Page 46: Name And Functions Of Indications On Remote Controller](#)

FILE NO. SVM-16003-2 DISPLAY LAMP BRIGHTNESS ADJUSTMENT To decrease the display lamp brightness or turn it off. 1. Press and hold for 3 seconds until brightness level () is shown on remote controller display. to rise or decrease the brightness in 4 levels. 2.

[Page 47: Installation Procedure](#)

FILE NO. SVM-16003 10. INSTALLATION PROCEDURE 10-1. Installation Diagram of Indoor and Outdoor Units Hook For the rear left and left piping Installation plate Wall Insert the cushion between the indoor unit and wall, and tilt the indoor unit for better operation.

[Page 48](#) FILE NO. SVM-16003 10-2. Installation 10-2-1. Optional installation parts Part Parts name Q'ty Code Refrigerant piping Liquid side : \varnothing 6.35 mm each : \varnothing 9.52 mm Gas side Pipe insulating material (polyethylene foam, 6 mm thick) Putty, PVC tapes each <Fixing bolt arrangement of outdoor unit>...

[Page 49](#) FILE NO. SVM-16003 10-2-2. Accessory and installation parts Part Part Part Part name (Q'ty) Part name (Q'ty) Part name (Q'ty) Installation plate x 1 Remote control holder x 1 Drain nipple* x 1 Mounting screw \varnothing 4 x 25 s x 6 Wireless remote control x 1 Flat head wood screw \varnothing 3.1 x 16 s x 2...

[Page 50](#) FILE NO. SVM-16003 10-2-3. Installation/Service Tools Changes in the product and components In the case of an air conditioner using R410A, in order to prevent any other refrigerant from being charged accidentally, the service port diameter of the outdoor unit control valve (3 way valve) has been changed. (1/2 UNF 20 threads per inch) •...

[Page 51](#) FILE NO. SVM-16003 10-3. Indoor Unit 10-3-2. Cutting a hole and mounting installation 10-3-1. Installation place <Cutting a hole> • A place which provides the spaces around the indoor When installing the refrigerant pipes from the rear. unit as shown in the diagram •...

[Page 52](#) FILE NO. SVM-16003 <When the installation plate is directly mounted on 10-3-3. Piping and drain hose installation the wall> <Piping and Drain Hose Forming> 1. Securely fit the installation plate onto the wall by * Since dewing results in a machine trouble, make screwing it in the upper and lower parts to hook up sure to insulate both the connecting pipes.

[Page 53](#) FILE NO. SVM-16003 <How to fix the Drain Cap> <Left-hand connection with piping> 1) Insert hexagon wrench (4 mm) in a center head. Bend the connecting pipe so that it is laid within 43 mm above the wall surface. If the connecting pipe is laid exceeding 43 mm above the wall surface, the indoor unit may unstably be set on the wall.

[Page 54](#) FILE NO. SVM-16003 10-3-4. Indoor unit fixing 10-3-5. Drainage 1. Pass the pipe through the hole in the wall, and hook 1. Run the drain hose sloped downwards. the indoor unit on the installation plate at the upper hooks. NOTE 2.

[Page 55](#) FILE NO. SVM-16003 10-4. Outdoor Unit 4. Installation in the following places may result in trouble. 10-4-1. Installation place Do not install the unit in such places. • A place which provides the spaces around the • A place full of machine oil. outdoor unit as shown in the left diagram.

[Page 56](#) FILE NO. SVM-16003 <Tightening connection> AIR PURGE acuate the air in the connecting pipes and in the Align the centers of the connecting pipes and tighten indoor unit using a v acuum pump Do not use the the flare n ut as f ar as possib le with y...

[Page 57](#) FILE NO. SVM-16003 CAUTION • KEEP IMPORTANT 5 POINTS FOR PIPING WORK (1) Take away dust and moisture (Inside of the connecting pipes.) (2) Tight connection (between

pipes and unit) (3) Evacuate the air in the connecting pipes using VACUUM PUMP. (4) Check gas leak (connected points) (5) Be save to fully open the packed valves before operation.

[Page 58: Wiring Connection](#)

The power supply can be selected to connect to indoor unit or outdoor unit. Choose proper way and connect the power supply and connecting cable by follow the instruction as following. Model RAS-07BKV-E RAS-10BKV-E RAS-13BKV-E Power source 50Hz, 220 – 240 V Single phase Maximum running current 5.0A 6.7A...

