
e-STUDIO163
TOSHIBA
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Toshiba e-STUDIO163 Service Manual

Multifunctional digital systems

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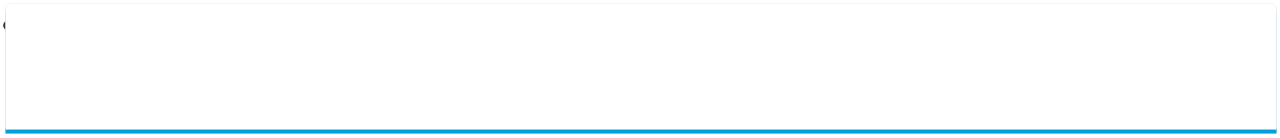

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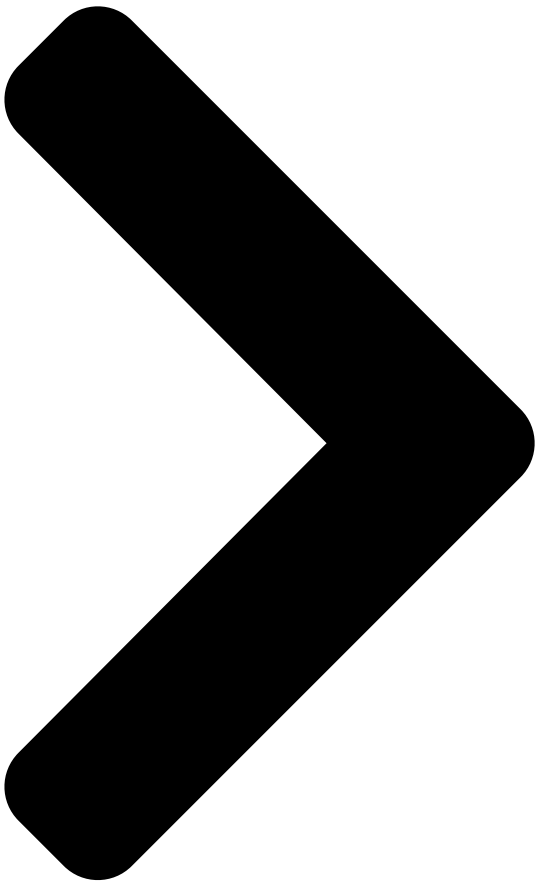

SERVICE MANUAL

MULTIFUNCTIONAL DIGITAL SYSTEMS

e-STUDIO163/203

File No. SME050024D0
R05092196100-TTEC
Ver04_2008-06

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Related Manuals for Toshiba e-STUDIO163

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All in One Printer Toshiba e-STUDIO163 Service Manual

Multifunctional digital systems (222 pages)

All in One Printer Toshiba e-STUDIO203 Service Handbook

(222 pages)

All in One Printer Toshiba e-STUDIO163 Service Handbook

(220 pages)

All in One Printer Toshiba e-STUDIO163 Service Handbook

Multifunctional digital systems (218 pages)

All in One Printer Toshiba e-STUDIO163 Operator's Manual

Viewer (162 pages)

All in One Printer Toshiba e-STUDIO163 Specifications

Toshiba digital copier/printer/scanner owner's manual (2 pages)

All in One Printer Toshiba e-STUDIO203 Operator's Manual

Toshiba multifunctional digital system operator's manual (116 pages)

Summary of Contents for Toshiba e-STUDIO163

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Page 3 GENERAL PRECAUTIONS REGARDING THE SERVICE FOR e-STUDIO163/203 The installation and service should be done by a qualified service technician. 1) Transportation/Installation When transporting/installing the equipment, remove the drawer, employ two persons and be sure to hold the positions as shown in the figure.

Page 4 Do not allow a short-circuit or do not use the parts not recommended by Toshiba TEC Corporation. 4) Cautionary Labels During servicing, be sure to check the rating plate and cautionary labels such as “Unplug the power cable during service”, “CAUTION.

Page 5 5) Disposal of the Equipment, Supplies, Packing Materials, Used Batteries and IC-RAMs Regarding the recovery and disposal of the equipment, supplies, packing materials, used batteries and IC-RAMs including lithium batteries, follow the relevant local regulations or rules. Caution: Dispose of used batteries and IC-RAMs including lithium batteries according to this manual. Attention: Se débarrasser de batteries et IC-RAMs usés y compris les batteries en lithium selon ce manuel.

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Page 11: Specifications / Accessories / Options / Supplies

SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES Specifications Values in [ ] are for e-STUDIO203 in case that the specification is different among e-STUDIO163 and e-STUDIO203. y Copy process Indirect electrophotographic process (dry) y Type Desktop type y Original table...

Page 12 Toner supply .....Automatic toner density detection/supply Toner cartridge replacing method (There is a recovered toner supply mechanism.) e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES 1 - 2 06/04...

Page 13 Dimensions of the equipment .....W 600 x D 643 x H 462.5 (mm): See the figure below Fig. 1-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES 1 - 3...

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Asia / Saudi Arabia SAD: Saudi Arabia ARD: Latin America CND: China TWD: Taiwan KRD: Korea JPD: Japan e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES 1 - 4 07/02...

Page 15: Options

KA-1640 PC Automatic Document Feeder (ADF) MR-2017 Paper Feed Unit (PFU) MY-1027 / C Expansion Memory GC-1240 Desk MH-1640 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES 1 - 5 07/02...

Page 16: Supplies

PS-ZT1640T5K (4) (for Taiwan) PS-ZT1640E (1) (for Europe) PS-ZT1640E5K (1) (for Europe) Developer material D-2320 (except for China) D-2320C (for China) e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES 1 - 6 07/02...

Page 17: System List

(ADF) KA-1640PC MR-2017 Expansion Memory GC-1240 Paper Feed Unit (PFU) MY-1027 Desk MH-1640 Fig. 1-2 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES 1 - 7 07/02...

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Page 19: Outline Of The Machine

Polygonal motor Pickup roller Separation claw Paper empty sensor Registration sensor Registration roller Bypass pickup roller Bypass feed roller Bypass separation pad © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 1...

