

Toshiba RAS-10SA-E-1 Service Manual

Air conditioner split wall type

| |
|-------------------|
| 1 |
| Table Of Contents |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |
| 13 |
| 14 |
| 15 |
| 16 |
| 17 |

18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56

•

[Table of Contents](#)

-

Troubleshooting

•

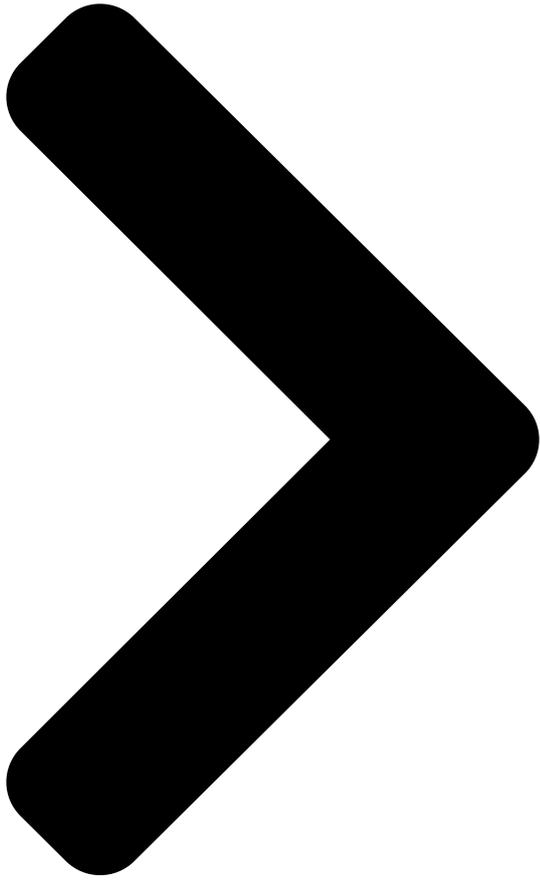
Bookmarks

Quick Links

[1 Specifications](#)

[2 Indoor Unit](#)

[Download this manual](#)



TOSHIBA

FILE NO. A00-9708

SERVICEMANUAL

AIR-CONDITIONER

SPLITWALLTYPE

RAS-10SK-ERAS-10SA-E, RAS-10SA-E-1

RAS-10SKXRAS-10SAX, RAS-10SAX-1

PRINTED IN JAPAN, May., 1997

ToMo

Table of Contents

[Next Page](#)

- 1
- 2
- 3
- 4
- 5

Troubleshooting

[TROUBLESHOOTING CHART](#) 32

[Troubleshooting Flowcharts](#) 38

Related Manuals for Toshiba RAS-10SA-E-1

[Air Conditioner Toshiba RAS-10SA-E Service Manual](#)

Split wall type (56 pages)

[Air Conditioner Toshiba RAS-10SAV-A Service Manual](#)

Split wall type (94 pages)

[Air Conditioner Toshiba RAS-B10SKVP-E Installation Manual](#)

(148 pages)

[Air Conditioner Toshiba RAS-B10SKVP-E Owner's Manual](#)

Split type (31 pages)

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[Air Conditioner Toshiba RAS-10SKVP-ND Installation Manual](#)

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[Air Conditioner Toshiba RAS-16SKV Series Owner's Manual](#)

(52 pages)

[Air Conditioner Toshiba RAS-10SKVP2 Series Owner's Manual](#)

Split type (3 pages)

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Split wall type air conditioner (62 pages)

[Air Conditioner Toshiba RAS-10SKH-ES Service Manual](#)

Split wall type (68 pages)

[Air Conditioner Toshiba RAS-10SKV2 Series Owner's Manual](#)

Split type (4 pages)

Summary of Contents for Toshiba RAS-10SA-E-1

[Page 1](#) TOSHIBAFILENO.A00-9708SERVICEMANUALAIR-CONDITIO
NERSPLITWALLTYPERAS-10SK-ERAS-10SA-E,RAS-10SA-E-1RAS-
10SKXRAS-10SAX,RAS-10SAX-1...