[Page 59](#) FILE NO. SVM-16003 10-5-2. Power Supply and Connecting Cable Connection Power Supply Input at Indoor Unit Terminal Block (Recommend) Indoor Unit Outdoor Unit Terminal block Power supply cable Stripping length of the power Power supply cable connect to L N supply cable Terminal block (L N 1 2 3) Earth line...

[Page 60: Power Supply Input Wiring Diagram](#)

FILE NO. SVM-16003 10-5-3. Power supply input wiring diagram Power supply input at Indoor unit Terminal Block (Recommend) Indoor Terminal Block Power supply input CHASSIS INDOOR UNIT OUTDOOR UNIT Outdoor Terminal Block CHASSIS EARTH Power supply input at Outdoor unit Terminal Block (Optional) Indoor Terminal Block...

[Page 61](#) FILE NO. SVM-16003 10-6. Others NOTE : 1. Repeat above step to reset Remote 10-6-1 . Gas leak test Control to be A. 2. Remote Control A has not "A" display. 3. Default setting of Remote Control from Check places for factory is A.

[Page 62: How To Diagnose The Trouble](#)

FILE NO. SVM-16003 11. HOW TO DIAGNOSE THE TROUBLE The pulse motor circuits are mounted to both indoor and outdoor units. Therefore, diagnose troubles according to the trouble diagnosis procedure as described below. (Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.) Table 11-1 Troubleshooting Procedure...

[Page 63](#) FILE NO. SVM-16003 CAUTION A high voltage (equivalent to the supply voltage) is also energized to ground through the sensors, PMV and other low-voltage circuits. The sensor leads and other wires are covered with insulated tubes for protection. Nevertheless, care must be taken to ensure that these wires are not pinched.

[Page 64: First Confirmation](#)

FILE NO. SVM-16003 11-1. First Confirmation 11-1-1. Confirmation of Power Supply Confirm that the power breaker operates (ON) normally. 11-1-2. Confirmation of Power Voltage Confirm that power voltage is AC 220-230-240 ± 10%. If power voltage is not in this range, the unit may not operate normally. 11-1-3.

[Page 65: Primary Judgment](#)

FILE NO. SVM-16003 11-2. Primary Judgment To diagnose the troubles, use the following methods. 1) Judgment by flashing LED of indoor unit 2) Self-diagnosis by service check remote controller 3) Judgment of trouble by every symptom Firstly use the method 1) for diagnosis. Then, use the method 2) or 3) to diagnose the details of troubles. 11-3.

[Page 66](#) FILE NO. SVM-16003 11-4. Self-Diagnosis by Remote Controller (Check Code) 1. If the lamps are indicated as shown B to E in Table 11-3-1, execute the self-diagnosis by the remote controller. 2. When the remote controller is set to the service mode, the indoor controller diagnoses the operation condi- tion and indicates the information of the self-diagnosis on the display of the remote controller with the check codes.

[Page 67](#) FILE NO. SVM-16003 11-4-2 Caution at Servicing 1. After using the service mode of remote controller finished, press the [] button to reset the remote controller to normal function. 2. After finished the diagnosis by the remote controller, turn OFF power supply and turn its ON again to reset the air conditioner to normal operation.

[Page 68](#) FILE NO. SVM-16003 Block distinction Operation of diagnosis function Action and Judgment Check Check Display flashing Block Cause of operation conditioner code code error status Serial signal 1) Defective wiring of the Indoor unit Flashes when 1) to 3) The outdoor unit

never and connecting connecting cable or operates...

[Page 69](#) FILE NO. SVM-16003 Block distinction Operation of diagnosis function Action and Judgment Check Check Display flashing Block Cause of operation conditioner code code error status Outdoor P.C. Current on inverter circuit All OFF Flashes after 1. Remove connecting lead wire of the board is over limit in short time.

[Page 70](#) FILE NO. SVM-16003 Block distinction Operation of diagnosis function Action and Judgment Check Check Display flashing Block Cause of operation conditioner code code error status Compressor drive output error. All OFF Flashes after 1. Check installation conditions such as (Relation of voltage, current error is detected packed valve opening, refrigerant 8 times*.