Page 20 Exit roller Exit sensor Front cover opening/closing switch Front cover opening/closing interlock switch Temperature/humidity sensor Switching regulator ADU cover opening/closing

interlock switch e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 2...

Page 21 Switching regulator cooling fan CIS home position sensor Platen sensor Drawer detection switch CLT1 Registration clutch SOL1 Pickup solenoid SOL2 Bypass pickup solenoid © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 3 06/04...

Page 22: Electric Parts Layout

Electric Parts Layout [A] Scanner, control panel THMO2 LPNL Fig. 2-3 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 4...

Page 23 [B] Power supply section, switches Fig. 2-4 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 5...

Page 24 [C] Laser optical unit, fuser unit, toner cartridge section CTIF CTRG LAMP1 LAMP2 THMO1 THMS1 THMS2 THMS3 Fig. 2-5 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 6 07/02...

Page 25 [D] Developer unit section THMS4 THMO3 Fig. 2-6 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 7...

Page 26 [E] Driving section CLT1 SRAM MAIN SOL1 Fig. 2-7 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 8...

Page 27 [F] Drawer section Fig. 2-8 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 9...

Page 28 [G] Bypass unit SOL2 Fig. 2-9 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 10...

Page 29: Symbols And Functions Of Various Components

Fig. 2-6 11-23 Exhaust fan the equipment inside PS-FAN-MOT Cooling down the switching regulator Fig. 2-4 5-11 Switching regulator cooling fan © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 11 07/02...

Page 30 Pickup solenoid the feed roller SOL2 SFB-SOL Controlling the power transmission of Fig. 2-9 14-15 Bypass pickup solenoid the bypass pickup roller e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 12 07/02...

Page 31 DRM-DH Preventing condensation of the drum Fig. 2-6 Drum damp heater Optional for NAD/MJD/CND model, standard for other models © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 13 07/02...

Page 32 Generating high voltage and supply- ing it to the main charger, developer, transfer and separation units • Supplying AC power to the heater lamp e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 14 07/02...

Page 33: General Description

General Description 2.4.1 System block diagram Fig. 2-10 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 15 07/02...

Page 34: Construction Of Boards

This is the interface board with the CTRG board in the toner cartridge. Information written in the IC chip on the CTRG board is read into the SoC on the MAIN board through this board. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 16...

Page 35 This is the unit witch performs optical-to-electrical conversion to convert the light reflected by the original into the electrical signals. It consists of a light source (LEDs), optical system, CCD sensor, etc. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-

STUDIO163/203 OUTLINE OF THE MACHINE...

Page 36: Disassembly And Replacement Of Covers

Take off the front cover while lifting it up. Fig. 2-12 [B] Inner tray Remove 2 screws and take off the Inner tray. Inner tray Fig. 2-13 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 18...

Page 37 [D] Tray rear cover Take off the left cover. P.2-19 "[C] Left cover" Take off the tray rear cover. Tray rear cover Fig. 2-15 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 19...

Page 38 Fig. 2-16 [F] Front upper cover Remove 1 screw and take off the front upper cover. Front upper cover Fig. 2-17 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 20...

Page 39 Open the ADU cover. Pull out the drawer. Remove 2 screws and take off the right front cover. Right front cover Fig. 2-20 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 21...

Page 40 Right rear cover Fig. 2-21 Rear cover Remove 5 screws and take off the rear cover. Rear cover Fig. 2-22 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 22...

Page 41: Disassembly And Replacement Of Pc Boards

3. Be sure to perform "05-310" with the platen cover or the ADF closed after replacing the MAIN board. MAIN board Fig. 2-24 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 23 06/04...

Page 42 NAD, CND and MJD.) Take off the rear cover. P.2-22 "[J] Rear cover" Remove 2 screws and take off the cover. Cover Fig. 2-26 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 24 06/04...

Page 43 (P.2-22 "[J] Rear cover") and disconnect connec- tors before performing the procedure below. Connector Fig. 2-28 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 25 06/04...

Page 44 Switching regulator unit Fig. 2-31 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 26 06/04...

Page 45 Disconnect 1 connector and take off the switching regulator cooling fan while sliding it upward. Connector Switching regulator cooling fan Fig. 2-34 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 27 06/04...

Page 46: Removal And Installation Of Options

Remove 1 screw and take off the connector cover. Fig. 2-35 Remove the ground wire. Fig. 2-36 Disconnect the connector. Fig. 2-37 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 28...

Page 47 Remove 1 screw on the rear right side. Fig. 2-38 Remove 1 screw and 1 washer on the rear left side. Fig. 2-39 Open the ADF. Fig. 2-40 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 29...

Page 48 Turn the power OFF and unplug the power cable. Remove 1 screw and take off the PFU con- nector cover. Fig. 2-43 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 30...

Page 49 Remove the ground wire. Fig. 2-44 Disconnect the connector. Fig. 2-45 Install the PFU connector cover. Fig. 2-46 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 31...

Page 50 Take off the drawer of the equipment and PFU drawer. Fig. 2-48 Remove 1 screw and take off 1 fixing brack- ets on the front left side. Fig. 2-49 e-STUDIO163/203 © 2005 - 2008

TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 32...

Page 51 Fig. 2-51 (12) Remove 1 screw and take off 1 fixing brack- ets on the rear right side. Fig. 2-52 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 OUTLINE OF THE MACHINE 2 - 33...

Page 52 (13) Lift up the equipment and take off the PFU. Fig. 2-53 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved OUTLINE OF THE MACHINE 2 - 34...

Page 53: Copy Process

È Transfer bias: Improves transfer efficiency. È Transfer: Transfers the visible toner image on the photoconductive drum onto paper. È © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 1 06/10...

Page 54: Details Of Copying Process

Time (t) Black area of original -500 White area of original Discharge Charging process process Electric potential of the photoconductive drum Fig. 3-3 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved COPY PROCESS 3 - 2...

Page 55 Light Image processing section Difference between "light " and "dark" is divided into 256 steps. Fig. 3-5 Dark Fig. 3-6 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 3...