[Page 2: Table Of Contents](#)

| | | | | | |
|---------------------------------|---|---|---|-------------------------|---|
| CONTENTS 1. SPECIFICATIONS..... | 4 | 2. CONSTRUCTION VIEWS | 6 | 2-1. | |
| Indoor Unit | 6 | 2-2. Outdoor Unit | 7 | 3. WIRING DIAGRAM | 8 |
| | 8 | 4. SPECIFICATIONS OF ELECTRICAL PARTS | 9 | 4-1. Indoor Unit | 9 |
| | 9 | 4-2. Outdoor Unit | 9 | 5. | |

[Page 3](#)

| | | | | | | | | | | | | |
|--------------------------------|----|--|----|-----------------------------------|----|--|----|---|----|---|----|--------|
| 9. TROUBLESHOOTING CHART | 32 | 9-1. What to be Prechecked First | 32 | 9-1-1. Power Supply Voltage | 32 | 9-1-2. Incorrect Cable Connection between Indoor and Outdoor Units | 32 | 9-1-3. Misleading but Good Operations | 33 | 9-2. Primary Judgement of Trouble Sources | 34 | 9-2-1. |
|--------------------------------|----|--|----|-----------------------------------|----|--|----|---|----|---|----|--------|

[Page 4: Specifications](#)

Indoor fan type Cross flow fan High fan Air volume Medium fan Low fan Fan motor output Air filter Polypropylene net filter (Washable) OUTDOOR UNIT RAS-10SA-E/RAS-10SA-E-1 RAS-10SAX/RAS-10SAX-1 Height Dimensions Width Depth Net weight Condenser type Finned tube Outdoor fan type...

[Page 5](#)

Note : *1 • Capacity is based on the following temperature conditions. Condition JIS C9612-1994 Temperature Cooling (DB) 27°C Indoor unit inlet air temperature (WB) 19°C (DB) 35°C Outdoor unit inlet air temperature (WB) 24°C Notes : *2 CHARGELESS • No additional refrigerant required. •...

[Page 6: Construction Views](#)

2. CONSTRUCTION VIEWS 2-1. Indoor Unit RAS-10SK-E RAS-10SKX Heat exchanger Air inlet Air filter @@@@ P P P P P @@@@ P P P P P @@@@ P P P P P 10SK-E : Without power cord 1800 10SKX : With power cord Air outlet Knock out system Front panel Back body Hanger Drain hose (0.54m) Hanger...

[Page 7: Outdoor Unit](#)

2-2. Outdoor Unit RAS-10SA-E, RAS-10SA-E-1 RAS-10SAX, RAS-10SAX-1 Detail Drawing Gas side (flare $\varnothing 9.52$) $\varnothing 25$ Drain hole Liquid side (flare $\varnothing 6.35$) $\varnothing 6$ Hole $\varnothing 11 \times 14$ Hole 8- $\varnothing 6$ Holes (For fixing the outdoor unit) Handle 4- $\varnothing 11 \times 14$ Long holes (For anchor bolt $\varnothing 8 - \varnothing 10$) Fan guard $\varnothing 420$...

[Page 8: Wiring Diagram](#)

3. WIRING DIAGRAM LOUVER MOTOR MOTOR Model Section A THERMAL FUSE RAS-10SK-E/SA-E, SA-E-1 77°C x 2 220/230/240V ~ MOTOR 50Hz RAS-10SKX/SAX, SAX-1 220/230/240V ~ 50Hz CN04 CN07 CN10 SG01 R109 MAIN P.C. BOARD R116 MCC-713 GRN&YEL VARISTOR IC04 F01 FUSE DB01 T3.15A Section A...

