FIG. 1

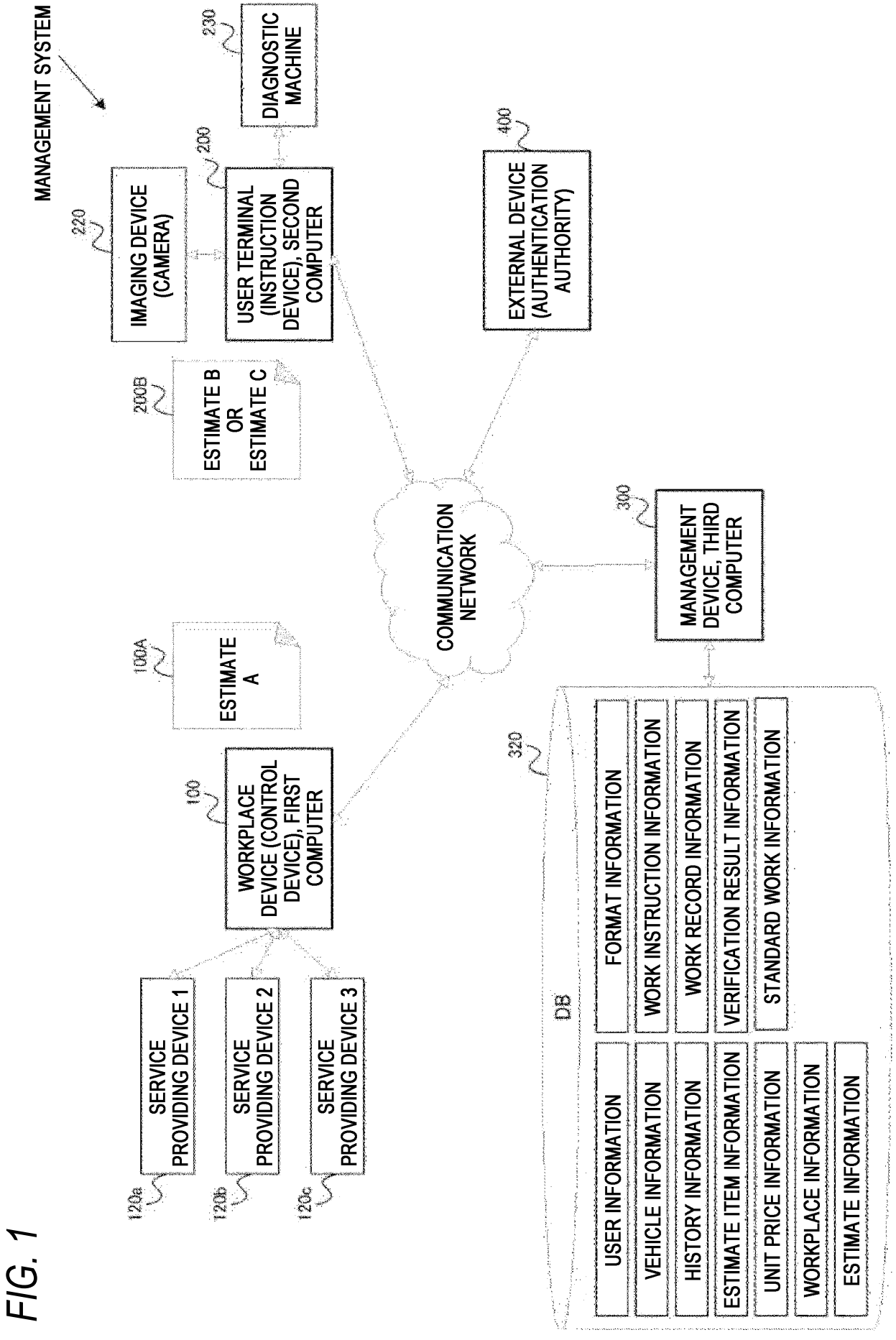

MANAGEMENT SYSTEM
DIAGNOSTIC MACHINE
230
IMAGING DEVICE (CAMERA)
220
USER TERMINAL (INSTRUCTION DEVICE), SECOND COMPUTER
200
EXTERNAL DEVICE (AUTHENTICATION AUTHORITY)
400
ESTIMATE B OR ESTIMATE C
200B
COMMUNICATION NETWORK
MANAGEMENT DEVICE, THIRD COMPUTER
300
ESTIMATE A
100A
WORKPLACE DEVICE (CONTROL DEVICE), FIRST COMPUTER
100
DB
320
FORMAT INFORMATION
WORK INSTRUCTION INFORMATION
WORK RECORD INFORMATION
VERIFICATION RESULT INFORMATION
STANDARD WORK INFORMATION
USER INFORMATION
VEHICLE INFORMATION
HISTORY INFORMATION
ESTIMATE ITEM INFORMATION
UNIT PRICE INFORMATION
WORKPLACE INFORMATION
ESTIMATE INFORMATION
SERVICE PROVIDING DEVICE 1
SERVICE PROVIDING DEVICE 2
SERVICE PROVIDING DEVICE 3
120a
120b
120c

FIG. 2

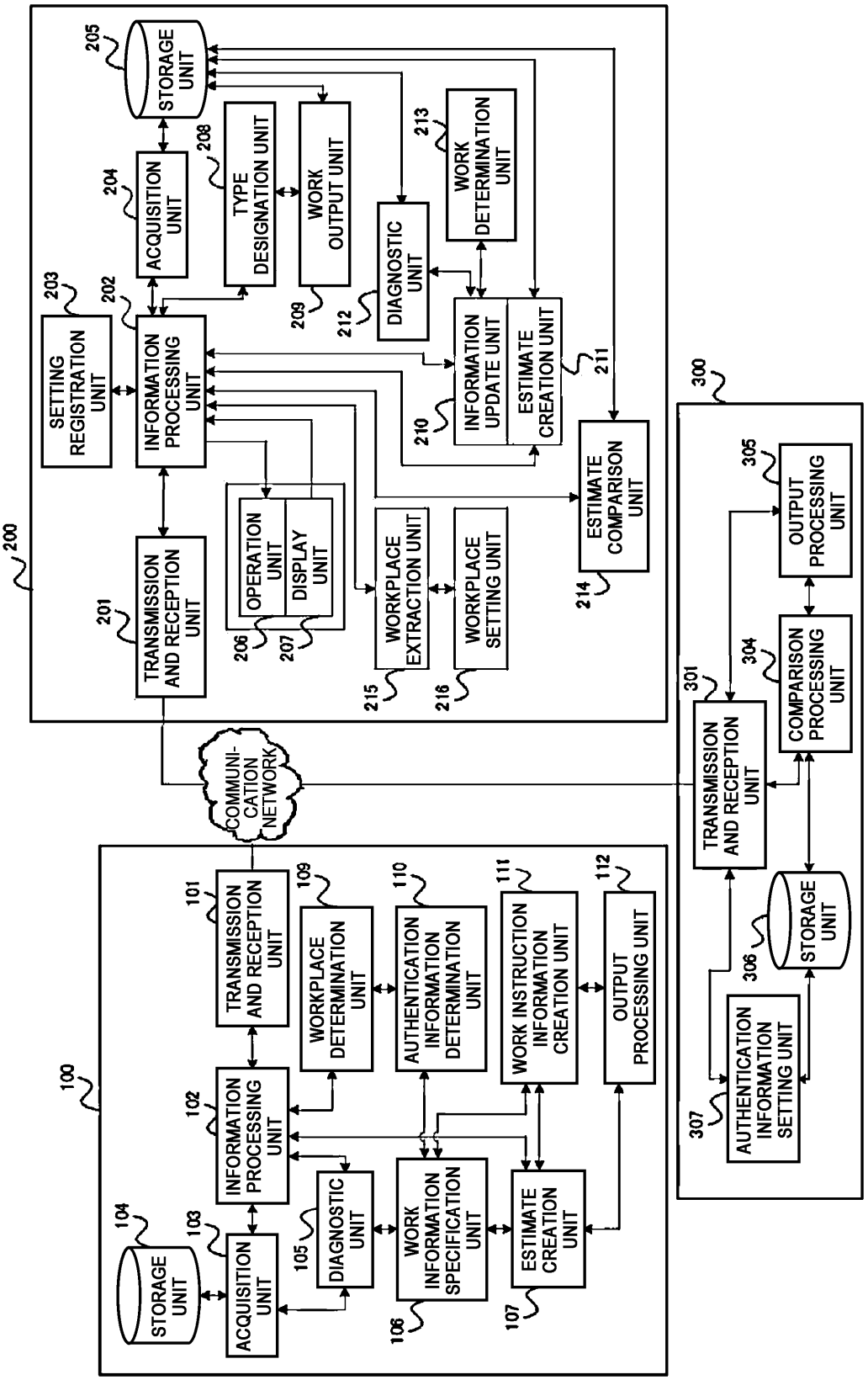

100
101 TRANSMISSION AND RECEPTION UNIT
102 INFORMATION PROCESSING UNIT
103 ACQUISITION UNIT
104 STORAGE UNIT
105 DIAGNOSTIC UNIT
106 WORK INFORMATION SPECIFICATION UNIT
107 ESTIMATE CREATION UNIT
109 WORKPLACE DETERMINATION UNIT
110 AUTHENTICATION INFORMATION DETERMINATION UNIT
111 WORK INSTRUCTION INFORMATION CREATION UNIT
112 OUTPUT PROCESSING UNIT
COMMUNI-CATION NETWORK
200
201 TRANSMISSION AND RECEPTION UNIT
202 INFORMATION PROCESSING UNIT
203 SETTING REGISTRATION UNIT
204 ACQUISITION UNIT
205 STORAGE UNIT
206 OPERATION UNIT
207 DISPLAY UNIT
208 TYPE DESIGNATION UNIT
209 WORK OUTPUT UNIT
210 INFORMATION UPDATE UNIT
211 ESTIMATE CREATION UNIT
212 DIAGNOSTIC UNIT
213 WORK DETERMINATION UNIT
214 ESTIMATE COMPARISON UNIT
215 WORKPLACE EXTRACTION UNIT
216 WORKPLACE SETTING UNIT
300
301 TRANSMISSION AND RECEPTION UNIT
304 COMPARISON PROCESSING UNIT
305 OUTPUT PROCESSING UNIT
306 STORAGE UNIT
307 AUTHENTICATION INFORMATION SETTING UNIT

FIG. 3

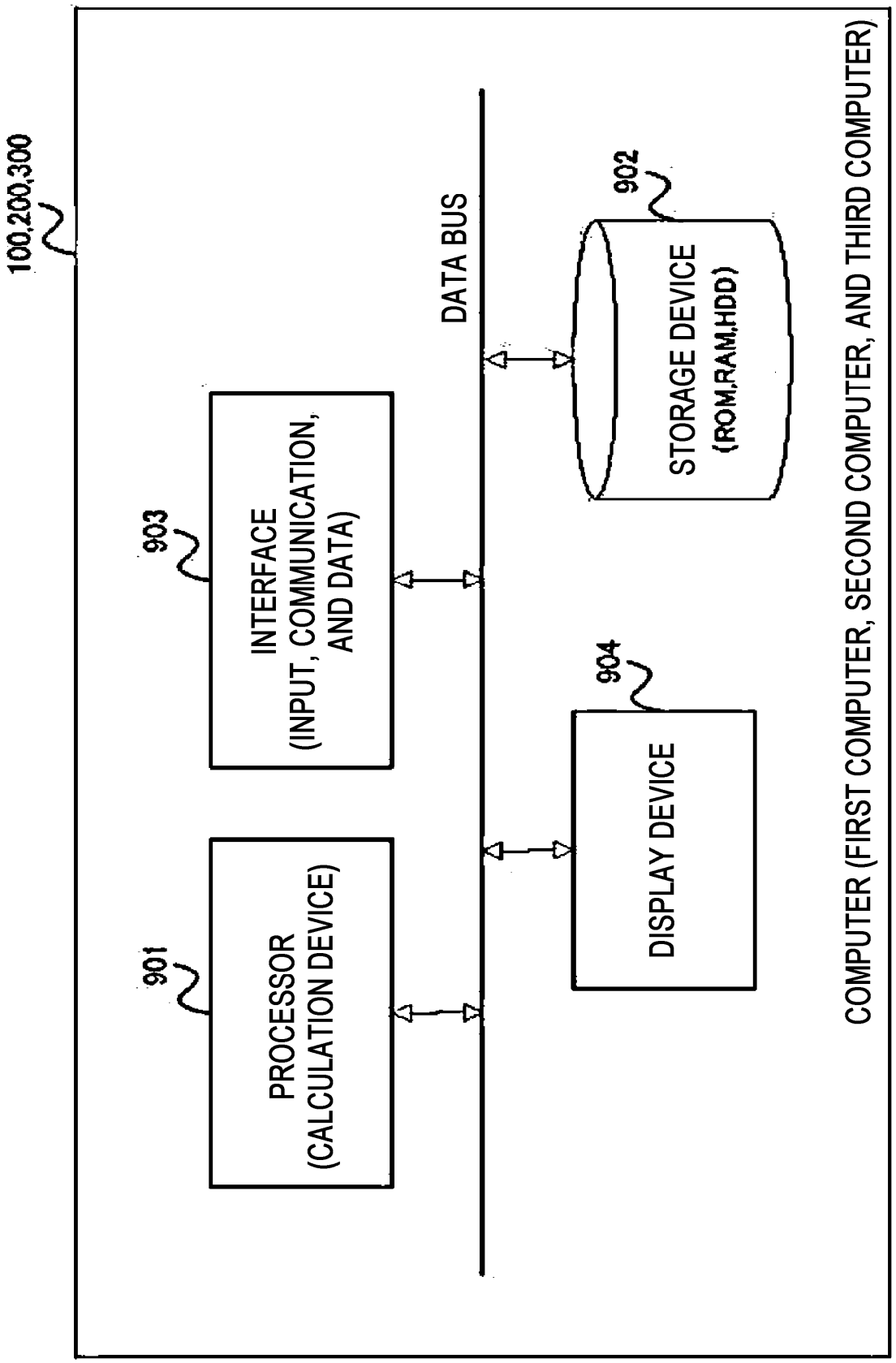

100,200,300
COMPUTER (FIRST COMPUTER, SECOND COMPUTER, AND THIRD COMPUTER)
DATA BUS
901
PROCESSOR (CALCULATION DEVICE)
902
STORAGE DEVICE (ROM,RAM,HDD)
903
INTERFACE (INPUT, COMMUNICATION, AND DATA)
904
DISPLAY DEVICE