Page 56 (laser emission) to expose the drum surface and form an electrostatic latent image on it. Image LDR board processing section Polygonal mirror Semiconductive laser element Photo- conductive drum Fig. 3-7 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved COPY PROCESS 3 - 4...

Page 57 Fig. 3-10 Charging AC bias To obtain the stable development characteristics, AC bias (approx. 1,100 V) is charged to the development bias (DC bias). © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 5...

Page 58 2. Toner scattering occurs. 3. Background fogging occurs. Solution: Replace the developer material. No frictional electrification occurs on the area where the toner is caked. Fig. 3-12 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved COPY PROCESS 3 - 6...

Page 59 È This is caused by the magnetic force lines between the south and north poles. Photoconductive drum Magnetic force Magnetic roller line Fig. 3-13 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 7...

Page 60 Is this graph, the toner consumption for copying in TEXT/PHOTO mode using chart “A” is defined as 100%. Output pages 140% 100% 24,000 or 5,900 pages TEXT/PHOTO TEXT PHOTO Type of originals Fig. 3-14 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved COPY PROCESS 3 - 8...

Page 61 (C) 369 µADC From 5 mm from trailing edge to trailing edge (L) 282 µADC Direction of transportation Drum rotation Transfer charger Toner Fig. 3-16 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 9...

Page 62 To prevent this, a separation finger is used to forcibly separate the paper which was left around the drum. Separation finger Paper movement Separation charger Drum rotation Fig. 3-18 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved COPY PROCESS 3 - 10...

Page 63 The toner is then caught by the recovery blade. Recovery blade Cleaning blade Drum rotation Fig. 3-21 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 11...

Page 64 All of the negative charge remaining on the pho- toconductive drum is conducted to the ground. È Preparation for the next printing is completed. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved COPY PROCESS 3 - 12...

Page 65: Comparison With E-Studio230/280

PFA tube roller (ø30) PFA tube roller (ø25) • Cleaning Cleaning roller for pressure roller (ø16) None Å • Heater Heater lamp Turned ON/OFF by thermistor © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 COPY PROCESS 3 - 13...

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Page 67: General Operation

Overview of Operation Operation of equipment Operation during initializing, pre-running and ready Drawer feed copying by [START] button Copying operation Bypass feed copying Interrupt copying © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 GENERAL OPERATION 4 - 1...

Page 68: Description Of Operation

When no button is pressed for a certain period of time, - Set number “1” is displayed. Equipment returns to the normal ready state. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved GENERAL OPERATION 4 - 2...

Page 69: Drawer Feed Copying

(Unit : ms) Main motor 9400 Registration sensor 2354 4829 Registration clutch 2594 5009 MVDEN signal 2801 5103 Exit sensor 4615 6921 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 GENERAL OPERATION 4 - 3 07/02...

Page 70: Bypass Feed Copying

LED “INTERRUPT” OFF by pressing the [INTERRUPT] button o Equipment returns to the status before the interruption 4) Press the [START] button o The copying operation before the interruption is resumed. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved GENERAL OPERATION 4 - 4...

Page 71: Detection Of Abnormality

(D) Replace the toner cartridge (E) Developer unit not installed properly 3) Abnormality not cleared without turning OFF the main switch (F) Call for service © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 GENERAL OPERATION 4 - 5...

Page 72: Description Of Abnormality

Clear paper symbol is displayed: E12 È Copying operation is disabled È Solution: The bypass paper sensor is turned OFF by removing the paper from the bypass tray. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved GENERAL OPERATION 4 - 6...

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È Paper jam (E12, E13 and E21: Error code differs depending on the paper source.) Refer to the error code table in Service Handbook. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 GENERAL OPERATION 4 - 7...

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Error code is displayed instead of the set number by pressing the [CLEAR] button and [8] button simultaneously when the service call lamp is blinking. Refer to the error code table in the Service Handbook. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved GENERAL OPERATION 4 - 8...

Page 75: Flow Chart

Exit sensor ON? detected? 13 - 15 seconds Peak detected? elapsed? Paper jam Call for service Call for service "E03" "C26" "C21" Fig. 4-3 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 GENERAL OPERATION 4 - 9 07/02...

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Call for service Call for service Call for service Fuser roller “C41” “C44” “CA1” reached ready “C43” temp.? READY Fig. 4-4 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved GENERAL OPERATION 4 - 10...

Page 77: Automatic Paper Feed Copying

Remaining set number=0? Scanning system control completed Exit sensor detected leading edge of paper? Laser OFF Paper jam Processing system control completed “E01” Fig. 4-5 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 GENERAL OPERATION 4 - 11...

Page 78 “E02” Polygonal motor OFF Main charger OFF Discharge LED OFF Developer bias OFF Drum rotation reversed Main motor OFF READY Fig. 4-6 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved GENERAL OPERATION 4 - 12...

Page 79: Control Panel

LEDs are mounted on the control panel PC board (LPNL) and are installed the inside of the control panel. Fig. 5-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 CONTROL PANEL 5 - 1...

Page 80: Items Displayed On Control Panel

“ALP” (Auto Low Power) is displayed during the Auto Power Save Mode, and “SLP” (Sleep) is displayed during the Auto Shut Off Mode. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved CONTROL PANEL 5 - 2...

Page 81 [START] button to perform the setting. When the set- ting needs to be canceled halfway, press the [FUNCTION CLEAR] button. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203...

Page 82: Relation Between Equipment State And Operation

Cover open Clears copy Clears each Operation quantity setting acceptable Toner empty Operation acceptable Paper jam Service call e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved CONTROL PANEL 5 - 4 06/04...

Page 83: Operation

The LED is turned ON only when the two conditions below are met. 1) The FET connected to the LED anode is ON. 2) The cathode side of the LED is “L” level. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 CONTROL PANEL...

Page 84: Disassembly And Replacement

When installing the control panel unit, be sure not to have the harness being caught by the front right cover and the unit. Control panel unit Fig. 5-5 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved CONTROL PANEL 5 - 6...