[Page 9: Specifications Of Electrical Parts](#)

15G561K 560V 5.6 Ω , 5W Resistor (R01) ERF-5TK5R6 Louver motor MP35EA7 Output (Rated) 2W, 10poles, 1phase DC 12V 4-2. Outdoor Unit RAS-10SA-E, RAS-10SA-E-1 RAS-10SAX, RAS-10SAX-1 Parts name Type Specifications Output (Rated) 750W, 2pole, 1phase, 220/230/240V, 50Hz 10SA-E Red-Black White-Black PH102T1-4C Winding resistance (Ω)

[Page 10: Refrigerant Cycle Diagram](#)

5. REFRIGERANT CYCLE DIAGRAM RAS-10SK-E / RAS-10SA-E, RAS-10SA-E-1 RAS-10SKX / RAS-10SAX, RAS-10SAX-1 Indoor unit Evaporator Cooling 0.39m 0.49m (Connecting pipe) (Connecting pipe) $\varnothing 9.52$ $\varnothing 6.35$ Cross flow fan Optional piping kits O.D.:9.52mm RB-P31BFH1 (3m) O.D.:6.35mm RB-P51BFH1 (5m) RB-P71BFH1 (7m) Packed valve Packed valve ($\varnothing 9.52$)

[Page 11: Micro-Computer Block Diagram](#)

6. MICRO-COMPUTER BLOCK DIAGRAM - 11 -...

[Page 12: Operation Descriptions](#)

7. OPERATION DESCRIPTIONS 7-1. FAN ONLY Operation 7-2. COOL Operation (MODE of the remote control : FAN ONLY) (MODE of the remote control : COOL) (1) During this mode, the relay RY01 is always turned (1) Compressor, outdoor fan and operation display off so that only the indoor fan is operated.

[Page 13: Louver Control](#)

7-2-1. Louver Control 7-3. DRY Operation (1) By pushing the SET button of the remote control (MODE of the remote control : DRY) during the operation, the louver can be set to the (1) Compressor, outdoor fan and operation display desired position.

[Page 14: Auto Operation](#)

7-4. AUTO Operation 7-4-1. Temporary Auto When the TEMPORARY button is pushed, the set (MODE of the remote control : AUTO) temperature is fixed at 24°C and controlled in accor- (1) One of the 2 modes, Cooling or Dry is selected dance with the chart shown in Fig.

[Page 15: Econo. Mode](#)

7-5. ECONO. Mode 7-6. Low-Temperature Limit Control (Cooling Operation) When the ECONO. button is pushed, during COOL and AUTO operation, the OPERATION display is The microprocessor detects the indoor heat exchanger turned off and the ECONO. display is lit and the indoor temperature so as to prevent freezing up the indoor unit operates quietly and mildly with controlling airflow.

[Page 16: Auto Restart Function](#)

7-7-1. How to Set the Auto Restart 7-7. Auto Restart Function To set the Auto Restart function, proceed as follows: This unit is equipped with an Automatic restarting Access the TEMPORARY button located in the lower facility which allows the unit to restart and resume the right hand corner beneath the hinged front panel of set operating conditions in the event of a power supply the indoor unit (please refer to section on PARTS...

[Page 17: How To Cancel The Auto Restart](#)

7-7-2. How to Cancel the Auto Restart The system will now be required to manually restart with the remote control after the main supply is turned To cancel the Auto Restart function, proceed as off. follows: Cancellation is carried out: Repeat the setting procedure: the unit will acknowledge the instruction and bleep three times.

[Page 18: Installation Procedure](#)

- Before doing the electrical work, attach an approved plug to the power supply cord. And make sure the equipment to be earthed.
- Appliance shall be installed in accordance with national wiring regulations. If you detect any damage, do not install the unit. Contact your Toshiba dealer immediately. – 18 –...

[Page 19](#) CAUTION • Exposure of unit or water or other moisture before installation will result in an electrical short. Do not store in a wet basement or expose to rain or water. • After unpacking the unit, examine it carefully for possible damage. •...

[Page 20: Installation Diagram Of Indoor And Outdoor Units](#)

8-2. Installation Diagram of Indoor and Outdoor Units For installation of the indoor unit, use the paper pattern on the back. For the rear and left piping 3 Clip anchor Clip anchor Wall Hook Hook Front cabinet 1 Installation Insert the remote control holder Front panel plate cushion between the indoor...