FIG. 4

[ESTIMATE AFTER DESIGNATING REQUEST DESTINATION + CONFIRMATION OF REQUEST DESTINATION ESTIMATE BY REQUESTER]

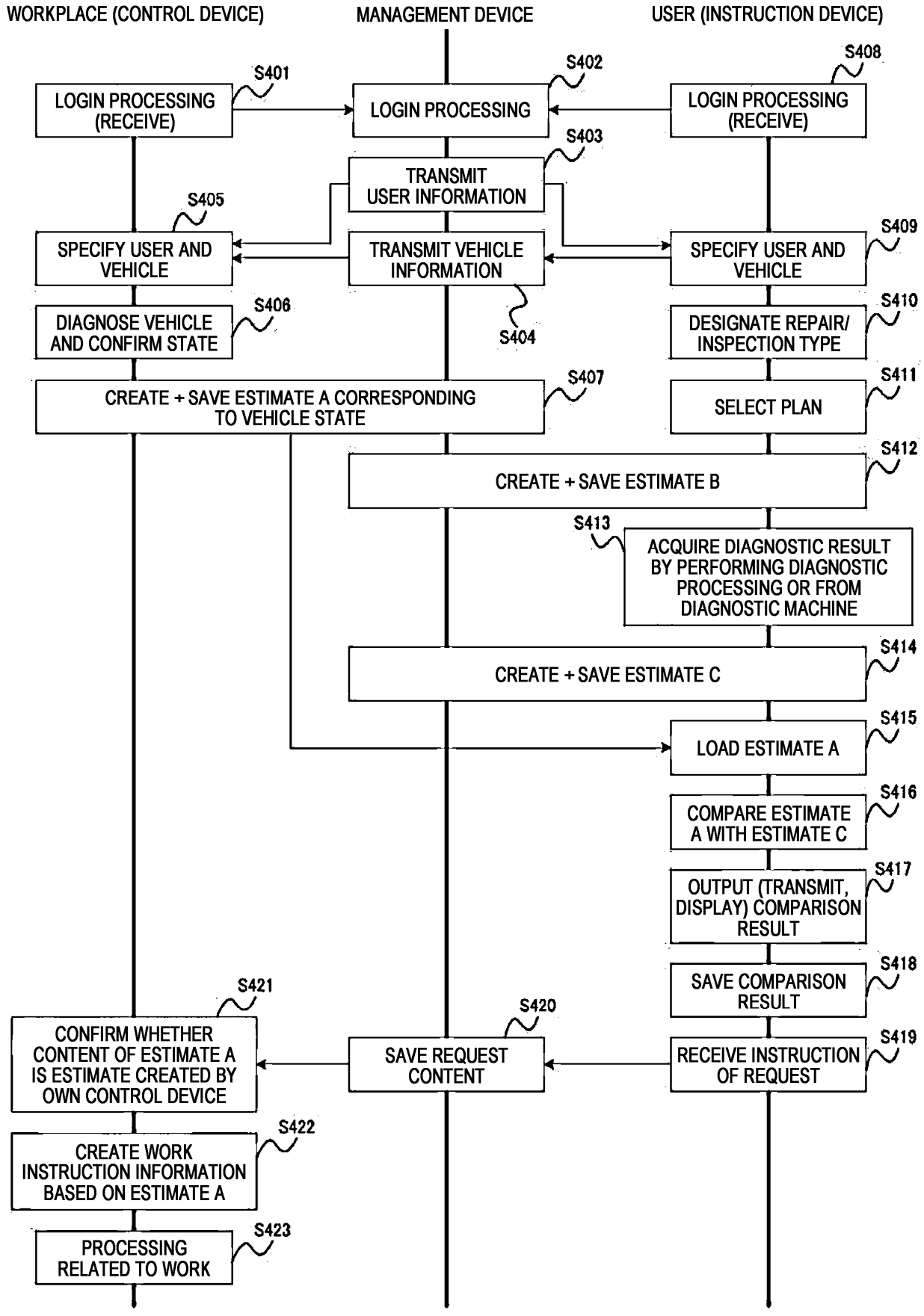


FIG. 5

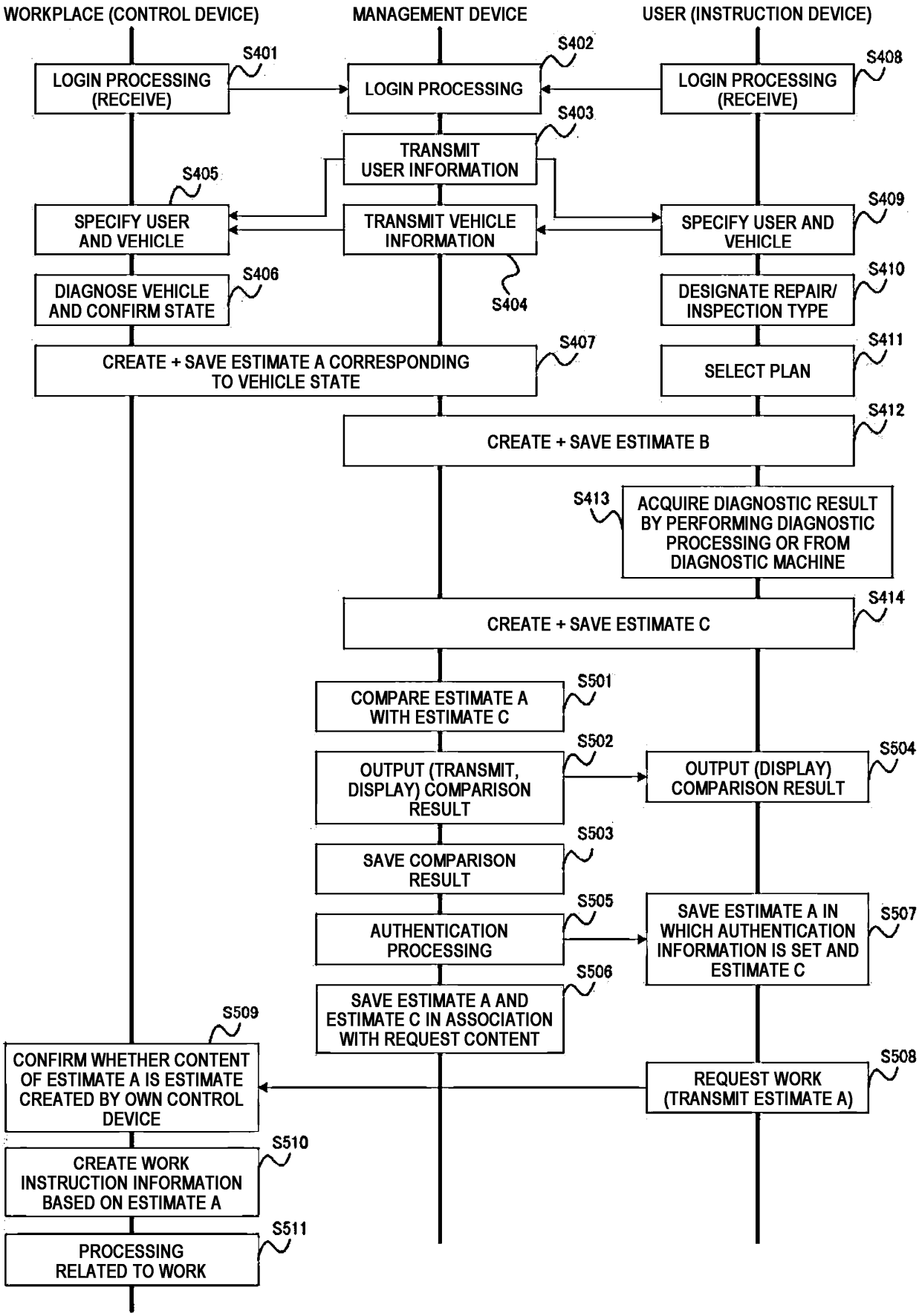

[ESTIMATE AFTER DESIGNATING REQUEST DESTINATION + WORK BASED ON REQUEST DESTINATION ESTIMATE]
WORKPLACE (CONTROL DEVICE)
MANAGEMENT DEVICE
USER (INSTRUCTION DEVICE)
S401
LOGIN PROCESSING (RECEIVE)
S402
LOGIN PROCESSING
S408
LOGIN PROCESSING (RECEIVE)
S403
TRANSMIT USER INFORMATION
S405
SPECIFY USER AND VEHICLE
TRANSMIT VEHICLE INFORMATION
S409
SPECIFY USER AND VEHICLE
S406
DIAGNOSE VEHICLE AND CONFIRM STATE
S404
S410
DESIGNATE REPAIR/ INSPECTION TYPE
S407
CREATE + SAVE ESTIMATE A CORRESPONDING TO VEHICLE STATE
S411
SELECT PLAN
S412
CREATE + SAVE ESTIMATE B
S413
ACQUIRE DIAGNOSTIC RESULT BY PERFORMING DIAGNOSTIC PROCESSING OR FROM DIAGNOSTIC MACHINE
S414
CREATE + SAVE ESTIMATE C
S501
COMPARE ESTIMATE A WITH ESTIMATE C
S502
OUTPUT (TRANSMIT, DISPLAY) COMPARISON RESULT
S504
OUTPUT (DISPLAY) COMPARISON RESULT
S503
SAVE COMPARISON RESULT
S505
AUTHENTICATION PROCESSING
SAVE ESTIMATE A IN WHICH AUTHENTICATION INFORMATION IS SET AND ESTIMATE C
S507
S506
SAVE ESTIMATE A AND ESTIMATE C IN ASSOCIATION WITH REQUEST CONTENT
S509
CONFIRM WHETHER CONTENT OF ESTIMATE A IS ESTIMATE CREATED BY OWN CONTROL DEVICE
S508
REQUEST WORK (TRANSMIT ESTIMATE A)
S510
CREATE WORK INSTRUCTION INFORMATION BASED ON ESTIMATE A
S511
PROCESSING RELATED TO WORK

FIG. 6

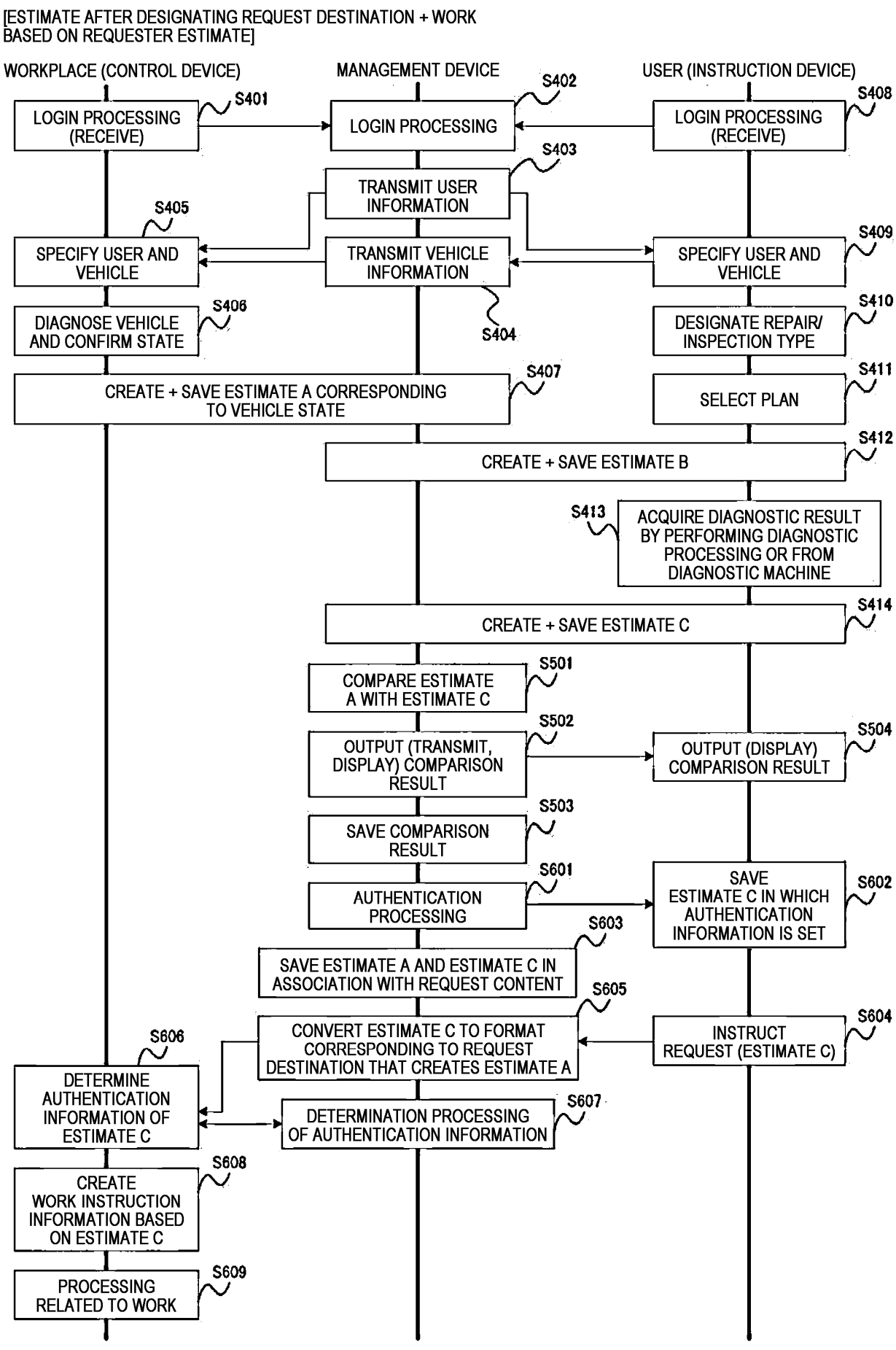

[ESTIMATE AFTER DESIGNATING REQUEST DESTINATION + WORK BASED ON REQUESTER ESTIMATE]
WORKPLACE (CONTROL DEVICE)
MANAGEMENT DEVICE
USER (INSTRUCTION DEVICE)
LOGIN PROCESSING (RECEIVE)
S401
LOGIN PROCESSING
S402
LOGIN PROCESSING (RECEIVE)
S408
TRANSMIT USER INFORMATION
S403
S405
SPECIFY USER AND VEHICLE
TRANSMIT VEHICLE INFORMATION
S404
SPECIFY USER AND VEHICLE
S409
DIAGNOSE VEHICLE AND CONFIRM STATE
S406
DESIGNATE REPAIR/ INSPECTION TYPE
S410
CREATE + SAVE ESTIMATE A CORRESPONDING TO VEHICLE STATE
S407
SELECT PLAN
S411
CREATE + SAVE ESTIMATE B
S412
S413
ACQUIRE DIAGNOSTIC RESULT BY PERFORMING DIAGNOSTIC PROCESSING OR FROM DIAGNOSTIC MACHINE
CREATE + SAVE ESTIMATE C
S414
COMPARE ESTIMATE A WITH ESTIMATE C
S501
OUTPUT (TRANSMIT, DISPLAY) COMPARISON RESULT
S502
OUTPUT (DISPLAY) COMPARISON RESULT
S504
SAVE COMPARISON RESULT
S503
AUTHENTICATION PROCESSING
S601
SAVE ESTIMATE C IN WHICH AUTHENTICATION INFORMATION IS SET
S602
SAVE ESTIMATE A AND ESTIMATE C IN ASSOCIATION WITH REQUEST CONTENT
S603
CONVERT ESTIMATE C TO FORMAT CORRESPONDING TO REQUEST DESTINATION THAT CREATES ESTIMATE A
S605
INSTRUCT REQUEST (ESTIMATE C)
S604
S606
DETERMINE AUTHENTICATION INFORMATION OF ESTIMATE C
DETERMINATION PROCESSING OF AUTHENTICATION INFORMATION
S607
CREATE WORK INSTRUCTION INFORMATION BASED ON ESTIMATE C
S608
PROCESSING RELATED TO WORK
S609