[Page 71](#) FILE NO. SVM-16003 Block distinction Operation of diagnosis function Action and Judgment Check Check Display Block Cause of operation conditioner code code flashing error status Compressor does not rotate. All OFF Flashes after 1. Remove connecting lead wire of the Because of missed wiring, error is detected compressor, and operate again.

[Page 72](#) FILE NO. SVM-16003 Block distinction Operation of diagnosis function Action and Judgment Check Check Display Block Cause of operation conditioner code code flashing error status Return signal of the outdoor Indoor unit Flashes when 1. . Check power supply (Rate +10%) operates error is detected unit has been sent when...

[Page 73: Judgment Of Trouble By Every Symptom](#)

FILE NO. SVM-16003 11-5. Judgment of Trouble by Every Symptom 11-5-1. Indoor Unit (Including Remote Controller) (1) Power is not turned on (Does not operate entirely) <Primary check> 1. Is the supply voltage normal? 2. Is the normal voltage provided to the outdoor unit? 3.

[Page 74](#) FILE NO. SVM-16003 (2) Power is not turned on though Indoor P.C. board is replaced <Confirmation procedure> Turn on power supply. Return the wiring of the power relay is returned to Is it wired as shown in Figure below? Does operation lamp flash? the normal procedure.

[Page 75](#) FILE NO. SVM-16003 (3) Only the indoor motor fan does not operate <Primary check> 1. Is it possible to detect the power supply voltage (AC220-240V) between on the terminal block? 2. Does the indoor fan motor operate in cooling operation? (In heating operation, the indoor fan motor does not operate for approximately 10 minutes after it is turned on, to prevent a cold air from blowing in.) Shut off the...

[Page 76](#) FILE NO. SVM-16003 (For AC fan motor) <Inspection procedure> 1. Remove the front panel. (Remove 2 screws.) 2. Remove the cover of the fan motor lead wires. 3. Check AC voltage with CN10 connector while the fan motor is rotating. NOTE : •...

[Page 77](#) FILE NO. SVM-16003 (4) Troubleshooting for remote controller <Primary check> Check that A or B selected on the main unit is matched with A or B selected on the remote controller. There is no beep from the indoor unit Push the [] button.

[Page 78](#) FILE NO. SVM-16003 11-5-2. Wiring Failure (Interconnecting and Serial Signal Wire) (1) Outdoor unit does not operate 1) Is the voltage between of the indoor terminal block varied? Confirm that transmission from indoor unit to outdoor unit is correctly performed based upon the follow- ing diagram.

[Page 79](#) FILE NO. SVM-16003 11-6. How to Check Simple the Main Parts <Check procedure> Gas leakage, Discharge temp. error, disconnection of TS/TC gas leakage sensors (Check code 02, 1C) (Check code 03, 1E) Valve drive check Is coil of the pulse motor valve Set it correctly.

[Page 80: How To Diagnose Trouble In Outdoor Unit](#)

FILE NO. SVM-16003 11-7. How to Diagnose Trouble in Outdoor Unit 11-7-1. Summarized Inner Diagnosis of Inverter Assembly Table 11-7-1 Diagnosis/Process flowchart Item Contents Summary Preparation Turn "OFF" the power supply breaker, and remove 3P Remove connector connector which connects of compressor.

[Page 81: How To Check Simply The Main Parts](#)

FILE NO. SVM-16003 Diagnosis/Process flowchart Item Contents Summary Check Check winding resistance between phases of compressor, and resistance between outdoor frames by using a tester. → OK if 20MΩ or more • Is not grounded. Replace control board assembly. □...

[Page 82](#) FILE NO. SVM-16003 (3) Check procedures Table 11-8-1 Procedure Check points Causes Turn off the power supply breaker Check whether or not the fuse (F01) Impulse voltage was applied or the and remove the P.C. board is blown. indoor fan motor short-circuited. assembly from electronic parts base.

[Page 83](#) FILE NO. SVM-16003 11-8-2. P.C. Board Layout +12V [1] Sensor characteristic table TD : Discharge temp. sensor TA : Room temp. sensor TC : Heat exchanger temp. sensor TO : Outdoor temp. sensor TS : Suction temp. sensor TA, TC, TO, TS, TE : Outdoor heat exchanger temp sensor...