[Page 21: Installation](#)

8-3. Installation 600mm Air inlet 8-3-1. Optional Parts Part Parts name Q'ty code Refrigerant piping Each Liquid side : ø6.35 mm Gas side : ø9.52 mm Pipe insulating material Air outlet (polyethylene foam, 6 mm thick) Fig 8-3-1 Air outlet Each Putty, PVC tapes •...

[Page 22: Indoor Unit](#)

8-4. Indoor Unit 8-4-1. Cutting a Hole and Mounting Installation Plate t Installation place <Cutting a hole> • A place which provides the spaces around the indoor unit as shown in the diagram in section 8-2. When installing the refrigerant pipes from the rear. •...

[Page 23: Electrical Work](#)

8-4-2. Electrical Work <When the installation plate is directly mounted on the wall> (1) The supply voltage must be the same as the rated voltage of the air conditioner. (1) Securely fit the installation plate onto the wall by screwing it in the upper and lower parts to hook (2) Prepare

the power source for exclusive use with up the indoor unit.

[Page 24: Wiring Connection](#)

8-4-3. Wiring Connection Taking out the power cord WARNING To plug the cable in the plug receptacle, take the following precaution. THIS APPLIANCE MUST BE EARTHED. • Cut off the slitted portion in the side face of the IMPORTANT rear panel to take out the power cord. After this, remove burrs, sharp edges, etc., to THE WIRES IN THIS MAINS LEAD ARE COLORED smooth the cut face.

[Page 25](#) <How to connect the connecting cable> <Stripping length of connecting cable> Wiring of the connecting cable can be carried out 50mm without removing of the front panel. Earth line 10mm (1) Remove the front panel. Fully open the front panel. Disengage the support arm located in the upper center while push- 10mm ing its handle leftwards, and then remove the front...

[Page 26: Piping And Drain Hose Installation](#)

8-4-4. Piping and Drain Hose Installation To connect pipe after installation of unit (figure) <In case of rightward piping> (To the forefront of flare) • After scribing slits of the front panel and the rear 196mm panel by a knife or a marking-off pin, cut them by a Side of liquid flow 96mm pair of nippers or the like.

[Page 27: Indoor Unit Installation](#)

8-4-5. Indoor Unit Installation 8-4-6. Drainage (1) Pass the pipe through the hole in the wall, and (1) Run the drain hose sloping downwards. hook the indoor unit on the installation plate at the NOTE : upper hooks. • Hole should be made at a slight downward slant to (2) Swing the indoor unit to right and left to confirm the outdoor side.

[Page 28: Outdoor Unit](#)

8-5. Outdoor Unit CAUTION Installation place Installation in the following places may result in • A place which provides the spaces around the trouble. Do not install the unit in such places. outdoor unit as shown in the diagram in page 20. •...

[Page 29: Refrigerant Piping Connection](#)

8-5-1. Refrigerant Piping Connection 8-5-2. Vacuum Pumping <Flaring> AIR PURGE (1) Cut the pipe with a pipe cutter. Evacuate the air in the connecting pipes and in the indoor unit using vacuum pump. Do not use the refrigerant in the outdoor unit. Obliquity Roughness Warp...

[Page 30: Wiring Connection](#)

8-5-3. Wiring Connection CAUTION (1) Remove the electric parts cover from the outdoor unit. (1 screw) • KEEP IMPORTANT 4 POINTS FOR INSTAL- LATION (PIPING WORK) (2) Connect the connecting cable to the terminals as identified with their respective matched numbers (1) Take away dust and moisture (Inside of the on the terminal block of indoor and outdoor units.

[Page 31: Others](#)

8-6-3. Auto Restart Setting 8-6. Others This product is designed so that, after a power failure, 8-6-1. Gas Leak Test it can restart automatically in the same operating mode Flare nut connections (indoor unit) as before the power failure. Information The product was shipped with Auto Restart function in the off position.

[Page 32: Troubleshooting Chart](#)

9. TROUBLESHOOTING CHART TROUBLESHOOTING PROCEDURES : • Following details of "What to be pre-checked first", make sure of the basic items. • When there is no trouble corresponding to above, check in detail the faulty parts following "How to judge faulty parts by symptoms"...