FIG. 7

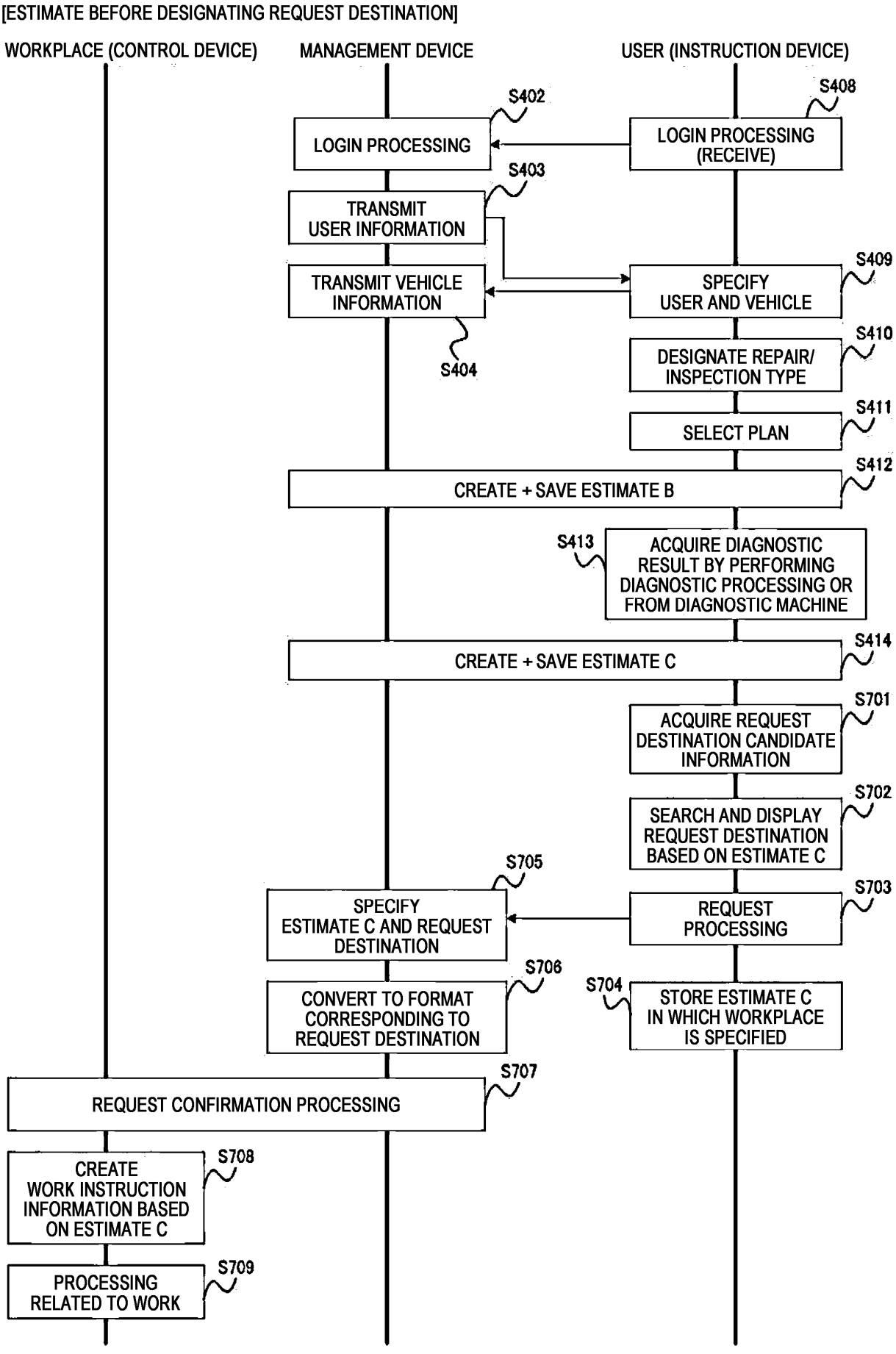

[ESTIMATE BEFORE DESIGNATING REQUEST DESTINATION]
WORKPLACE (CONTROL DEVICE)
MANAGEMENT DEVICE
USER (INSTRUCTION DEVICE)
S402
LOGIN PROCESSING
S408
LOGIN PROCESSING (RECEIVE)
S403
TRANSMIT USER INFORMATION
TRANSMIT VEHICLE INFORMATION
S404
S409
SPECIFY USER AND VEHICLE
S410
DESIGNATE REPAIR/ INSPECTION TYPE
S411
SELECT PLAN
S412
CREATE + SAVE ESTIMATE B
S413
ACQUIRE DIAGNOSTIC RESULT BY PERFORMING DIAGNOSTIC PROCESSING OR FROM DIAGNOSTIC MACHINE
S414
CREATE + SAVE ESTIMATE C
S701
ACQUIRE REQUEST DESTINATION CANDIDATE INFORMATION
S702
SEARCH AND DISPLAY REQUEST DESTINATION BASED ON ESTIMATE C
S705
SPECIFY ESTIMATE C AND REQUEST DESTINATION
S703
REQUEST PROCESSING
S706
CONVERT TO FORMAT CORRESPONDING TO REQUEST DESTINATION
S704
STORE ESTIMATE C IN WHICH WORKPLACE IS SPECIFIED
S707
REQUEST CONFIRMATION PROCESSING
S708
CREATE WORK INSTRUCTION INFORMATION BASED ON ESTIMATE C
S709
PROCESSING RELATED TO WORK

FIG. 8

[ESTIMATE AFTER DESIGNATING REQUEST DESTINATION + CHECK REQUEST DESTINATION ESTIMATE BY REQUESTER]

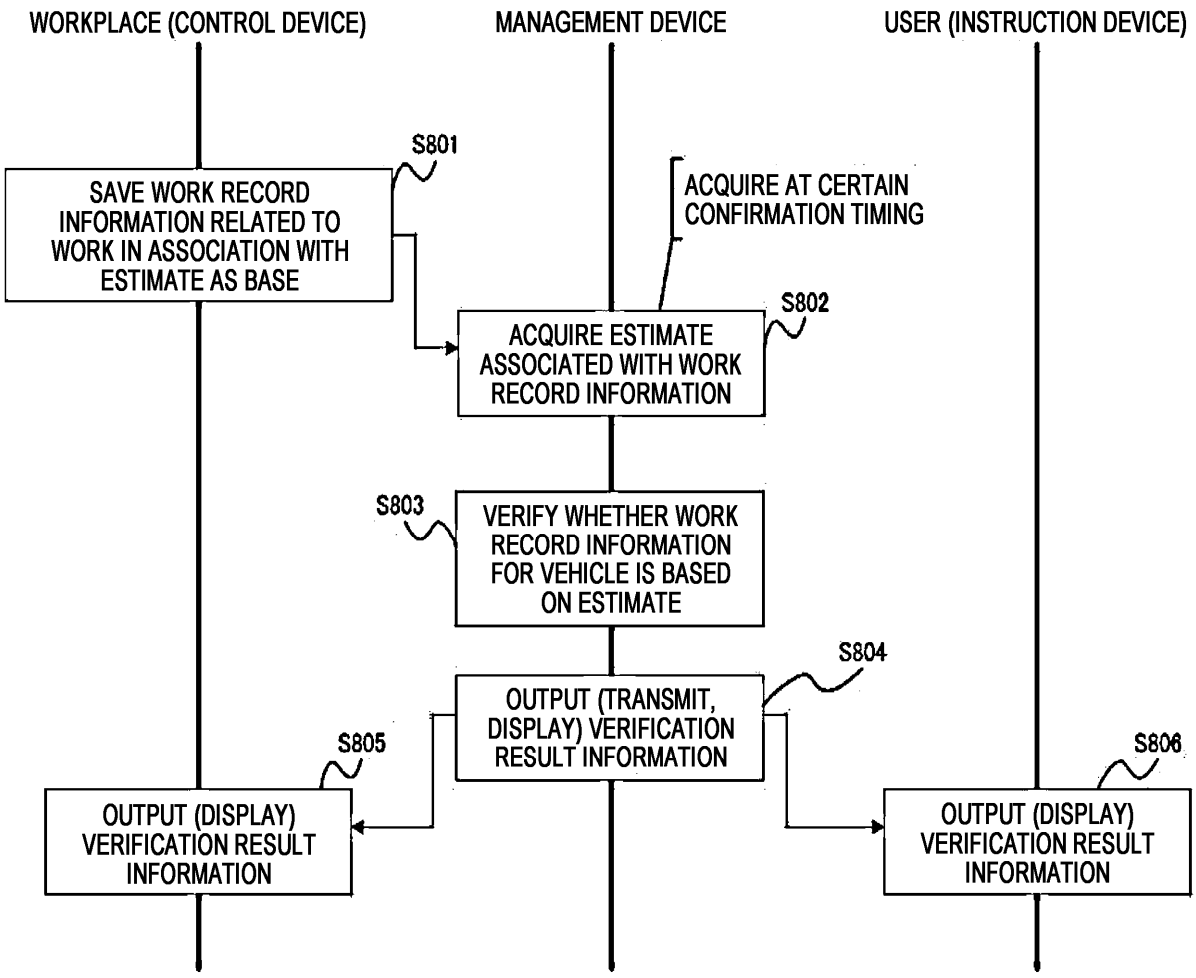


FIG. 9

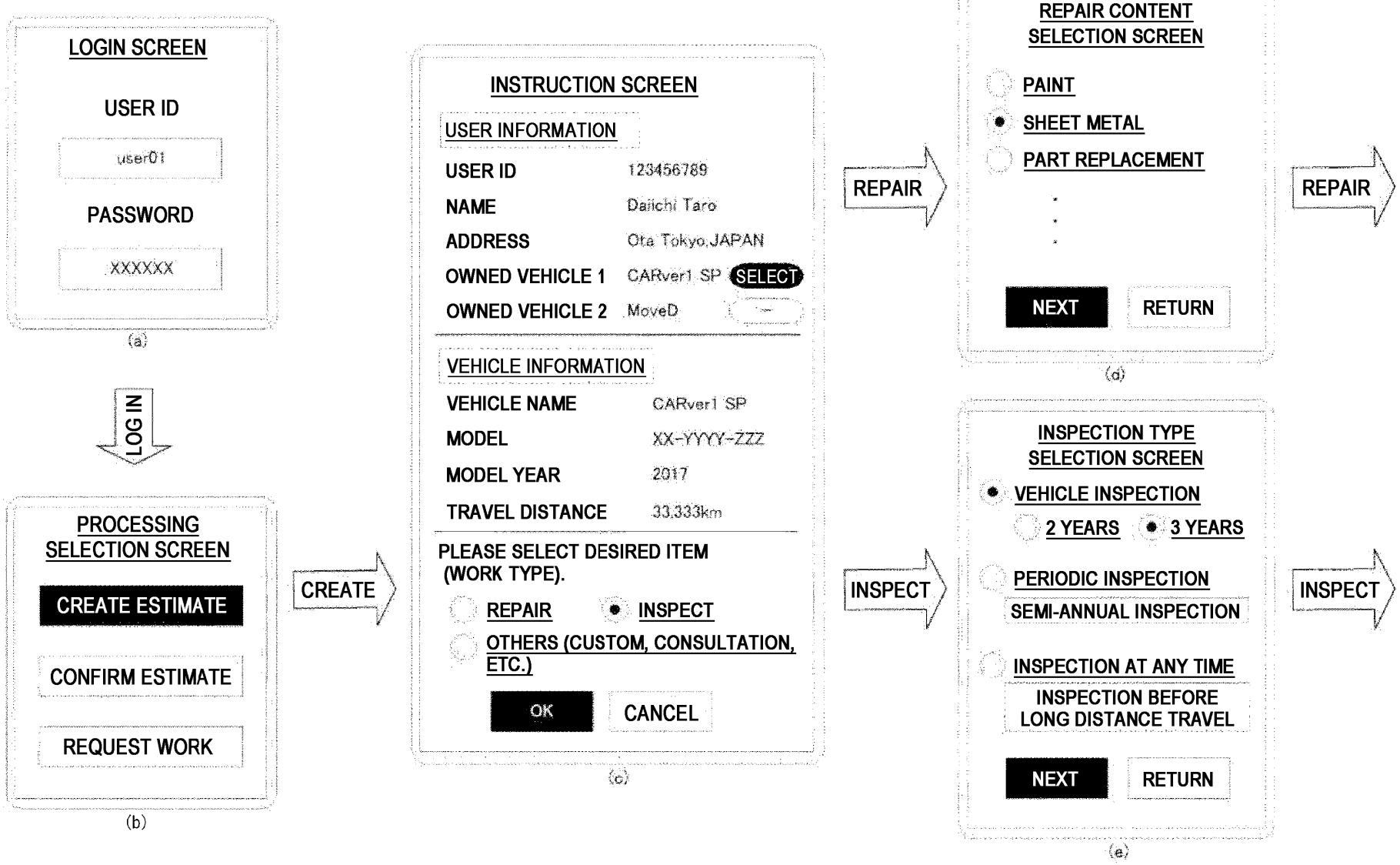

LOGIN SCREEN
USER ID
user01
PASSWORD
XXXXXX
(a)
LOG IN
PROCESSING SELECTION SCREEN
CREATE ESTIMATE
CONFIRM ESTIMATE
REQUEST WORK
(b)
CREATE
INSTRUCTION SCREEN
USER INFORMATION
USER ID 123456789
NAME Daiichi Taro
ADDRESS Ota Tokyo,JAPAN
OWNED VEHICLE 1 CARver1 SP SELECT
OWNED VEHICLE 2 MoveD
VEHICLE INFORMATION
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
PLEASE SELECT DESIRED ITEM (WORK TYPE).
REPAIR
INSPECT
OTHERS (CUSTOM, CONSULTATION, ETC.)
OK
CANCEL
(c)
REPAIR
REPAIR CONTENT SELECTION SCREEN
PAINT
SHEET METAL
PART REPLACEMENT
NEXT
RETURN
(d)
REPAIR
INSPECT
INSPECTION TYPE SELECTION SCREEN
VEHICLE INSPECTION
2 YEARS
3 YEARS
PERIODIC INSPECTION
SEMI-ANNUAL INSPECTION
INSPECTION AT ANY TIME
INSPECTION BEFORE LONG DISTANCE TRAVEL
NEXT
RETURN
(e)
INSPECT