Page 85 Take off 2 brackets by removing 2 screws each. Bracket Fig. 5-7 Remove 12 screws and take off the control panel PC board. Control panel PC board Fig. 5-8 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 CONTROL PANEL 5 - 7...

Page 86 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved CONTROL PANEL 5 - 8...

Page 87: Scanner

MAIN board, the data are transmitted to the writing section. Original glass ADF original glass Scan motor CIS home position sensor CIS unit Damp heater Fig. 6-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 1 06/04...

Page 88: Construction

CIS unit (CIS) YG-LED array RGB-light guiding tube Rod-lens array Drive section Scan motor (M1) CIS home position sensor (S1) Others Damp heater (DH1, DH2) e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 2 06/04...

Page 89: Functions

Works as an assistant light for the RGB light guiding tube. This YG-LED array is used to reduce the shadow of the original when scanning is performed. This LED array produces the output power of 7.68W. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-

STUDIO163/203 SCANNER...

Page 90 CIS unit through the timing belt to move the unit in the secondary scanning direction. 4) CIS home position sensor (S1) This sensor detects if the CIS unit is at its home position. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 4 06/04...

Page 91: Description Of Operation

Scanning an original on the ADF The CIS unit (CIS) stops and stays at the shading position during the shading correction, and at the scanning position during the scanning operation. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER...

Page 92: Scan Motor Drive Circuit

SCNEN: Cutting off of the drive output ENABLE SCNCLK: Clock input CLOCK VREF SCNMVR: Voltage to set value for the motor current IC53 Driver IC MAIN board Fig. 6-3 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 6...

Page 93: 2005 - 2008 Toshiba Tec Corporation All Rights Reserved E-Studio163/203

Motor wire current value can be set in the range of 0 to 2.0 (A)/phase by applying the analog voltage of 0 to 5 (V). © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 7...

Page 94: Contact Image Sensor Unit Control Circuit

MAIN board Contact image sensor unit +24V Green Blue Yellow-Green SCNLEDVR3-1 Serial data SCNLEDVR1-1 converter SCNLEDVR2-1 SCNLEDROFF-1 SCNLEDGOFF-1 ASIC SCNLEDBOFF-1 SCNLEDASTOFF-1 Fig. 6-4 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 8...

Page 95: Ccd Control Circuit

CK2B MCLCK RSCLCK IMGDTA[0] SCNIMGA[0] IMGDTA[1] SCNIMGA[1] CDIN1 IMGDTA[2] SCNIMGA[2] CDIN2 IMGDTA[3] SCNIMGA[3] CDIN3 IMGDTA[4] SCNIMGA[4] CDIN4 IMGDTA[5] SCNIMGA[5] IMGDTA[6] SCNIMGA[6] IMGDTA[7] SCNIMGA[7] Fig. 6-5 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 9...

Page 96 Chip 8 Chip 9 Chip 10 Chip 11 Channel 1 Channel 2 Channel 3 Channel 4 Primely scanning: 7084 pixels (1 line) Fig. 6-6 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 10 06/04...

Page 97 I = k (W - K) Coefficient Image data before correction Black data (stored in "Black" memory) White data (stored in "White" memory) © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 11...

Page 98: Disassembly And Replacement

Fig. 6-8 Take off the ADF original glass. ADF Original glass Fig. 6-9 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 12 07/02...

Page 99 Fig. 6-11 [C] Scan motor (M1) Take off the scanner top cover. P.6-13 "[B] Scanner top cover" Disconnect 1 connector. Connector Fig. 6-12 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 13 07/02...

Page 100 Fix the screw A and then B at the stopped position. 4. Remove the belt tension jig. Belt tension jig Fig. 6-15 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 14 06/04...

Page 101 Take off the scanner top cover. P.6-13 "[B] Scanner top cover" Disconnect 1 connector, release 2 latches and take off the platen sensor. Platen sensor Connector Fig. 6-18 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 15 06/04...

Page 102 Place the flat harness along the edge of the scanner base. Align the seal with the

two edges of the scanner base. Harness Fig. 6-21 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 16 06/04...

Page 103 CIS unit. Fig. 6-22 Release 2 latches each to take off 2 original glass guides from the CIS unit. Original glass guide Fig. 6-23 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 17 07/02...

Page 104 V- groove on the inside of the CIS unit drive belt-1. CIS unit drive belt-1 Fig. 6-26 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 18 08/06...

Page 105 [H] CIS unit drive belt-1 Take off the CIS case. P.6-18 "[G] CIS case" Tension bracket Loosen 1 fixing screw of the tension bracket. Fig. 6-29 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 SCANNER 6 - 19 06/04...

Page 106 When assembling the CIS unit drive belt-2, CIS unit drive belt-2 be sure to perform the tension adjustment for the scan motor. P.6-13 "[C] Scan motor (M1)" Fig. 6-32 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved SCANNER 6 - 20...

Page 107: Image Processing

High quality image processing, image memory editing, gamma correction, gradation processing, scanner high quality image processing, smoothing processing, image area control, laser related control and printer high quality image processing © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 IMAGE PROCESSING...

Page 108: Configuration

Scanner high-quality image processing Smoothing processing Image area control Laser related control Printer high-quality image processing LDR board Image data flow Laser drive Fig. 7-2 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved IMAGE PROCESSING 7 - 2 07/02...

Page 109: Main Board

Image memory editing Gamma correction Gradation processing Scanner high quality image processing Smoothing processing Image area control Laser related control Printer high quality processing © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 IMAGE PROCESSING 7 - 3 06/04...

Page 110: Functions Of Image Processing Circuit

When the matrix is (3 x 1): a+b+x x' = The above averaging operation is performed for all the pixels to accomplish the high reproducibil- ity of original. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved IMAGE PROCESSING 7 - 4...

Page 111 Enlargement/Reduction Enlargement/Reduction is accomplished by using the line memory control function in the process of the image processing operation. <Example> Enlargement 100% 200% © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 IMAGE PROCESSING 7 - 5...

Page 112 This function performs the APC (Auto Power Control). 9) Printer high quality processing This function reproduces the image signals output from the printer controller sharper. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved IMAGE PROCESSING 7 - 6...