[Page 33: Misleading But Good Operations](#)

9-1-3. Misleading but Good Operations (Program Controlled Operation) The microcomputer performs the operations listed in Table 9-1-1 to control the air conditioner. If a claim is made on the operation, check whether it corresponds to the contents in the Table 9-1-1. If it does, it is an indispensable operation for the control and mainte- nance of the air conditioner: it is not a failure of the unit.

[Page 34: Primary Judgement Of Trouble Sources](#)

9-2-2. Display of Abnormalities and 9-2. Primary Judgement of Trouble Judgement of the Abnormal Spots Sources The indoor unit of this machine observes the operation condition of the air conditioner and displays the contents of the self-diagnosis as block displays on the remote control and assumes the following...

[Page 35](#) (2) Self-diagnosis with remote control (2) Selecting ordinary mode With the indoor unit control, self-diagnosis of protective circuit action can be done by turning the top of the wireless remote control with a tip of remote control operation into service mode, operation for more than 3 seconds.

[Page 36](#) <Self-diagnosis by check codes> c) At the same time, also make sure the operation lamp is also flashing. This shows 1) The self-diagnosis by the check codes is confirmed that the protection circuit on the indoor PC board is working.

[Page 37](#) Table 9-2-4 Block level Diagnosis function Judgment and action Check Check Conditioner Block Symptom Condition code code status Indoor PC Thermo sensor Continued Indicated when 1. Check thermo sensor. board short/break. operation detected abnormal 2. If it is OK, check PC board. Heat exchanger Continued Indicated when...

[Page 38: Troubleshooting Flowcharts](#)

9-3. Troubleshooting Flowcharts 9-3-1. Power can not be Turned on (No Operation at All) <Preliminary checks> (1) Is the supply voltage normal? Operation (2) Is the connection to the AC output OK.? Check Items Main cause Shut off the power supply from AC outlet once and Countermeasure turn it on after 5 seconds.

[Page 39: Power Can Not Be Turned On After Replacing Indoor Pc Board](#)

9-3-2. Power can not be Turned on after Replacing Indoor PC Board <Checking Procedure> Connect the AC Power supply Return the wiring of the Is it wired as shown Does the OPERATION power relay is returned to in Figure below? lamp flash? the normal procedure.

[Page 40: Only Compressor Does Not Operate](#)

9-3-4. Only Compressor does not Operate Shut off the power supply from AC outlet once and turn it on after 5 seconds. Does the OPERATION lamp flash? See "Power can not be turned on". Does the power turn on by See "Power can not be turned on".

[Page 41: Only Outdoor Fan Does Not Operate](#)

9-3-5. Only Outdoor Fan does not Operate Shut off the power supply from AC outlet once and turn it on after 5 seconds. Does the OPERATION lamp flash? See "Power can not be turned on". Does the power turn on by See "Power can not be turned on".

[Page 42: Only The Indoor Fan Does Not Operate](#)

9-3-6. Only the Indoor Fan does not Operate < Check procedure > Shut off the power supply once. Turn the power supply. Does the fan Replace the PC board. stop in no operating Control PC board is defective. status? Start the operation with low fan setting in cool operation.

[Page 43: How To Check The Remote Control \(Including The Indoor Pc Board\)](#)

9-4. How to Check the Remote Control (Including the Indoor PC Board) There is no beep from the indoor unit. Push the START/STOP button. The operation lamp of the air conditioner main unit does not light. Does the transmission indicator flash? Short-circuit the metal terminal at the side of the battery compartment...

[Page 44: How To Check The Pc Board](#)

9-4-1. How to Check the PC Board (2) Inspection procedures (1) Operating precautions 1) When a PC board is judged to be defective, check for disconnection, burning, or discoloration. 1) When removing the front panel or the PC board, be sure to shut off the power supply.

[Page 45](#) (3) Checking procedure Table 9-4-1 Procedure Check Point (Symptom) Causes Shut off the power supply and 1. Is the fuse blown? 1. * Application of shock voltage. remove the PC board assembly * Overload by short-circuit of the from the electronic parts base. parts.