FIG. 10

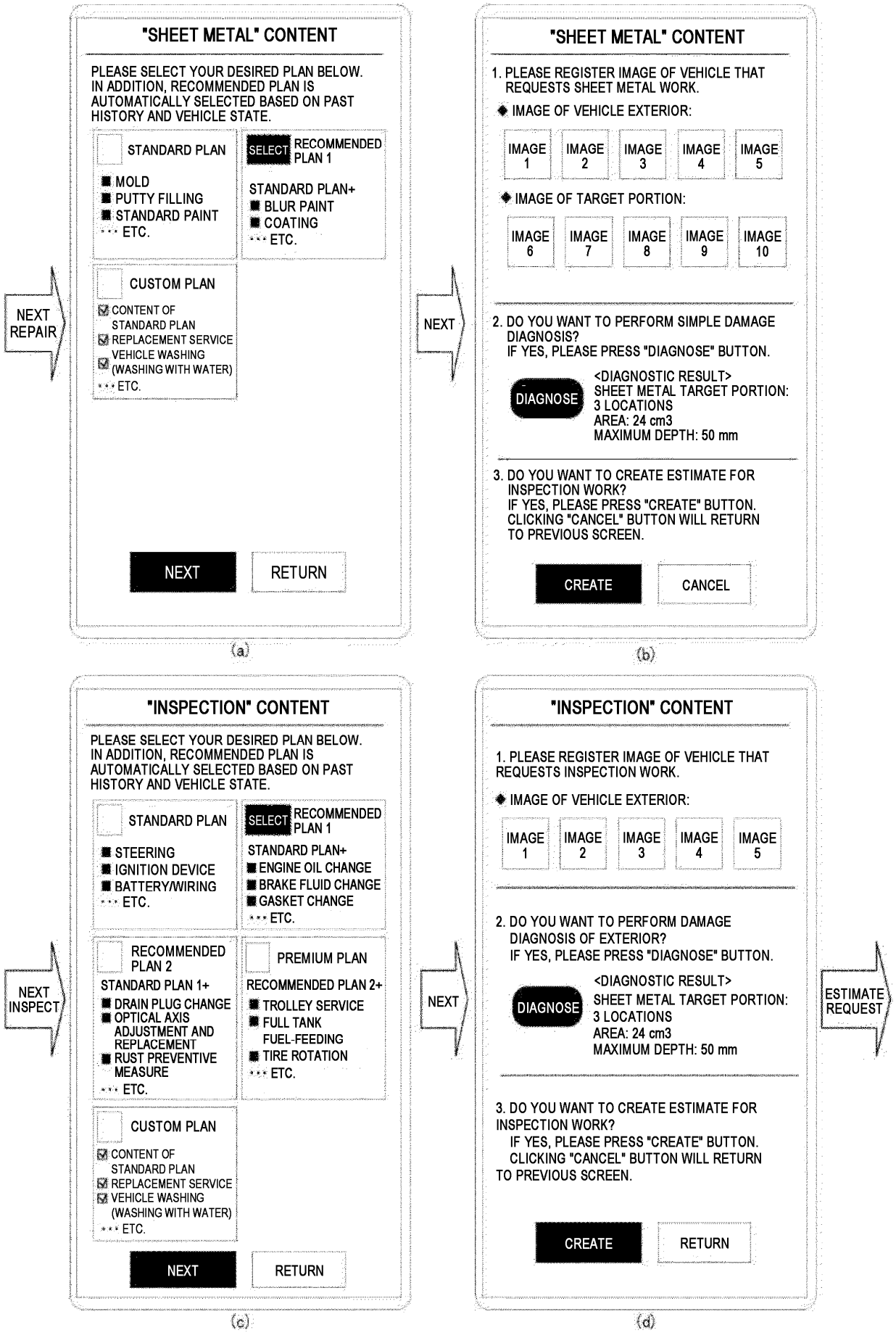

"SHEET METAL" CONTENT
PLEASE SELECT YOUR DESIRED PLAN BELOW.
IN ADDITION, RECOMMENDED PLAN IS AUTOMATICALLY SELECTED BASED ON PAST HISTORY AND VEHICLE STATE.
STANDARD PLAN
MOLD
PUTTY FILLING
STANDARD PAINT
*** ETC.
SELECT
RECOMMENDED PLAN 1
STANDARD PLAN+
BLUR PAINT
COATING
*** ETC.
CUSTOM PLAN
CONTENT OF STANDARD PLAN
REPLACEMENT SERVICE
VEHICLE WASHING (WASHING WITH WATER)
*** ETC.
NEXT REPAIR
NEXT
RETURN
(a)
"SHEET METAL" CONTENT
1. PLEASE REGISTER IMAGE OF VEHICLE THAT REQUESTS SHEET METAL WORK.
IMAGE OF VEHICLE EXTERIOR:
IMAGE 1
IMAGE 2
IMAGE 3
IMAGE 4
IMAGE 5
IMAGE OF TARGET PORTION:
IMAGE 6
IMAGE 7
IMAGE 8
IMAGE 9
IMAGE 10
2. DO YOU WANT TO PERFORM SIMPLE DAMAGE DIAGNOSIS?
IF YES, PLEASE PRESS "DIAGNOSE" BUTTON.
DIAGNOSE
<DIAGNOSTIC RESULT>
SHEET METAL TARGET PORTION:
3 LOCATIONS
AREA: 24 cm3
MAXIMUM DEPTH: 50 mm
3. DO YOU WANT TO CREATE ESTIMATE FOR INSPECTION WORK?
IF YES, PLEASE PRESS "CREATE" BUTTON.
CLICKING "CANCEL" BUTTON WILL RETURN TO PREVIOUS SCREEN.
CREATE
CANCEL
(b)
"INSPECTION" CONTENT
PLEASE SELECT YOUR DESIRED PLAN BELOW.
IN ADDITION, RECOMMENDED PLAN IS AUTOMATICALLY SELECTED BASED ON PAST HISTORY AND VEHICLE STATE.
STANDARD PLAN
STEERING
IGNITION DEVICE
BATTERY/WIRING
*** ETC.
SELECT
RECOMMENDED PLAN 1
STANDARD PLAN+
ENGINE OIL CHANGE
BRAKE FLUID CHANGE
GASKET CHANGE
*** ETC.
RECOMMENDED PLAN 2
STANDARD PLAN 1+
DRAIN PLUG CHANGE
OPTICAL AXIS ADJUSTMENT AND REPLACEMENT
RUST PREVENTIVE MEASURE
*** ETC.
PREMIUM PLAN
RECOMMENDED PLAN 2+
TROLLEY SERVICE
FULL TANK FUEL-FEEDING
TIRE ROTATION
*** ETC.
CUSTOM PLAN
CONTENT OF STANDARD PLAN
REPLACEMENT SERVICE
VEHICLE WASHING (WASHING WITH WATER)
*** ETC.
NEXT INSPECT
NEXT
RETURN
(c)
"INSPECTION" CONTENT
1. PLEASE REGISTER IMAGE OF VEHICLE THAT REQUESTS INSPECTION WORK.
IMAGE OF VEHICLE EXTERIOR:
IMAGE 1
IMAGE 2
IMAGE 3
IMAGE 4
IMAGE 5
2. DO YOU WANT TO PERFORM DAMAGE DIAGNOSIS OF EXTERIOR?
IF YES, PLEASE PRESS "DIAGNOSE" BUTTON.
DIAGNOSE
<DIAGNOSTIC RESULT>
SHEET METAL TARGET PORTION:
3 LOCATIONS
AREA: 24 cm3
MAXIMUM DEPTH: 50 mm
3. DO YOU WANT TO CREATE ESTIMATE FOR INSPECTION WORK?
IF YES, PLEASE PRESS "CREATE" BUTTON.
CLICKING "CANCEL" BUTTON WILL RETURN TO PREVIOUS SCREEN.
CREATE
RETURN
NEXT
ESTIMATE REQUEST
(d)

FIG. 11

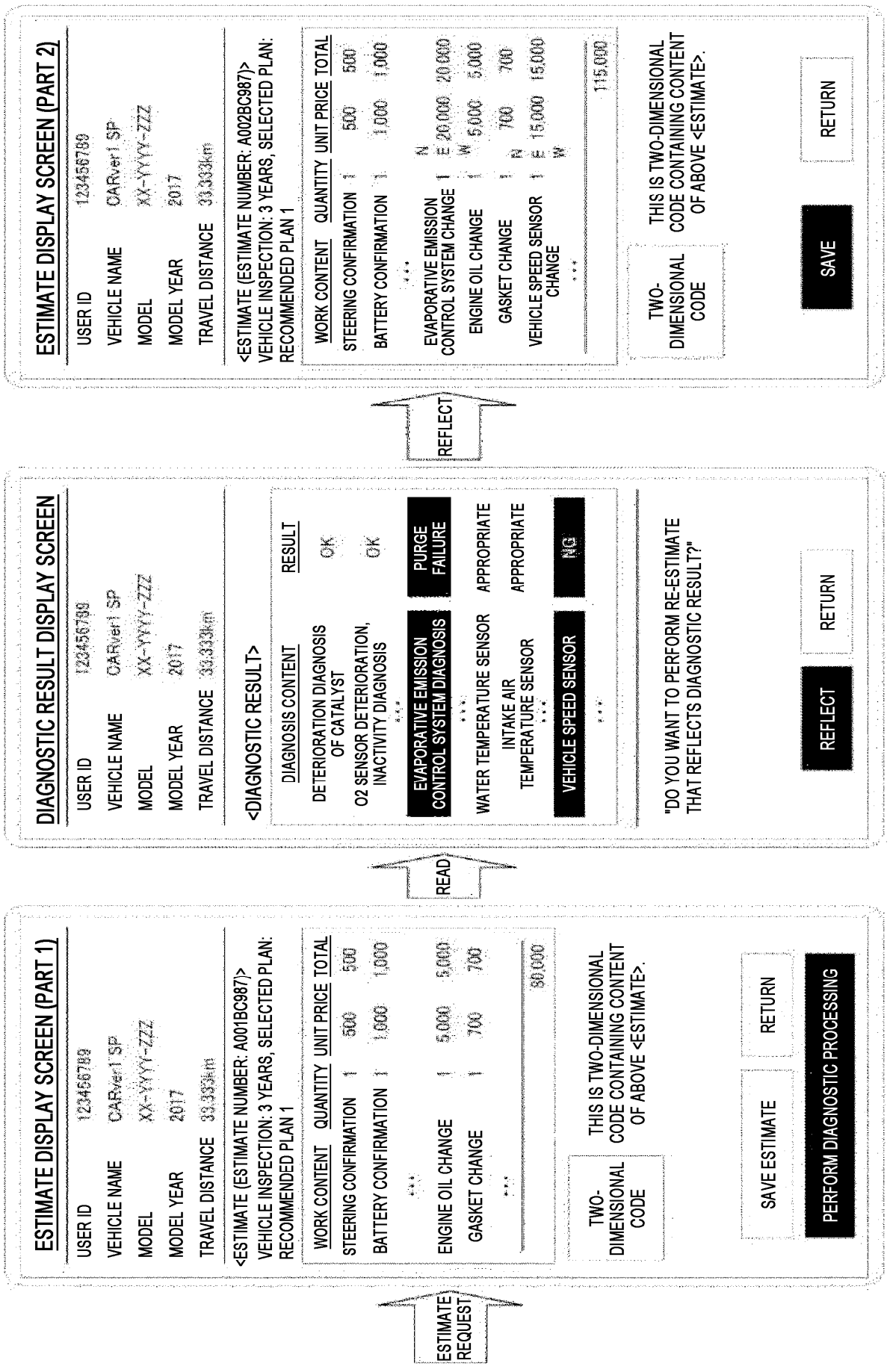

ESTIMATE REQUEST
ESTIMATE DISPLAY SCREEN (PART 1)
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<ESTIMATE (ESTIMATE NUMBER: A001BC987)>
VEHICLE INSPECTION: 3 YEARS, SELECTED PLAN: RECOMMENDED PLAN 1
WORK CONTENT QUANTITY UNIT PRICE TOTAL
STEERING CONFIRMATION 1 500 500
BATTERY CONFIRMATION 1 1,000 1,000
...
ENGINE OIL CHANGE 1 5,000 5,000
GASKET CHANGE 1 700 700
...
80,000
TWO-DIMENSIONAL CODE
THIS IS TWO-DIMENSIONAL CODE CONTAINING CONTENT OF ABOVE <ESTIMATE>.
SAVE ESTIMATE
RETURN
PERFORM DIAGNOSTIC PROCESSING
(a)
READ
DIAGNOSTIC RESULT DISPLAY SCREEN
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<DIAGNOSTIC RESULT>
DIAGNOSIS CONTENT RESULT
DETERIORATION DIAGNOSIS OF CATALYST OK
O2 SENSOR DETERIORATION, INACTIVITY DIAGNOSIS OK
EVAPORATIVE EMISSION CONTROL SYSTEM DIAGNOSIS PURGE FAILURE
...
WATER TEMPERATURE SENSOR APPROPRIATE
INTAKE AIR TEMPERATURE SENSOR APPROPRIATE
...
VEHICLE SPEED SENSOR NG
...
"DO YOU WANT TO PERFORM RE-ESTIMATE THAT REFLECTS DIAGNOSTIC RESULT?"
REFLECT
RETURN
(b)
REFLECT
ESTIMATE DISPLAY SCREEN (PART 2)
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<ESTIMATE (ESTIMATE NUMBER: A002BC987)>
VEHICLE INSPECTION: 3 YEARS, SELECTED PLAN: RECOMMENDED PLAN 1
WORK CONTENT QUANTITY UNIT PRICE TOTAL
STEERING CONFIRMATION 1 500 500
BATTERY CONFIRMATION 1 1,000 1,000
...
EVAPORATIVE EMISSION CONTROL SYSTEM CHANGE 1 N E 20,000 20,000
ENGINE OIL CHANGE 1 W 5,000 5,000
GASKET CHANGE 1 N E 700 700
VEHICLE SPEED SENSOR CHANGE 1 N E 15,000 15,000
W
...
115,000
TWO-DIMENSIONAL CODE
THIS IS TWO-DIMENSIONAL CODE CONTAINING CONTENT OF ABOVE <ESTIMATE>.
SAVE
RETURN
(c)