Page 113: Laser Optical Unit

SNS board fθ lens-2 Slit glass LDR board Fine focus lens Aperture (Slit) fθ lens-1 Cylinder lens Polygonal motor Fig. 8-2 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 LASER OPTICAL UNIT 8 - 1 07/02...

Page 114: Structure

The following cautionary label for the laser is attached to the front right cover (inside of the front cover). Fig. 8-3 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights

reserved LASER OPTICAL UNIT 8 - 2 07/02...

Page 115 (C). One scan is performed on one plane of the polygonalmirror. Six scans can be made with one rotation of the polygonal mirror. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 LASER OPTICAL UNIT 8 - 3...

Page 116 5) Slit glass Slit glass is located where the laser beams are output from the laser optical unit, and it protects the unit from dust. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved LASER OPTICAL UNIT 8 - 4...

Page 117: Laser Diode Control Circuit

Power source Laser power Semiconductive laser Laser driver comparison circuit circuit Constant optical output Monitor efficiency Monitor output regulation circuit Fig. 8-8 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 LASER OPTICAL UNIT 8 - 5...

Page 118: Polygonal Motor Control Circuit

Polygonal motor ON signal PMTRCLK Polygonal motor reference clock PMTRSTS-0 Polygonal motor PLL control signal Rotating at a constant Stopping or error speed e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved LASER OPTICAL UNIT 8 - 6...

Page 119: Disassembly And Replacement

P.2-25 "[D] Switching regulator unit (PS)" Remove 1 screw. Pull out the laser optical unit while lifting it up and take it off. Laser optical unit Fig. 8-11 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 LASER OPTICAL UNIT 8 - 7...

Page 120 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved LASER OPTICAL UNIT 8 - 8...

Page 121: Drive Unit

Fuser roller Toner motor Toner recovery auger Drum Mixer Bypass feed roller Bypass pickup roller Main motor Pickup roller PFU drive gear Fig. 9-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRIVE UNIT 9 - 1 06/04...

Page 122: Configuration

Timing belt, gears Rollers (Exit roller, Pickup roller, Bypass Timing belt, gears feed roller, Bypass pickup roller and PFU) Toner motor (M2) Toner cartridge Gears e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRIVE UNIT 9 - 2...

Page 123: Functions

The main motor is a DC motor which is controlled by control signals output from the MAIN board. The driving force of the toner motor is transmitted to the toner cartridge via gears. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203...

Page 124: Main Motor Control Circuit

9) When MMTRBK-0 signal from the ASIC becomes "L" level, the motor is braked. When the MMTR-0 signal becomes "H" level, the motor is stopped. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRIVE UNIT 9 - 4...

Page 125 MMTRBK-0 signal: This signal applies a brake on the main motor. When this signal becomes "L" level, a brake is applied to the rotation of the motor. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRIVE UNIT...

Page 126: Disassembly And Replacement

Disconnect 1 connector, remove 1 screw, take off the toner motor with the bracket, and then remove 1 bushing and 1 gear. Bushing Bracket Gear Fig. 9-4 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRIVE UNIT 9 - 6...

Page 127 Rotation stopper Fig. 9-6 Remove 1 clip and take off 1 bushing. Clip Bushing Fig. 9-7 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRIVE

UNIT 9 - 7 07/02...

Page 128 Connector Main motor drive unit Fig. 9-8 Loosen 1 tensioner fixing screw and remove the tension spring. Tensioner spring Fig. 9-9 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRIVE UNIT 9 - 8...

Page 129 Tensioner spring Loosen the tensioner fixing screw. Let the spring force produce tension Fig. 9-11 for the belt, and tighten the fixing screw. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRIVE UNIT 9 - 9...

Page 130 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRIVE UNIT 9 - 10...

Page 131: Paper Feeding System

Pickup roller Paper empty sensor Bypass feed roller Bypass pickup roller Separation claw Bypass paper sensor Bypass separation pad Registration sensor Fig. 10-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 1...

Page 132: Configuration

Bypass pickup solenoid (SOL2) Bypass pickup clutch Bypass feed clutch Registration roller Registration roller clutch (CLT1) Registration sensor (S4) Drawer detection switch (SW5) e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 2...

Page 133: Functions

(SOL2) is turned OFF, the spring tension of the one-way clutch decreases so that the bypass pickup roller moves to the upper position (standby position), and moves to the lower position (operation position) when the solenoid is turned ON. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM...

Page 134 Also, it is used to detect the trailing edge of the paper has passed the registration roller. 15)Drawer detection sensor (SW5) The switch to detect whether the drawer is fully inserted or not. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 4...

Page 135: Operation

(S4) within a specified period of time or not is substituted for the paper jam detection. Pickup clutch Pickup solenoid Pickup roller Fig. 10-2 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 5...

Page 136 Separation claw Pickup clutch Pickup solenoid Pickup roller Fig. 10-3 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 6...

Page 137: Bypass Tray

Bypass pickup clutch Bypass feed clutch Bypass feed roller Bypass pickup clutch Bypass separation pad Bypass pickup solenoid Bypass pickup roller Fig. 10-4 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 7...

Page 138 Bypass feed clutch Bypass pickup clutch Bypass feed roller Bypass feed roller Bypass separation pad Spring Bypass separation pad Bypass pickup roller Fig. 10-5 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 8...

Page 139: General Operation

• The registration clutch (CLT1) is turned ON and the paper aligned by the registration roller is trans- ported to the transfer unit. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 9...

Page 140: Disassembly And Replacement

Guide Screw Note: When installing the bypass unit, place the guide behind the transfer unit. Screw Bypass unit Fig. 10-8 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All

rights reserved PAPER FEEDING SYSTEM 10 - 10...

Page 141 Fig. 10-10 Remove 1 screw on the bottom of the bypass separation pad unit, and take off the cover. Cover Fig. 10-11 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 11...

Page 142 [D] Bypass roller unit Take off the bypass unit. P.10-10 "[A] Bypass unit" Remove 2 screws, and take off the cover. Cover Fig. 10-14 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 12 06/04...