[Page 84](#) FILE NO. SVM-16003 11-8-3. Indoor Unit (Other Parts) Part name Checking procedure Room temp. (TA) sensor Disconnect the connector and measure the resistance value with tester. Heat exchanger (TC) sensor (Normal temp.) Temperature 10°C 20°C 25°C 30°C 40°C Sensor TA, TC (kΩ) 20.7 12.6 10.0...

[Page 85](#) FILE NO. SVM-16003 Outdoor temperature sensor Disconnect the connector, and measure resistance value with the tester. (TO), discharge temperature (Normal temperature) sensor (TD), suction temperature Temperature sensor (TS), exchanger 10°C 20°C 30°C 40°C 50°C temperature sensor (TE) Sensor TD (kΩ) TO, TS, TE (kΩ)...

[Page 86: How To Simply Judge Whether Outdoor Fan Motor Is Good Or Bad](#)

FILE NO. SVM-16003 11-9. How to Simply Judge Whether Outdoor Fan Motor is Good or Bad 1. Symptom • Outdoor fan motor does not rotate. • Outdoor fan motor stops within several tens seconds though it started rotating. • Outdoor fan motor rotates or does not rotate according to the position where the fan stopped, etc. Remote controller check code "02 : Outdoor block, 1A : Outdoor fan drive system error"...

[Page 87](#) FILE NO. SVM-16003 11-10. How to setting the CLEAN OPERATION cancel • Self-Cleaning diagram 11-10-1. Self-Cleaning function Operation display FCU fan rpm is depend on presetting. (500RPM) FCU louver OPEN CLOSE OPEN (12.7°) ON or OFF ON or OFF Timer display depend on presetting of timer function.

[Page 88: How To Replace The Main Parts](#)

FILE NO. SVM-16003 12. HOW TO REPLACE THE MAIN PARTS WARNING • Since high voltages pass through the electrical parts, turn off the power without fail before proceeding with the repairs. Electric shocks may occur if the power plug is not disconnected. •...

[Page 89](#) FILE NO. SVM-16003-2 Part name Procedures Remarks Front panel 1) Stop operation of the air conditioner and turn off its main power supply. Front panel Air inlet grille 2) Open two screw caps and securely remove screws (2 pcs.) at the front panel. Hooks of front panel Screw...

[Page 90](#) FILE NO. SVM-16003 Part name Remarks Procedures Fan motor 1) Follow the procedure item 3 and 4 . Cross flow fan 2) Loosen the set screw of the cross flow fan. Cross flow fan Body back 3.5 mm Vertical louver Set screw Fan motor Hexagon screw driver...

[Page 91](#) FILE NO. SVM-16003 Part name Remarks Procedures Drain pan 1) Follow the procedure item 3 . assembly 2) Remove screw holding the electric part cover. Connectors P.C.board Screw Electric part cover Louver motor connector 3) Disconnect the louver motor connector (5P) from P.C.

[Page 92](#) FILE NO. SVM-16003 Part name Remarks Procedures Vertical louver 1) Follow the procedure item 3 and 7 . assembly 2) Remove 2 fixing screws from the base vertical Vertical louver louver then remove the vertical louver assembly from the body back. Screw Screw Cross flow fan...

[Page 93](#) FILE NO. SVM-16003-2 Part name Remarks Procedures Heat exchanger 1) Follow the procedure in item 3 and 4 . (Evaporator) 2) Remove 2 fixing screws at the left side of the heat

exchanger. Screws 3) Remove fixing screw at the upper right side of the heat exchanger.

[Page 94](#) FILE NO. SVM-16003 12-2. Microcomputer Part name Procedure Remarks □ Common procedure 1) Turn the power supply off to stop the Replace terminal block, operation of air-conditioner. microcomputer ass'y and the P.C. board ass'y. 2) Remove the front panel. •...

[Page 95](#) FILE NO. SVM-16003 12-3. Outdoor Unit Part name Procedures Remarks Common 1. Detachment 1) Stop operation of the air conditioner, and procedure turn off the main switch and breaker of the air conditioner. 2) Remove the valve cover. (ST2TØ4 x 10s 1 pc) •...

[Page 96](#) FILE NO. SVM-16003 Part name Procedure Remarks Inverter module cover 1) Perform work of item 1 in □ □ Inverter 2) Remove screw (ST2TØ4x10L 2 pcs.) of the assembly upper part of the front cabinet. • Disconnect connectors all connector on P.C.