FIG. 12

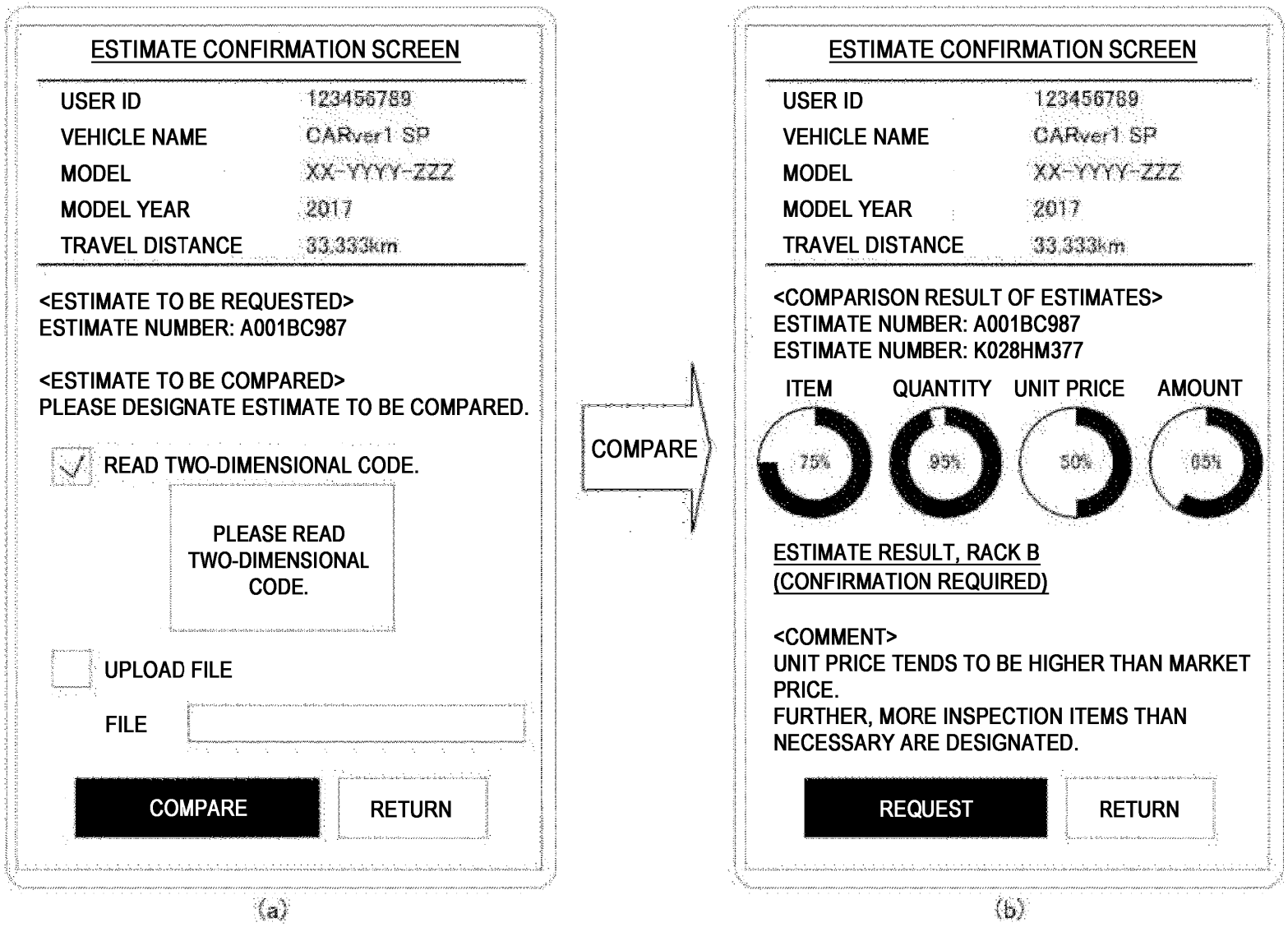
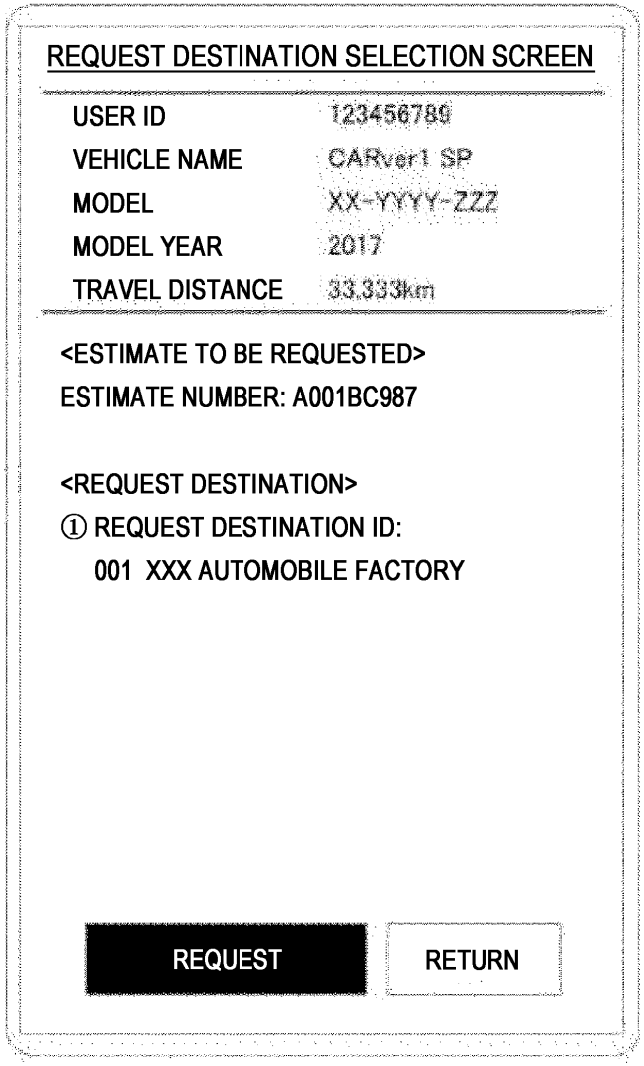
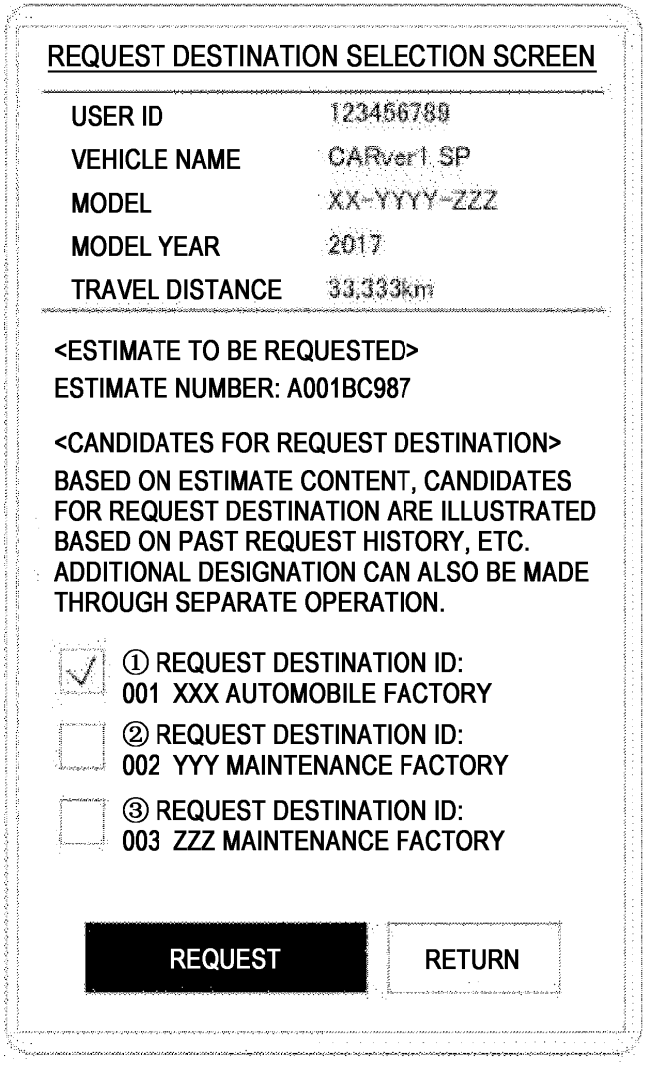

ESTIMATE CONFIRMATION SCREEN
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<ESTIMATE TO BE REQUESTED>
ESTIMATE NUMBER: A001BC987
<ESTIMATE TO BE COMPARED>
PLEASE DESIGNATE ESTIMATE TO BE COMPARED.
READ TWO-DIMENSIONAL CODE.
PLEASE READ TWO-DIMENSIONAL CODE.
UPLOAD FILE
FILE
COMPARE
RETURN
(a)
COMPARE
ESTIMATE CONFIRMATION SCREEN
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<COMPARISON RESULT OF ESTIMATES>
ESTIMATE NUMBER: A001BC987
ESTIMATE NUMBER: K028HM377
ITEM
QUANTITY
UNIT PRICE
AMOUNT
75%
95%
50%
65%
ESTIMATE RESULT, RACK B
(CONFIRMATION REQUIRED)
<COMMENT>
UNIT PRICE TENDS TO BE HIGHER THAN MARKET PRICE.
FURTHER, MORE INSPECTION ITEMS THAN NECESSARY ARE DESIGNATED.
REQUEST
RETURN
(b)

FIG. 13


REQUEST DESTINATION SELECTION SCREEN
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<ESTIMATE TO BE REQUESTED>
ESTIMATE NUMBER: A001BC987
<REQUEST DESTINATION>
① REQUEST DESTINATION ID:
001 XXX AUTOMOBILE FACTORY
REQUEST
RETURN

(a)


REQUEST DESTINATION SELECTION SCREEN
USER ID 123456789
VEHICLE NAME CARver1 SP
MODEL XX-YYYY-ZZZ
MODEL YEAR 2017
TRAVEL DISTANCE 33,333km
<ESTIMATE TO BE REQUESTED>
ESTIMATE NUMBER: A001BC987
<CANDIDATES FOR REQUEST DESTINATION>
BASED ON ESTIMATE CONTENT, CANDIDATES FOR REQUEST DESTINATION ARE ILLUSTRATED BASED ON PAST REQUEST HISTORY, ETC. ADDITIONAL DESIGNATION CAN ALSO BE MADE THROUGH SEPARATE OPERATION.
① REQUEST DESTINATION ID:
001 XXX AUTOMOBILE FACTORY
② REQUEST DESTINATION ID:
002 YYY MAINTENANCE FACTORY
③ REQUEST DESTINATION ID:
003 ZZZ MAINTENANCE FACTORY
REQUEST
RETURN

(b)

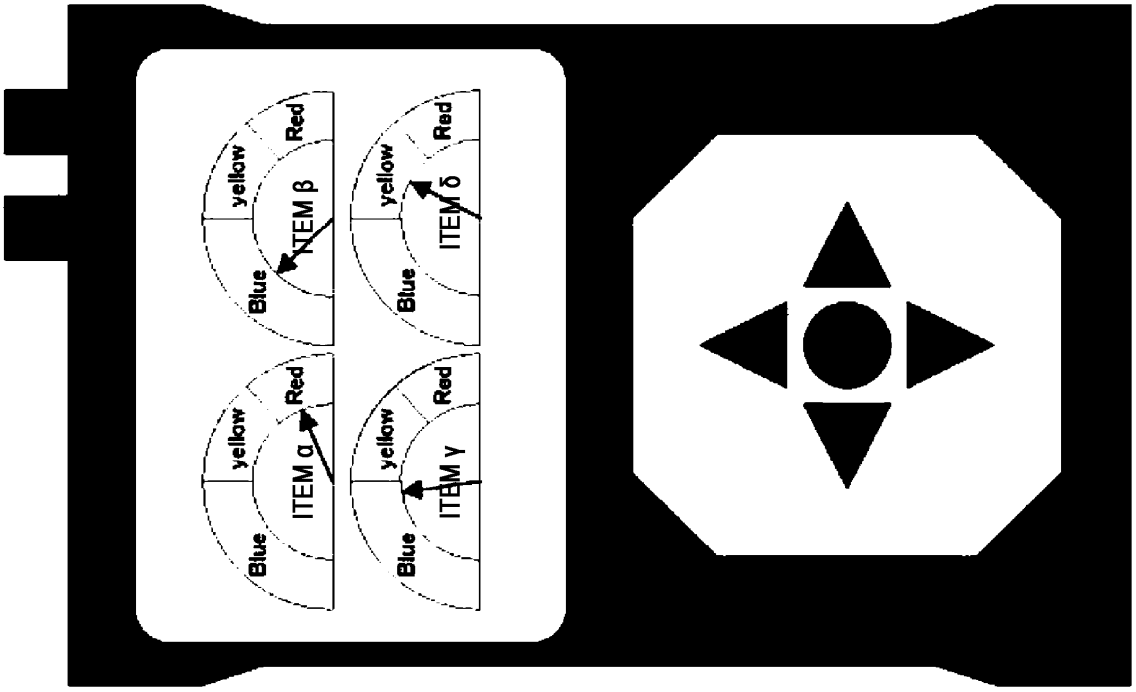

Red
yellow
Blue
ITEM β
Red
yellow
Blue
ITEM δ
Red
yellow
Blue
ITEM α
Red
yellow
Blue
ITEM γ

FIG. 14

FIG. 15

(a) USER INFORMATION TABLE

USER ID	USER NAME	ADDRESS (REGION)	FAMILY INFORMATION	USER RANK
User001	TARO	REGION A, TOKYO	User201 User303	RANK 5
User002	ICHI	REGION ZK, OSAKA	User319	RANK 2
...	...	...	...	...
User303	JIRO	REGION B, TOKYO	User001 User201	RANK 3
...	...	...	...	...