Page 143 Bypass roller unit Note: When installing the bypass roller unit, insert Coupling the shaft into the coupling on the rear side. Shaft Fig. 10-17 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 13...

Page 144 P.10-12 "[D] Bypass roller unit" Bypass feed roller Remove 1 clip. Then pull out the shaft. Take off the bypass feed roller. Shaft Clip Fig. 10-19 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 14...

Page 145 Spring Bracket Fig. 10-21 Release 2 latches, take off the bypass sen- sor, and disconnect the connector. Bracket Connector Bypass sensor Fig. 10-22 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 15...

Page 146 Remove 1 E-ring, 1 bushing and 2 screws. Then take off the 1 bracket and 2 gears. Gear Gear Bracket Bushing E-ring Fig. 10-25 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 16...

Page 147 Spring Fig. 10-28 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 17...

Page 148 Remove 1 E-ring, and take off the bypass feed clutch. E-ring Bypass feed clutch Fig. 10-29 Remove the gear, cover, spring and cap. Cover Spring Gear Fig. 10-30 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 18...

Page 149 Screw Damp heater unit or dummy plate Fig. 10-32 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 19 06/04...

Page 150 Fig. 10-33 Release 2 latches and take off the paper empty sensor from the bracket. Bracket Paper empty sensor Fig. 10-34 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 20 06/04...

Page 151 Rotation stopper Fig. 10-37 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 21 06/04...

Page 152 Remove 1 screw and take off the pickup solenoid bracket. Bushing Note: Be sure not to drop the bushing. Screw Pickup solenoid bracket Fig. 10-40 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 22 07/02...

Page 153 Remove 1 E-ring, and take off the drawer pickup clutch. Drawer pickup clutch E-ring Fig. 10-42 Take off the cover-A, cover-B, spring and flange. Cover-B Cover-A Fig. 10-43 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 23 07/02...

Page 154 Remove 2 washers, 1 E-ring, 1 gear, and 1 pin from the registration roller. Washer Gear E-ring Washer Registration roller (rubber) Fig. 10-46 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 24...

Page 155 Take off the pickup solenoid bracket. P.10-22 "[N] Pickup solenoid (SOL1)" Remove 2 screws, and then take off the feed gear unit. Feed gear unit Fig. 10-49 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 25...

Page 156 Take off the rear cover. P.2-22 "[J] Rear cover" Release the harness from the

harness clamp and disconnect 1 connector. Connector Harness clamp Fig. 10-52 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 26 06/04...

Page 157 Release the harness from the harness clamp, disconnect the connector, remove 3 screws, and then take off the registration guide. Connector Fig. 10-55 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 PAPER FEEDING SYSTEM 10 - 27 06/04...

Page 158 Remove the seal, release 2 latches, and take off the registration sensor. Registration sensor Seal Fig. 10-56 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved PAPER FEEDING SYSTEM 10 - 28...

Page 159: Drum Related Section

Main charger Recovery blade Drum thermistor Post-Transfer guide Exhaust fan Separation charger Transfer charger Transfer guide roller Pre-Transfer guide Ozone filter Drum Fig. 11-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 1...

Page 160: Configuration

Transfer charger wire PM parts Separation charger wire PM parts Exhaust fan (M5) Ozone filter PM parts Transport guide Temperature/humidity sensor (S3) Switching regulator (PS) e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 2...

Page 161: Functions

Therefore, the needle electrode enables to reduce the ozone amount. Main charger Needle electrode Charge Fig. 11-2 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 3...

Page 162 Thus the main charger grid, transfer/separation charger, transfer guide bias, developer bias, laser output and auto-toner output are controlled to be at their optimum states. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 4...

Page 163: High-Voltage Output Control Circuit

Transfer HVTAC-0 Transfer charger bias HVTT-0 ASIC Separation HVTSP-0 Separation charger bias HVTGB-0 Transfer guide HVSDWN-0 Transfer guide bias Leakage detection Fig. 11-3 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 5...

Page 164: Description Of Operation

This signal is for leakage detection of the high-voltage generation circuit. This signal becomes "L" level at the occurrence of such an abnormality. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 6...

Page 165: Drum Temperature Detection Circuit

A/D converter becomes smaller along with the rise of the temperature. MAIN board Digital data DRTH-1A converter Drum thermistor Fig. 11-4 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 7...

Page 166: Temperature/Humidity Detection Circuit

SoC. The higher the temperature or the humidity is, the higher the output voltage of this sensor becomes. MAIN board Temperature/ humidity sensor TEM-1A (Temp) Digital data converter HMS-1A (Hum) Fig. 11-5 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 8...

Page 167: Disassembly And Replacement

Note: When installing the process unit, make sure that the connector (harness) is not caught under the developer unit. Process unit Fig. 11-6 © 2005 - 2008 TOSHIBA TEC CORPORATION All

rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 9...

Page 168 Process unit front cover Fig. 11-8 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 10...

Page 169 Release 1 latch and take off the discharge LED unit. Note: Be careful not to touch or scratch the drum surface at this time. Discharge LED unit Latch Fig. 11-11 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 11...

Page 170 Remove the spring and take off the main Main charger grid charger grid. Note: Do not touch the mesh area of the grid. Spring Fig. 11-14 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 12...

Page 171 1. Do not touch the needle electrode directly with bare hands. 2. Make sure not to hold or bend the needle Terminal electrode. Spring Fig. 11-17 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 13...

Page 172 Remove 2 screws and take off the drum Drum cleaning blade cleaning blade. Note: Be careful not to touch or scratch the edge of the drum cleaning blade. Fig. 11-19 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 14...

Page 173 P.11-15 "[J] Drum separation finger" Remove 2 screws, and take off the whole recovery blade with the bracket. Recovery blade Fig. 11-22 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 15 07/02...

Page 174 Release 2 latches and take off the terminal Terminal cover cover on the rear side. Fig. 11-25 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 16 06/04...

Page 175 Open off the ADU cover. Take off 2 guides. Guide Fig. 11-27 Take off the transfer unit while pulling the lever. Transfer unit Fig. 11-28 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 17...