[Page 46: Pc Board Layout](#)

9-4-2. PC Board Layout Top View Bottom View - 46 -...

[Page 47: How To Reduce The Operation Time Of The Anti-Restart Timer](#)

Table 9-4-2 Approximate value of the sensor (thermistor) resistance (TA, TC) (= kΩ)
Temperature 0°C 10°C 20°C 25°C 30°C Sensor Themo Sensor 35.8 20.7 12.6 10.0 7.92 9-4-3.
How to Reduce the Operation Time of Wireless remote control the Anti-Restart Timer •...

[Page 48: Part Replacement](#)

10. PART REPLACEMENT 10-1. Indoor Unit (RAS-10SK-E, RAS-10SKX) Part name Procedure Remarks □ Front panel 1) After stopping the operation of the air conditioner, be sure to turn off the circuit breaker or disconnect the power plug from the AC wall socket. 2) Open the screw caps and remove the two screws fixing the front panel.

[Page 49](#) Part name Procedure Remarks □ □ Horizontal grille 1) Perform the process Note: 2) Remove the screw fixing the louver motor, and remove the louver motor. The horizontal grille can not be 3) Remove the shaft of the horizontal grille from the removed without drain-pan.

[Page 50: Microcomputer](#)

10-2. Microcomputer (RAS-10SK-E, RAS-10SKX) Part name Procedure Remarks □ Common 1) Turn the power supply off to stop the operation of air- Replace the thermal fuse, terminal procedure conditioner, and disconnect the power cord from the block, power cord, microcomputer AC supply.

[Page 51: Outdoor Unit](#)

10-3. Outdoor Unit RAS-10SA-E, RAS-10SA-E-1 RAS-10SAX, RAS-10SAX-1 Part name Procedure Remarks □ Common 1) Stop the operation of air-conditioner, and disconnect procedure the power cord from the AC supply. 2) Remove E-parts cover. (1- ST1T ø4 x 10) 3) Remove the cord clamp (2- ST2T ø4 x 12) and remove the connecting cable.

[Page 52: Cautions On Replacement Of Pc Board Assembly](#)

11. CAUTIONS ON REPLACEMENT OF PC BOARD ASSEMBLY 1. Set the switch (SW03) provided on the PC board as follows. 2. Don't through the black lead wire to the current trans. (CT. T02) Black White Blue Brown RY01 Indoor Power terminal terminal PC board...

[Page 53: Exploded Views And Parts List](#)

12. EXPLODED VIEWS AND PARTS LIST 12-1. Indoor Unit (1) Location Part Location Part Description Description 43T60002 Base, Terminal 43T69007 PC Board, WRS-LED 3P , AC 300V, 20A MCC-635 43T69004 Sensor, Heat Exchanger 43T69008 PC Board MCC-713 10kΩ, 25°C 43T61001 Base, E-Parts 43T69005 Sensor, Thermostat ABS, Black, UL94-5V 10kΩ, 25°C...

[Page 54: Indoor Unit \(2\)](#)

Indoor Unit (2) Location Part Location Part Description Description 43T00002 Front Panel Assembly 43T49005 Plate of EVA-SEAL 43T00003 Suction Grille 43T49006 Holder for Plate of EVA-SEAL 43T80001 Air Filter (L) 43T49004 Rubber of Sound Insulation 43T80002 Air Filter (R) 43T79002 Drain Guide 43T80003 Frame Filter 43T39002 Motor Band (Left) 43T07004 Screw Cap (L)

[Page 55: Outdoor Unit](#)

12-2. Outdoor Unit RAS-10SA-E, RAS-10SA-E-1 RAS-10SAX, RAS-10SAX-1 8, 9 10, 11 14 2 7 : CAPILLARY TUBE 26 : DRYER Location Part Location Part Description Description 43T19001 Guard Fan 43T63001 Holder, OL-Relay (RAS-10SA-E, RAS-10SAX) 43T20001 Fan, Propeller 43054408 Relay, Over-Load...

This manual is also suitable for:

Ras-10saxRas-10sax-1Ras-10skxRas-10sk-eRas-10sa-e