(b) VEHICLE INFORMATION TABLE

VEHICLE ID	MODEL	VEHICLE TYPE ID	MODEL YEAR	TRAVEL DISTANCE	MANUFACTURER	REGISTRATION YEAR (YEARS SINCE REGISTRATION)	VEHICLE IMAGE ID	USER ID (HOLDER ID)	WORK HISTORY ID
MOV001	XX-XYZ-LMA	VEHICLE TYPE 1	2013	30,000	○○ AUTOMOBILE	2013	Pic 001 to Pic 010 (10 SHEETS IN TOTAL)	User001	Main001
MOV002	ZY-TTB-LWE	VEHICLE TYPE 2	2020	85,000	△△ AUTOMOBILE	2021	Pic 011 to Pic 025 (15 SHEETS IN TOTAL)	User303	Main002 Main003
...	...	...	...	...	...	...	...	...	...

FIG. 16

(c) VEHICLE IMAGE INFORMATION TABLE

VEHICLE IMAGE ID	NAME	IMAGE-CAPTURING DATE AND TIME	PHOTOGRAPHER	IMAGE-CAPTURING LOCATION	HOLDING LOCATION
Pic001	ENTIRE IMAGE 1 (LEFT FRONT)	2013/9	User201	LATITUDE XXX LONGITUDE YYY	···/pic/2013/XX/○○1.jpg
Pic002	ENTIRE IMAGE 2 (LEFT FRONT)	2013/9	User201	LATITUDE XXX LONGITUDE YYY	···/pic/2013/XX/○○2.jpg
···	···	···	···	···	···

(d) WORK HISTORY INFORMATION TABLE

WORK HISTORY ID	WORK CONTENT (ITEM)	WORKER	WORK DATE	ESTIMATE ID	VEHICLE ID	WORK STATUS	RECOMMENDED DATE OF NEXT WORK	NEXT RECOMMENDED WORK CONTENT
Main001	BRAKE FLUID CHANGE GASKET CHANGE	work001	2015/3/2	Est001	MOV001	COMPLETED	2015/6/2	OIL CHANGE
Main002	OIL CHANGE	work002	2022/8/5	Est002	MOV002	DURING WORK	2024/11/30	VEHICLE INSPECTION
···	···	···	···	···	···	···	···	···

(e) WORKPLACE LIST INFORMATION TABLE

WORKPLACE ID	NAME	ADDRESS (REGION)	WORKER INFORMATION	WORK FACILITY INFORMATION	RESERVATION INFORMATION ID
Pos001	WORKPLACE 001	REGION A, TOKYO	WORKER 001 WORKER 002	FACILITY 1 FACILITY 2	RESERVATION INFORMATION ID 001
Pos002	WORKPLACE 002	REGION B, TOKYO	WORKER 100 WORKER 101 WORKER 102	FACILITY 100 FACILITY 101 MAINTENANCE 102 MAINTENANCE 103	RESERVATION INFORMATION ID 002
···	···	···	···	···	···

FIG. 17

(f) ESTIMATE INFORMATION TABLE (MANAGED BY MANAGEMENT DEVICE. OF COURSE, IT CAN ALSO BE STORED IN INSTRUCTION DEVICE OR CONTROL DEVICE)

ESTIMATE ID	CREATOR	CREATION DATE	VEHICLE ID	ESTIMATE CONTENT				USER DESIRED CONDITION AND DESIGNATED ITEM
				ITEM 1	ITEM 2	ITEM 3	...	
Est001	work001	2015/2/20	MOV001	STEERING INSPECTION	IGNITION DEVICE INSPECTION	BATTERY/ WIRING	...	INSPECTION OF BASIC ITEM ONLY
Est002	work002	2022/8/1	MOV002	DRAIN PLUG CHANGE	OPTICAL AXIS ADJUSTMENT AND REPLACEMENT	RUST PREVENTIVE MEASURE	...	INSPECTION OF ENTIRE VEHICLE
...	...	...	...	...	...	...	...	...

(g) UNIT PRICE INFORMATION TABLE (MANAGED BY MANAGEMENT DEVICE, APPROPRIATENESS DETERMINATION INFORMATION MAY BE ACQUIRED FROM MANAGEMENT DEVICE BY CONTROL DEVICE AND STORED)

VEHICLE TYPE ID	WORK CONTENT ID	WORK CONTENT (ITEM)	BASIC WORK FEE	SPECIAL WORK FEE	BASIC WORK MAN-HOUR	ASSOCIATED WORK	APPROPRIATENESS DETERMINATION INFORMATION
VEHICLE TYPE 1	work001	BRAKE FLUID CHANGE	5000	8000	0.5 h	work033	OIL AMOUNT 200 mL TIGHTENING TORQUE 5 Nm
	work002	ENGINE OIL CHANGE	4500	7000	0.5 h	work033	OIL AMOUNT 2000 mL TIGHTENING TORQUE 10 Nm
	...	...	...	...	...	...	...
	work033	GASKET CHANGE	1000	1500	0.1 h	work001 work002	...
	...	...	...	...	...	...	...
VEHICLE TYPE 2	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...

FIG. 18

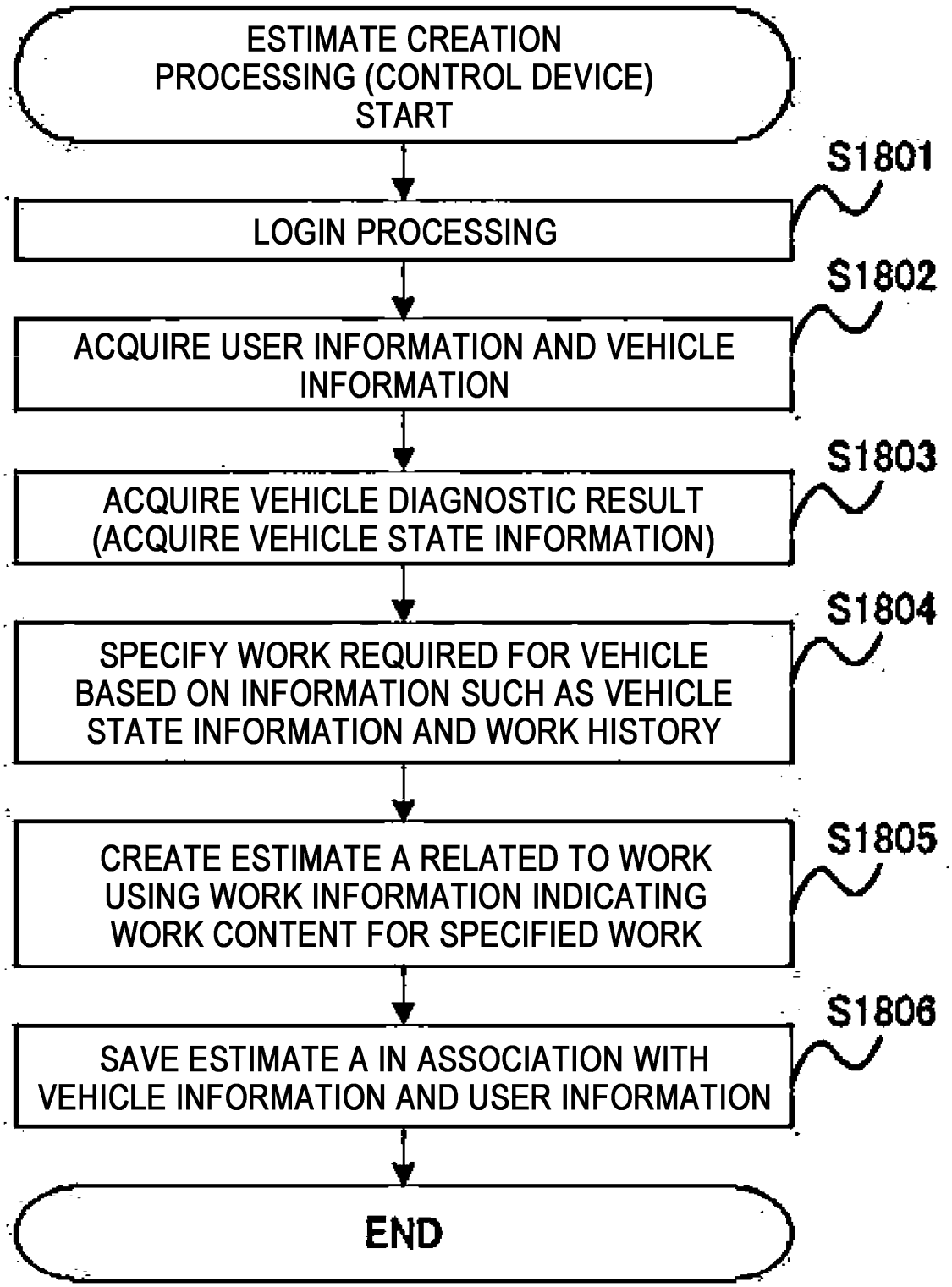

ESTIMATE CREATION PROCESSING (CONTROL DEVICE) START
S1801
LOGIN PROCESSING
S1802
ACQUIRE USER INFORMATION AND VEHICLE INFORMATION
S1803
ACQUIRE VEHICLE DIAGNOSTIC RESULT (ACQUIRE VEHICLE STATE INFORMATION)
S1804
SPECIFY WORK REQUIRED FOR VEHICLE BASED ON INFORMATION SUCH AS VEHICLE STATE INFORMATION AND WORK HISTORY
S1805
CREATE ESTIMATE A RELATED TO WORK USING WORK INFORMATION INDICATING WORK CONTENT FOR SPECIFIED WORK
S1806
SAVE ESTIMATE A IN ASSOCIATION WITH VEHICLE INFORMATION AND USER INFORMATION
END

FIG. 19

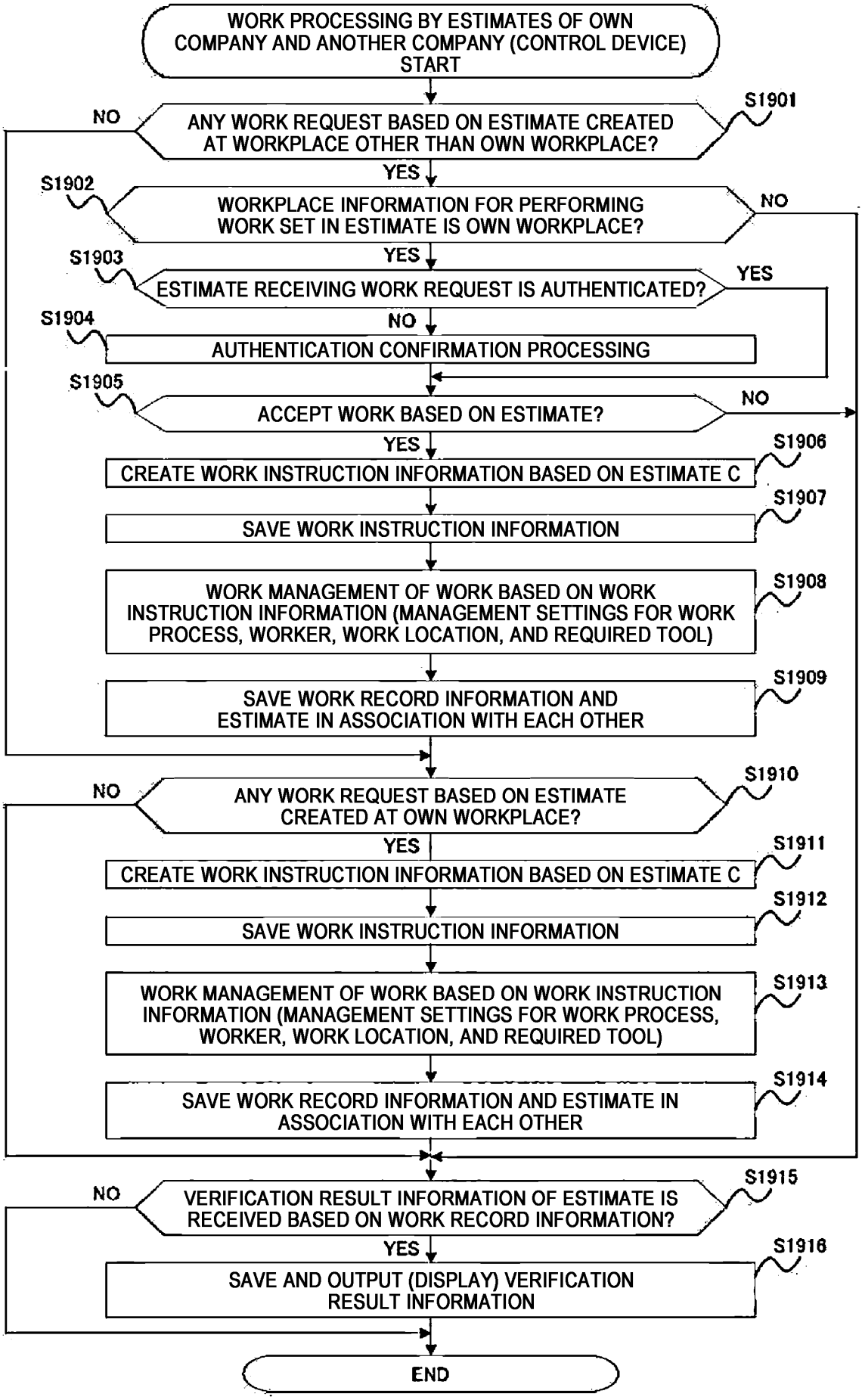

WORK PROCESSING BY ESTIMATES OF OWN COMPANY AND ANOTHER COMPANY (CONTROL DEVICE) START
S1901
ANY WORK REQUEST BASED ON ESTIMATE CREATED AT WORKPLACE OTHER THAN OWN WORKPLACE?
NO
YES
S1902
WORKPLACE INFORMATION FOR PERFORMING WORK SET IN ESTIMATE IS OWN WORKPLACE?
NO
YES
S1903
ESTIMATE RECEIVING WORK REQUEST IS AUTHENTICATED?
YES
NO
S1904
AUTHENTICATION CONFIRMATION PROCESSING
S1905
ACCEPT WORK BASED ON ESTIMATE?
NO
YES
S1906
CREATE WORK INSTRUCTION INFORMATION BASED ON ESTIMATE C
S1907
SAVE WORK INSTRUCTION INFORMATION
S1908
WORK MANAGEMENT OF WORK BASED ON WORK INSTRUCTION INFORMATION (MANAGEMENT SETTINGS FOR WORK PROCESS, WORKER, WORK LOCATION, AND REQUIRED TOOL)
S1909
SAVE WORK RECORD INFORMATION AND ESTIMATE IN ASSOCIATION WITH EACH OTHER
S1910
ANY WORK REQUEST BASED ON ESTIMATE CREATED AT OWN WORKPLACE?
NO
YES
S1911
CREATE WORK INSTRUCTION INFORMATION BASED ON ESTIMATE C
S1912
SAVE WORK INSTRUCTION INFORMATION
S1913
WORK MANAGEMENT OF WORK BASED ON WORK INSTRUCTION INFORMATION (MANAGEMENT SETTINGS FOR WORK PROCESS, WORKER, WORK LOCATION, AND REQUIRED TOOL)
S1914
SAVE WORK RECORD INFORMATION AND ESTIMATE IN ASSOCIATION WITH EACH OTHER
S1915
VERIFICATION RESULT INFORMATION OF ESTIMATE IS RECEIVED BASED ON WORK RECORD INFORMATION?
NO
YES
S1916
SAVE AND OUTPUT (DISPLAY) VERIFICATION RESULT INFORMATION
END