[Page 97](#) FILE NO. SVM-16003 Part name Procedures Remarks „ 1) Perform work of item 1 of 1 and 1 of 2. Fan motor 2) Remove the flange nut fixing the fan motor Fan motor and the propeller fan. Propeller fan • Flange nut is loosened by turning clockwise.

[Page 98](#) FILE NO. SVM-16003 Part name Procedures Remarks Fan guard 1. Detachment 1) Perform work of item 1 of 1 and 1 of 2. Requirement: Perform the work on a corrugated cardboard, cloth, etc. to prevent scratches to the product. 2) Remove the front cabinet, and place it down so that the fan guard side faces downwards.

[Page 99](#) FILE NO. SVM-16003 Part name Procedure Remarks 1. Disconnect the leads and connectors connected to Control board assembly the other parts from the control board assembly. 1) Leads • 3 leads (black, white, orange) connected to terminal block. • Lead connected to compressor : Disconnect the connector (3P).

[Page 100](#) FILE NO. SVM-16003 Part name Procedure Remarks Replacement of 1) Cut the sensor 100 mm longer than old temperature sensor one. Cutting here Thermal for servicing only Connector sensor part 2) Cut the protective tube after pulling out it (200 mm). Common service 3) Move the protective tube toward the Cutting here...

[Page 101: Exploded Views And Parts List](#)

43T44557 REFRIGERATION CYCLE ASSY 43T03398 BACK BODY ASSY (FOR RAS-10BKV-E)
43T22343 VERTICAL LOUVER ASSY 43T44559 REFRIGERATION CYCLE ASSY 43T72325 DRAIN PAN ASSY (FOR RAS-13BKV-E) 43T22345 HORIZONTAL LOUVER 43T39370 EVAPORATOR HINS SEAL 43T70321 DRAIN HOSE 43T19333 HOLDER, SENSOR 43T79322 DRAIN CAP...

[Page 102](#) FILE NO. SVM-16003-2 13-2. Indoor Unit (Part-E) Location Part Location Part Description Description 43T69319 TEMPERATURE SENSOR 43T6V681 PC BOARD ASSY:WRS-LED 43T6V673 TERMINAL(5P-TF) 43T6V678 PC BOARD(FOR RAS-07BKV-E) 43T6V674 TEMPERATURE SENSOR 43T6V679 PC BOARD(FOR RAS-10BKV-E) 43T62340 CORD-CLAMP 43T6V680 PC BOARD(FOR RAS-13BKV-E) - 102 -...

[Page 103](#) FILE NO. SVM-16003-2 13-3. Outdoor Unit RAS-07BAV-E, RAS-10BAV-E Location Part Location Part Description Description 43T19363 FAN GUARD 43T41487 COMPRESSOR(for RAS-07BAV-E) 43T20324 PROPELLER FAN 43T19337 PACKED VALVE COVER 43T00682 43T00684 FRONT CABINET ASSEMBLY UPPER CABINET ASSEMBLY CONDENSER ASSEMBLY 43T00448 43T43537 FIXING PLATE VALVE TERMINAL COVER 43T62323 43T42335...

[Page 104](#) FILE NO. SVM-16003-2 13-4. Outdoor Unit RAS-13BAV-E Location Part Location Part Description Description 43T19363 FAN GUARD 43T19337 PACKED VALVE COVER 43T20324 43T00684 PROPELLER FAN UPPER CABINET ASSEMBLY FIXING 43T00683 43T00448 FRONT CABINET ASSEMBLY PLATE VALVE CONDENSER ASSEMBLY 43T43538 43T42335 BASE PLATE ASSEMBLY TERMINAL COVER 43T62323 43T79305...

[Page 105](#) FILE NO. SVM-16003-2 13-5. Outdoor Unit (Part-E) TE Sensor (Ø6) TS Sensor (Ø6) TD Sensor (Ø6) TD Sensor (Ø4) Location Part Location Part Description Description 43T67306 HEATSINK 43T60459 FUSE 43T6V682 PC BOARD(FOR RAS-07BAV-E) 43T60465 TEMPERATURE SENSOR 43T6V683 PC BOARD(FOR RAS-10BAV-E) 43T50304 SENSOR;HEAT EXCHANGER 43T6V684...

This manual is also suitable for:

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