Page 176 Harness cover Fig. 11-29 Disconnect 1 connector. Connector Fig. 11-30 Take off the transfer unit while lifting it up. Transfer unit Fig. 11-31 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 18...

Page 177 Post transfer guide Take off the transfer/separation charger. P.11-16 "[L] Transfer/Separation charger" Remove 1 screw and take off the post trans- fer guide. Fig. 11-34 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 19...

Page 178 Fig. 11-36 Release the harness from the harness clamp, remove the two-sided tape and take off the exhaust fan. Exhaust fan Duct Fig. 11-37 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 20...

Page 179 Disconnect 1 connector, remove 1 screw and then take off the toner cartridge interface PC board. Toner cartridge interface PC board Fig. 11-39 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DRUM RELATED SECTION 11 - 21...

Page 180 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DRUM RELATED SECTION 11 - 22...

Page 181: Development System

(M3) to rotate the mixers and the developer sleeve. Drum thermistor Drum Doctor blade Toner recycling auger Mixer-3 Mixer-2 Auto-toner sensor Mixer-1 Developer sleeve Fig. 12-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 1...

Page 182: Construction

Recovered toner supply mechanism (Toner recycling auger) Toner cartridge Toner cartridge PC board CTRG Toner cartridge interface PC board CTIF Toner motor M2 (Ch. 9) e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 2...

Page 183: Functions

(M2). The toner cartridge in this equipment mounts the toner cartridge PC board (CTRG), and the data identifying recommended TOSHIBA toner cartridges and the counter values determining that the cartridge is nearly empty are written in this board. These data are read out by the toner cartridge interface PC board (CTIF) in this equipment, and data related to toner supply are also written in the toner cartridge PC board (CTRG).

Page 184: Functions Of The Toner Cartridge Pc Board (Ctrg)

The toner cartridge in this equipment mounts the toner cartridge PC board (CTRG). An IC chip is embedded in this board, and the data identifying the recommended TOSHIBA toner cartridge and thresholds to determine if the cartridge is nearly empty are written in this chip.

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When the cartridge detecting function is set to ON (08-695 is set at “1”), the value of the toner near- empty status threshold setting (08-971) is automatically set at “1” and the toner remaining check func- tion is enabled. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM...

Page 186: Recovered Toner Supply Mechanism

1. They are further mixed by the mixer-1 and transported to the developer sleeve. Drum cleaner Mixer-1 Mixer-2 Toner recovery auger Mixer-3 Toner cartridge Fresh toner Recovered toner Toner recycling auger Fig. 12-2 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 6...

Page 187: Toner Motor Control Circuit

The toner motor is driven when the ON/OFF signal (TNRMTON-0) output from the ASIC becomes “L” level. MAIN board +24VCOV-OFF Toner motor ASIC TNRMTON-0 Fig. 12-3 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 7...

Page 188: Auto-Toner Circuit

Recovered toner supply mechanism Toner Toner motor Main Recovered motor toner converter Toner density signal Auto-toner sensor Control voltage signal Developer material converter Fig. 12-4 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 8...

Page 189: Function Of Auto-Toner Sensor

Toner is supplied from toner cartridge. o The auto-toner sensor output changes. o The toner density returns to normal value. o The toner-empty state is cleared. © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 9...

Page 190

The ratio of the toner against the carrier in the developer material increases. o The magnetic resistance increases. o The detection output decreases. o The auto-toner output V decreases. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 10...

Page 191: Disassembly And Replacement

Developer unit Fig. 12-6 2. Do not deform the Guide Mylar by touch- ing this. Guide mylar Fig. 12-7 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 11...

Page 192

Note: When removing the developer material, be careful not to drop the developer material on the gears of the developer unit. Fig. 12-10 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 12...

Page 193

Place the developer unit upside down. Disconnect 1 connector, release 1 latch, and then rotate the auto toner sensor counter- clockwise to take it off. Fig. 12-12 © 2005 - 2008

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Page 194 Remove 1 screw. Disconnect 1 connector while taking off the recovered toner drive unit. Remove 1 gear. Connector Gear Recovered toner drive unit Fig. 12-15 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 14...

Page 195 (Mark the position if needed.) When reassembling, match the polarity adjustment lever with the previously marked position on the scale. Polarity adjustment lever Fig. 12-18 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 15...

Page 196 Remove 1 E-ring and take off the guide roller on the front side. E-ring Guide roller Fig. 12-20 Remove 1 screw and the gear. Gear Fig. 12-21 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 16 06/04...

Page 197 (12) Remove 1 E-ring, 1 pin and 1 pulley. (13) Take off the guide roller on the rear side. Guide roller Pulley E-ring Fig. 12-24 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 17...

Page 198 Fig. 12-26 [G] Mixer Take off the developer sleeve. P.12-14 "[F] Guide roller / Developer sleeve" Doctor sleeve Take off the doctor sleeve. Fig. 12-27 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 18...

Page 199 (Replacement of Oil seal: P.12-21 "[H] Oil seal Replacement of Oil Seal") Bushing Fig. 12-29 Take off the mixers-2 and -3. Mixer-3 Mixer-2 Fig. 12-30 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 19...

Page 200 End section of mixer-1 (Replacement of Oil seal: P.12-21 "[H] Replacement of Oil Seal") Bushing Oil seal Fig. 12-32 (10) Take off the mixer-1. Mixer-1 Fig. 12-33 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 20...

Page 201 Apply the grease (Alvania No.2; amount of 2 rice grains) on entire surface of the oil seal evenly. Grease Note: Wipe off the excessive grease. Oil seal Fig. 12-35 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 DEVELOPMENT SYSTEM 12 - 21...

Page 202 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved DEVELOPMENT SYSTEM 12 - 22...

Page 203: Fuser / Exit Unit

Fuser separation finger Exit roller Exit sensor Center heater lamp Side heater lamp Pressure roller Fuser thermostat Center/Side/Edge thermistor Fuser roller Fig. 13-1 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 1...