FIG. 20

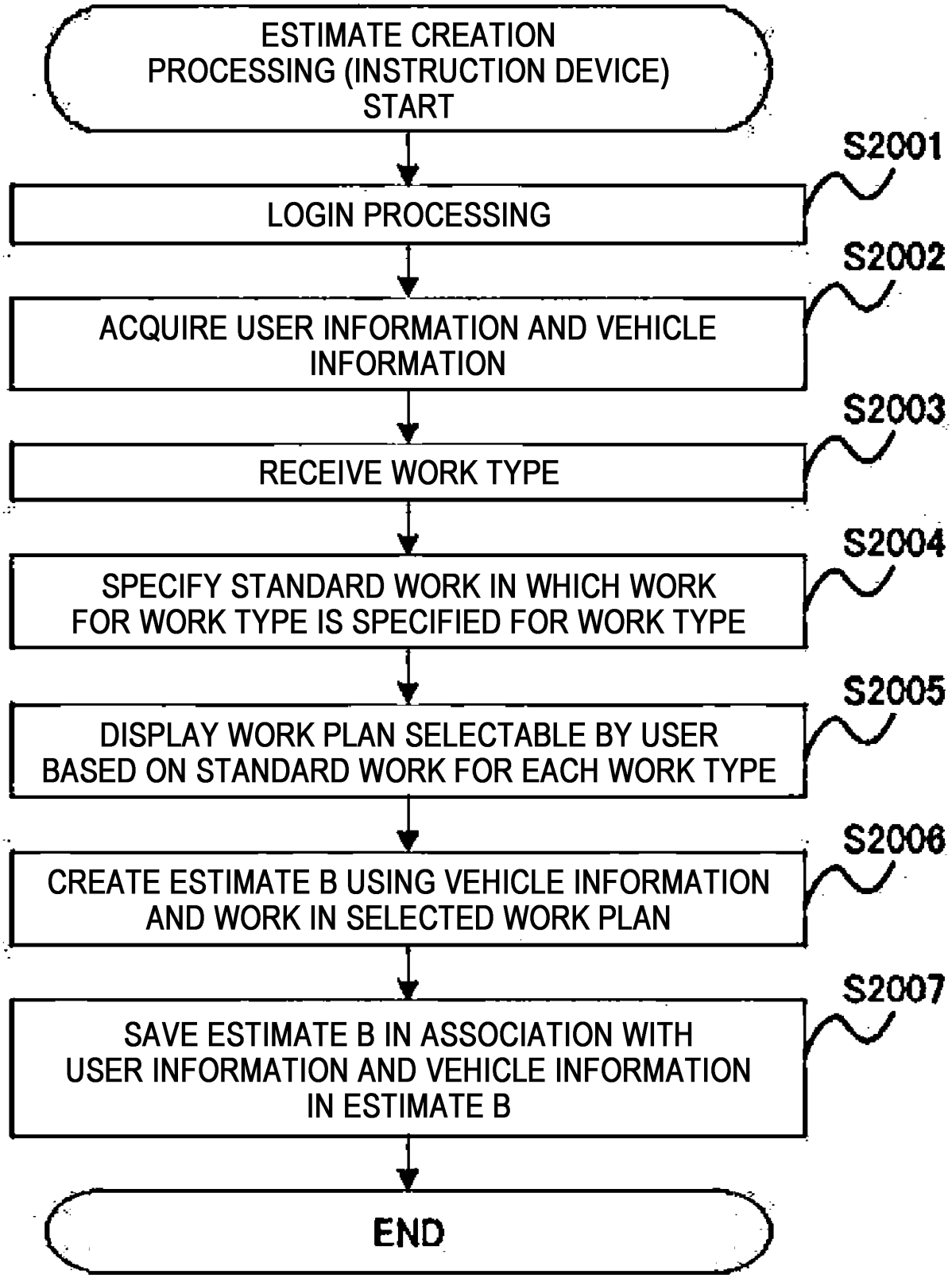

ESTIMATE CREATION PROCESSING (INSTRUCTION DEVICE) START
S2001
LOGIN PROCESSING
S2002
ACQUIRE USER INFORMATION AND VEHICLE INFORMATION
S2003
RECEIVE WORK TYPE
S2004
SPECIFY STANDARD WORK IN WHICH WORK FOR WORK TYPE IS SPECIFIED FOR WORK TYPE
S2005
DISPLAY WORK PLAN SELECTABLE BY USER BASED ON STANDARD WORK FOR EACH WORK TYPE
S2006
CREATE ESTIMATE B USING VEHICLE INFORMATION AND WORK IN SELECTED WORK PLAN
S2007
SAVE ESTIMATE B IN ASSOCIATION WITH USER INFORMATION AND VEHICLE INFORMATION IN ESTIMATE B
END

FIG. 21

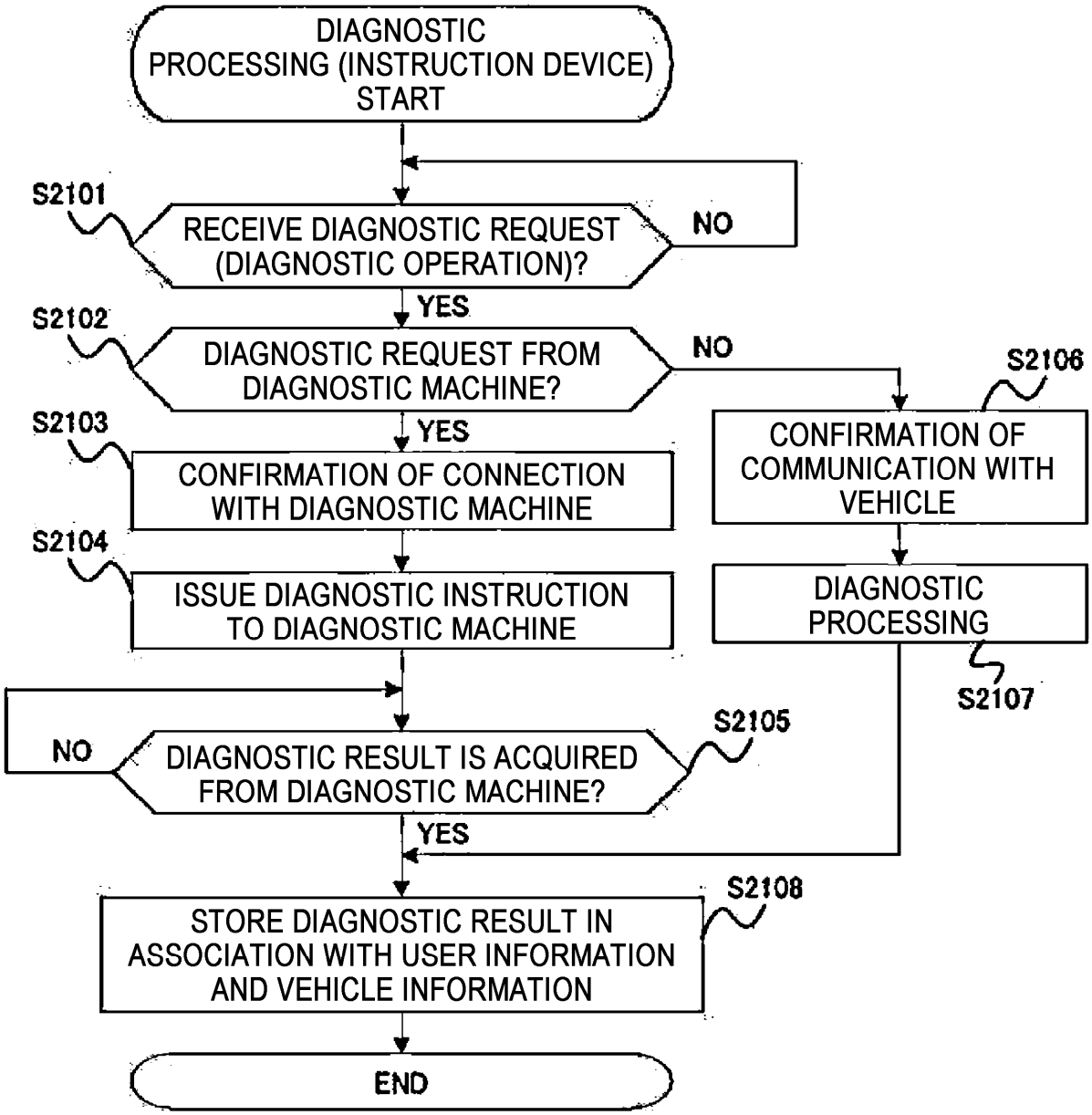

DIAGNOSTIC PROCESSING (INSTRUCTION DEVICE) START
S2101
RECEIVE DIAGNOSTIC REQUEST (DIAGNOSTIC OPERATION)?
NO
YES
S2102
DIAGNOSTIC REQUEST FROM DIAGNOSTIC MACHINE?
NO
S2106
YES
S2103
CONFIRMATION OF CONNECTION WITH DIAGNOSTIC MACHINE
CONFIRMATION OF COMMUNICATION WITH VEHICLE
S2104
ISSUE DIAGNOSTIC INSTRUCTION TO DIAGNOSTIC MACHINE
DIAGNOSTIC PROCESSING
S2107
NO
S2105
DIAGNOSTIC RESULT IS ACQUIRED FROM DIAGNOSTIC MACHINE?
YES
S2108
STORE DIAGNOSTIC RESULT IN ASSOCIATION WITH USER INFORMATION AND VEHICLE INFORMATION
END