Page 204: Configurations

Heater lamp (LAMP1, LAMP2) 564W+564W Thermistor (THM1, 2, 3) Fuser thermostat (THMO1) Non-contact type (170ºC) Separation finger Periodic replacement part Exit roller e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 2...

Page 205: Functions

9) Exit roller The exit roller, which transports the paper to the inner tray, is driven by the main motor (M3). © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 3...

Page 206: Operation

Auto Power Save Mode, the equipment then enters the Auto Shut Off mode to turn OFF the 2 heater lamps. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 4...

Page 207: Fuser Unit Control Circuit

Side heater lamp control signal AC line DC line Forcible power-off Relay-OFF signal circuit MAIN board Fig. 13-2 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 5 06/04...

Page 208: Temperature Detection Section

(Approx. 235ºC), the heater lamp is turned OFF regardless of the temperature of the area where the paper passes on. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 6...

Page 209 Fixed time (08-205) Auto °C Shut Off Mode Fixed time (08-206) Temperature of fuser roller Heater lamp Fig. 13-4 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 7...

Page 210 After confirming that it is the fuser unit abnormality, correct the abnormality and reset the counter value (08-400) to “0” to start up the equipment normally. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 8...

Page 211 OFF the power when the temperature of heater lamp exceeds the specified temperature. Center thermistor MTH-1A Side thermistor STH-1A ADCD0 converter ETH-1A Edge thermistor Fig. 13-5 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 9...

Page 212 40°C or below On usual 40°C or below 40°C or below The figures in the “priority” section denote the priority of error checking. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 10...

Page 213: Disassembly And Replacement

Separate the pressure roller and the heat roller while pressing the thermistor ground leaf spring. Thermistor ground leaf spring Fig. 13-8 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 11 07/02...

Page 214 Release the latch and take off the gear-A. Gear-A Fig. 13-9 Take off the gear-B. Gear-B Fig. 13-10 Remove the bracket. Bracket Fig. 13-11 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 12...

Page 215 Then slide its rear hinge downward. Note: Keep the guide being slid to the front side during the steps (3) and (4). Guide Fig. 13-14 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 13 07/02...

Page 216 Remove the Mylar. Disconnect 1 connector, release 2 latches, Exit sensor and then take off the exit sensor. Connector Mylar Fig. 13-17 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 14 07/02...

Page 217 P.13-11 "[B] Pressure roller unit / Fuser Fuser roller unit roller unit" Remove 5 springs. Spring Fig. 13-19 Take off 5 separation fingers. Separation finger Fig. 13-20 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 15 07/02...

Page 218 The con- nector on each end of the harness which connects to the side heater lamp has a big one. e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 16 07/02...

Page 219 P.13-11 "[B] Pressure roller unit / Fuser roller unit" Remove 3 screws, and then take off the fuser unit entrance guide. Fuser unit entrance guide Fig. 13-26 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved e-STUDIO163/203 FUSER / EXIT UNIT 13 - 17 07/02...

Page 220 (pressure roller ground plate side) in order not to deform the pressure roller ground plate. Pressure roller ground plate Fig. 13-29 e-STUDIO163/203 © 2005 - 2008 TOSHIBA TEC CORPORATION All rights reserved FUSER / EXIT UNIT 13 - 18...

Page 221 Take off the fuser roller. P.13-17 "[G] Fuser roller" Remove 2 screws and take off the fuser ther- mostat. Fuser thermostat Fig. 13-32 e-STUDIO163/203 FUSER / EXIT UNIT 13 - 19...

Page 222 FUSER / EXIT UNIT 13 - 20...

Page 223: Power Supply Unit

AC power is supplied to each heater lamp (center and side) in the fuser unit. For details of the heater lamp control circuit, see the following. P.13-5 "13.5 Fuser Unit Control Circuit" e-STUDIO163/203 POWER SUPPLY UNIT...

Page 224: Operation Of Dc Output Circuit

If the protection circuit is activated (except when the fuse is blown), repair the causes such as short-circuiting. Turn ON the power again 1 minute later to clear the overcurrent protection. e-STUDIO163/203 POWER SUPPLY UNIT 14 - 2...

Page 225: Output Channel

The following is an output channel for the cover switch line. 1) +24V +24VCOV-OFF: CN104 Pins 21 and 22 Output to the MAIN board, PFU (via MAIN board) e-STUDIO163/203 POWER SUPPLY UNIT 14 - 3 06/04...

Page 226: Fuse

Contact image sensor unit +24VDF F202: 4A +24VCOV-OFF MAIN board Toner motor F201: 4A Main motor Exhaust fan Auto-toner sensor Discharge LED Coin controller e-STUDIO163/203 POWER SUPPLY UNIT 14 - 4...

Page 227: Configuration Of Power Supply Unit

14.5 Configuration of Power Supply Unit CN104 CN113 CN108 CN105 Regulator CN101 CN106 Fig. 14-1 e-STUDIO163/203 POWER SUPPLY UNIT 14 - 5 06/04...

Page 228: Power Supply Sequence

(Linked with main switch) OPEN Cover opening/closing CLOSE interlock switch 200 ms or lower +24VCOV-OFF (Linked with cover switch) Fig. 14-2 e-STUDIO163/203 POWER SUPPLY UNIT 14 - 6...

Page 229: Ac Wire Harness

14.7 AC Wire Harness Fig. 14-3 e-STUDIO163/203 POWER SUPPLY UNIT 14 - 7 06/04...

Page 230 POWER SUPPLY UNIT 14 - 8...

Page 231 15. PC BOARDS 1) PWA-F-MAIN Fig. 15-1 2) PWA-F-SRAM Fig. 15-2 e-STUDIO163/203 PC BOARDS 15 - 1...

Page 232 3) PWA-F-LDR Fig. 15-3 4) PWA-F-SNS Fig. 15-4 5) PWA-F-LPNL Fig. 15-5 e-STUDIO163/203 PC BOARDS 15 - 2...

Page 233 6) PWA-F-FUS Fig. 15-6 e-STUDIO163/203 PC BOARDS 15 - 3...

Page 234 PC BOARDS 15 - 4...

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