FIG. 22

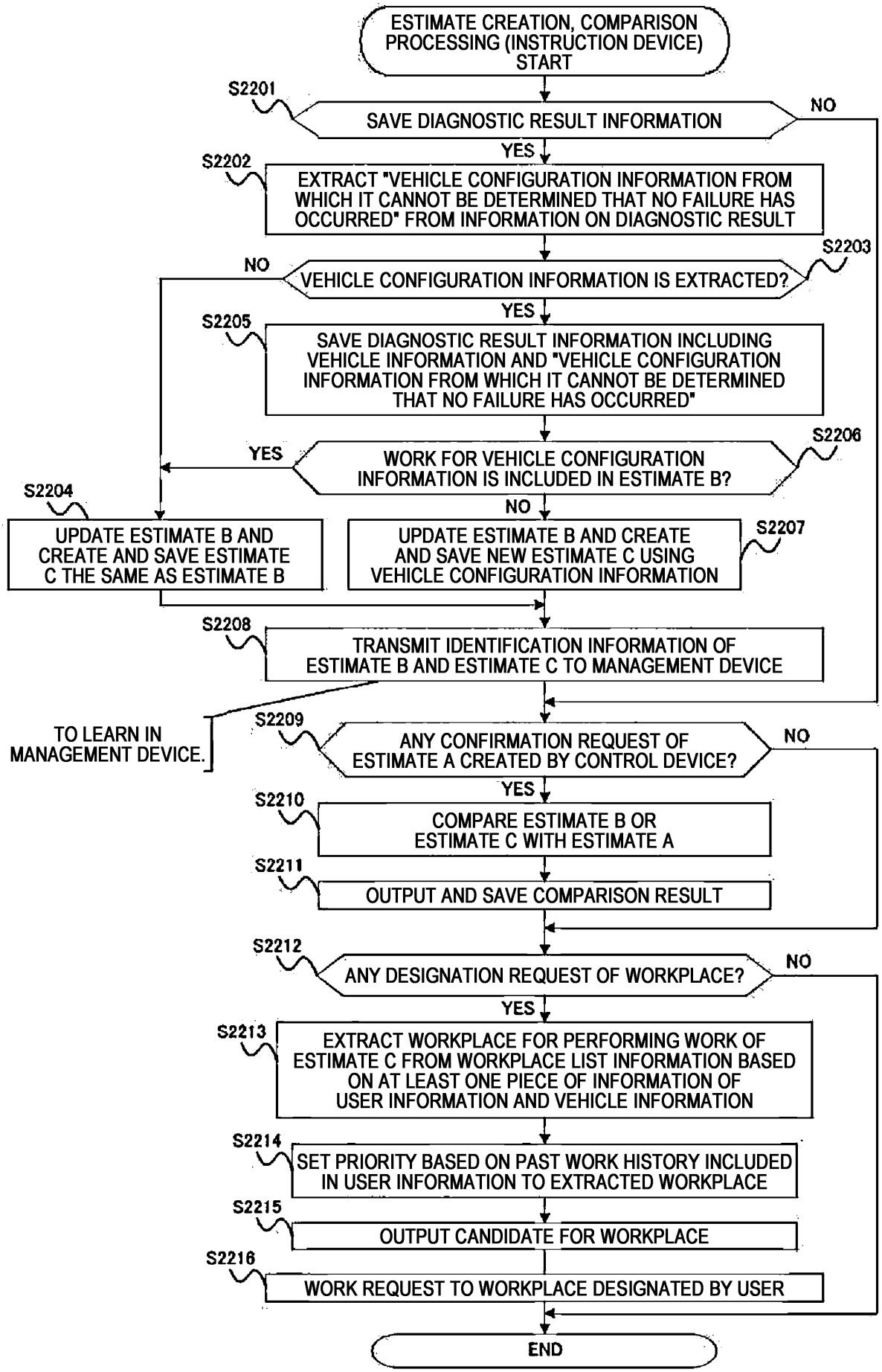

ESTIMATE CREATION, COMPARISON PROCESSING (INSTRUCTION DEVICE) START
S2201
SAVE DIAGNOSTIC RESULT INFORMATION
NO
YES
S2202
EXTRACT "VEHICLE CONFIGURATION INFORMATION FROM WHICH IT CANNOT BE DETERMINED THAT NO FAILURE HAS OCCURRED" FROM INFORMATION ON DIAGNOSTIC RESULT
S2203
NO
VEHICLE CONFIGURATION INFORMATION IS EXTRACTED?
YES
S2205
SAVE DIAGNOSTIC RESULT INFORMATION INCLUDING VEHICLE INFORMATION AND "VEHICLE CONFIGURATION INFORMATION FROM WHICH IT CANNOT BE DETERMINED THAT NO FAILURE HAS OCCURRED"
S2206
YES
WORK FOR VEHICLE CONFIGURATION INFORMATION IS INCLUDED IN ESTIMATE B?
NO
S2204
UPDATE ESTIMATE B AND CREATE AND SAVE ESTIMATE C THE SAME AS ESTIMATE B
S2207
UPDATE ESTIMATE B AND CREATE AND SAVE NEW ESTIMATE C USING VEHICLE CONFIGURATION INFORMATION
S2208
TRANSMIT IDENTIFICATION INFORMATION OF ESTIMATE B AND ESTIMATE C TO MANAGEMENT DEVICE
TO LEARN IN MANAGEMENT DEVICE.
S2209
ANY CONFIRMATION REQUEST OF ESTIMATE A CREATED BY CONTROL DEVICE?
NO
YES
S2210
COMPARE ESTIMATE B OR ESTIMATE C WITH ESTIMATE A
S2211
OUTPUT AND SAVE COMPARISON RESULT
S2212
ANY DESIGNATION REQUEST OF WORKPLACE?
NO
YES
S2213
EXTRACT WORKPLACE FOR PERFORMING WORK OF ESTIMATE C FROM WORKPLACE LIST INFORMATION BASED ON AT LEAST ONE PIECE OF INFORMATION OF USER INFORMATION AND VEHICLE INFORMATION
S2214
SET PRIORITY BASED ON PAST WORK HISTORY INCLUDED IN USER INFORMATION TO EXTRACTED WORKPLACE
S2215
OUTPUT CANDIDATE FOR WORKPLACE
S2216
WORK REQUEST TO WORKPLACE DESIGNATED BY USER
END

FIG. 23

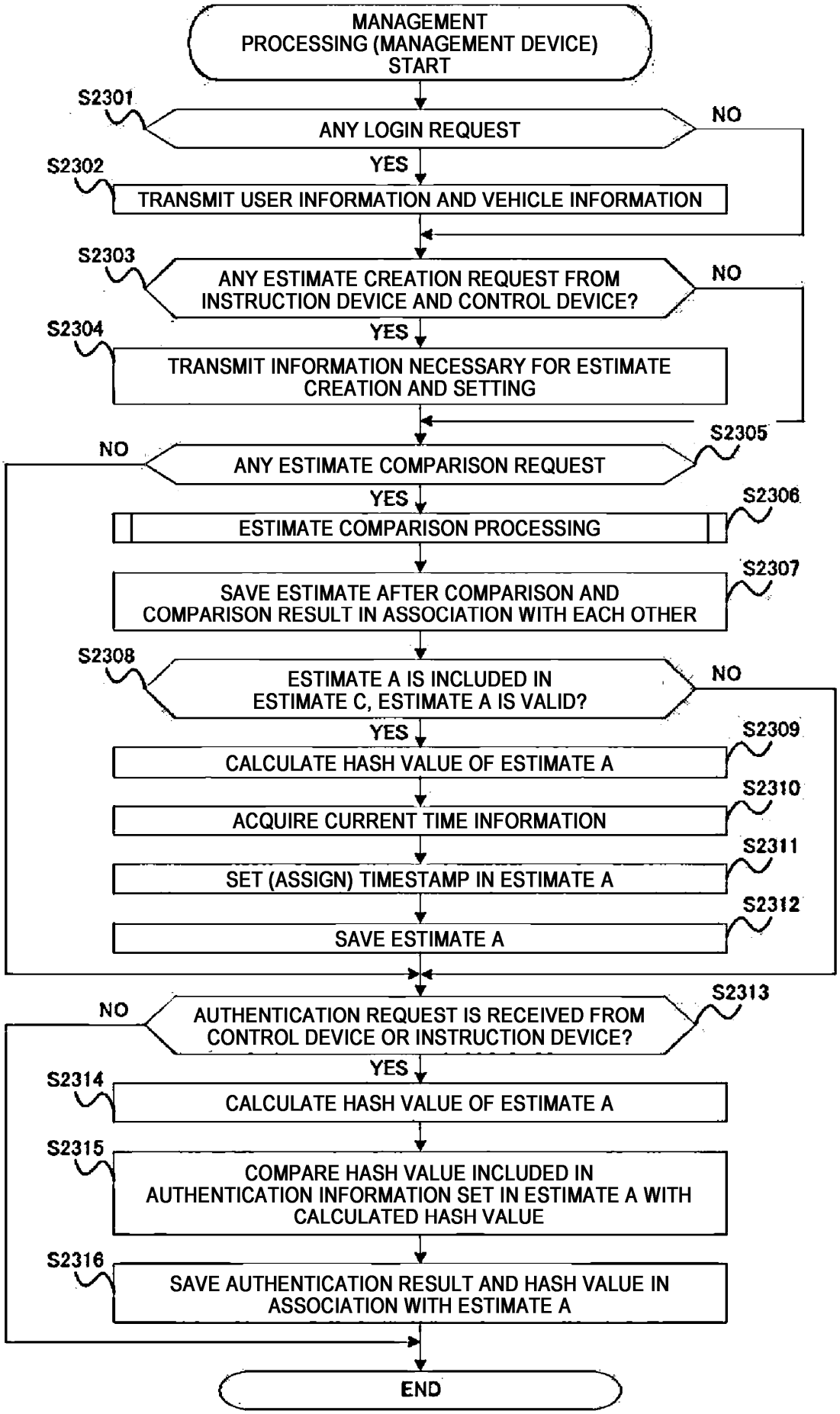

MANAGEMENT PROCESSING (MANAGEMENT DEVICE) START
S2301
ANY LOGIN REQUEST
NO
YES
S2302
TRANSMIT USER INFORMATION AND VEHICLE INFORMATION
S2303
ANY ESTIMATE CREATION REQUEST FROM INSTRUCTION DEVICE AND CONTROL DEVICE?
NO
YES
S2304
TRANSMIT INFORMATION NECESSARY FOR ESTIMATE CREATION AND SETTING
S2305
NO
ANY ESTIMATE COMPARISON REQUEST
YES
S2306
ESTIMATE COMPARISON PROCESSING
S2307
SAVE ESTIMATE AFTER COMPARISON AND COMPARISON RESULT IN ASSOCIATION WITH EACH OTHER
S2308
ESTIMATE A IS INCLUDED IN ESTIMATE C, ESTIMATE A IS VALID?
NO
YES
S2309
CALCULATE HASH VALUE OF ESTIMATE A
S2310
ACQUIRE CURRENT TIME INFORMATION
S2311
SET (ASSIGN) TIMESTAMP IN ESTIMATE A
S2312
SAVE ESTIMATE A
S2313
NO
AUTHENTICATION REQUEST IS RECEIVED FROM CONTROL DEVICE OR INSTRUCTION DEVICE?
YES
S2314
CALCULATE HASH VALUE OF ESTIMATE A
S2315
COMPARE HASH VALUE INCLUDED IN AUTHENTICATION INFORMATION SET IN ESTIMATE A WITH CALCULATED HASH VALUE
S2316
SAVE AUTHENTICATION RESULT AND HASH VALUE IN ASSOCIATION WITH ESTIMATE A
END

FIG. 24

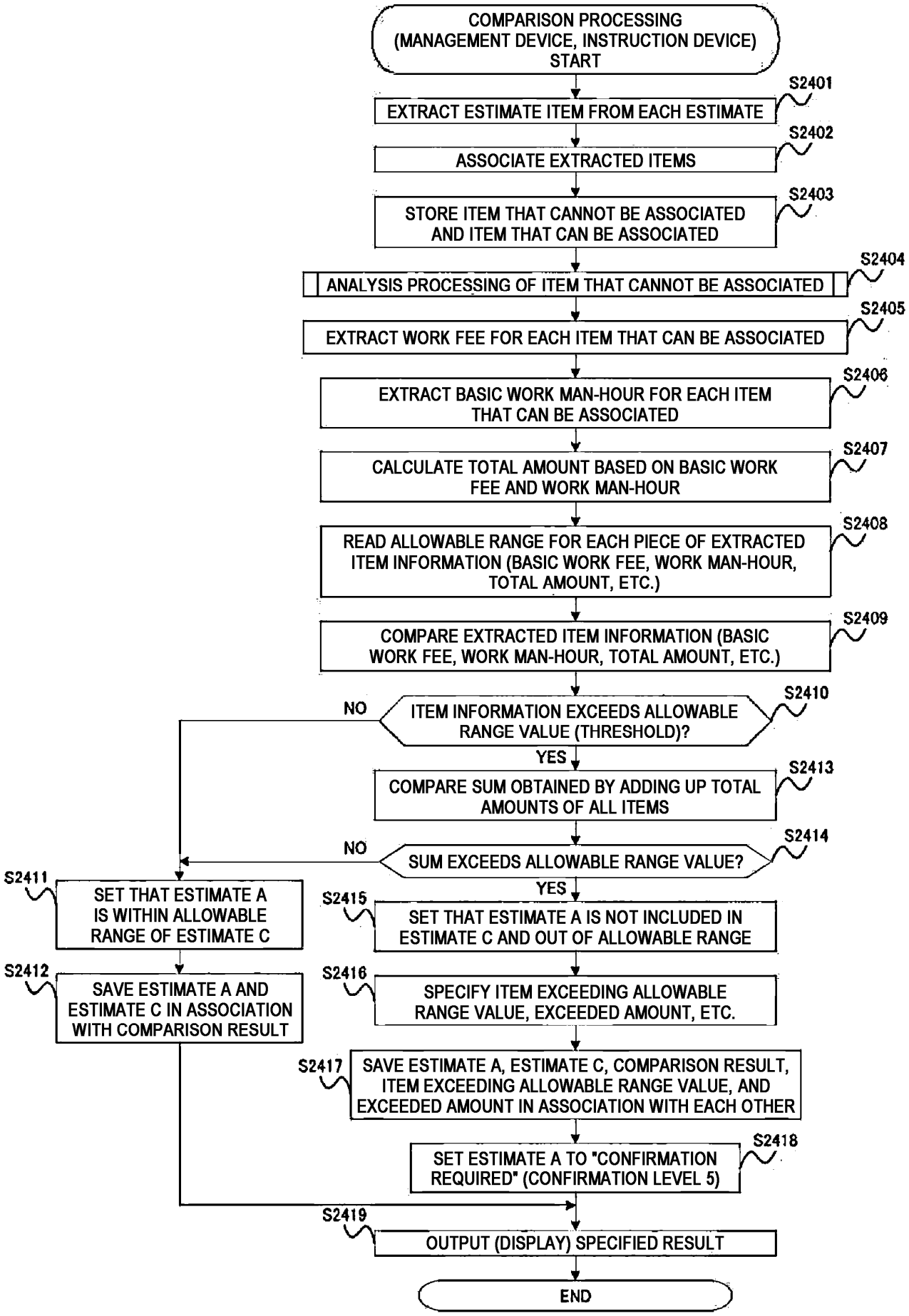

COMPARISON PROCESSING (MANAGEMENT DEVICE, INSTRUCTION DEVICE) START
S2401
EXTRACT ESTIMATE ITEM FROM EACH ESTIMATE
S2402
ASSOCIATE EXTRACTED ITEMS
S2403
STORE ITEM THAT CANNOT BE ASSOCIATED AND ITEM THAT CAN BE ASSOCIATED
S2404
ANALYSIS PROCESSING OF ITEM THAT CANNOT BE ASSOCIATED
S2405
EXTRACT WORK FEE FOR EACH ITEM THAT CAN BE ASSOCIATED
S2406
EXTRACT BASIC WORK MAN-HOUR FOR EACH ITEM THAT CAN BE ASSOCIATED
S2407
CALCULATE TOTAL AMOUNT BASED ON BASIC WORK FEE AND WORK MAN-HOUR
S2408
READ ALLOWABLE RANGE FOR EACH PIECE OF EXTRACTED ITEM INFORMATION (BASIC WORK FEE, WORK MAN-HOUR, TOTAL AMOUNT, ETC.)
S2409
COMPARE EXTRACTED ITEM INFORMATION (BASIC WORK FEE, WORK MAN-HOUR, TOTAL AMOUNT, ETC.)
S2410
ITEM INFORMATION EXCEEDS ALLOWABLE RANGE VALUE (THRESHOLD)?
NO
YES
S2413
COMPARE SUM OBTAINED BY ADDING UP TOTAL AMOUNTS OF ALL ITEMS
S2414
SUM EXCEEDS ALLOWABLE RANGE VALUE?
NO
YES
S2411
SET THAT ESTIMATE A IS WITHIN ALLOWABLE RANGE OF ESTIMATE C
S2412
SAVE ESTIMATE A AND ESTIMATE C IN ASSOCIATION WITH COMPARISON RESULT
S2415
SET THAT ESTIMATE A IS NOT INCLUDED IN ESTIMATE C AND OUT OF ALLOWABLE RANGE
S2416
SPECIFY ITEM EXCEEDING ALLOWABLE RANGE VALUE, EXCEEDED AMOUNT, ETC.
S2417
SAVE ESTIMATE A, ESTIMATE C, COMPARISON RESULT, ITEM EXCEEDING ALLOWABLE RANGE VALUE, AND EXCEEDED AMOUNT IN ASSOCIATION WITH EACH OTHER
S2418
SET ESTIMATE A TO "CONFIRMATION REQUIRED" (CONFIRMATION LEVEL 5)
S2419
OUTPUT (DISPLAY) SPECIFIED RESULT
END

FIG. 25

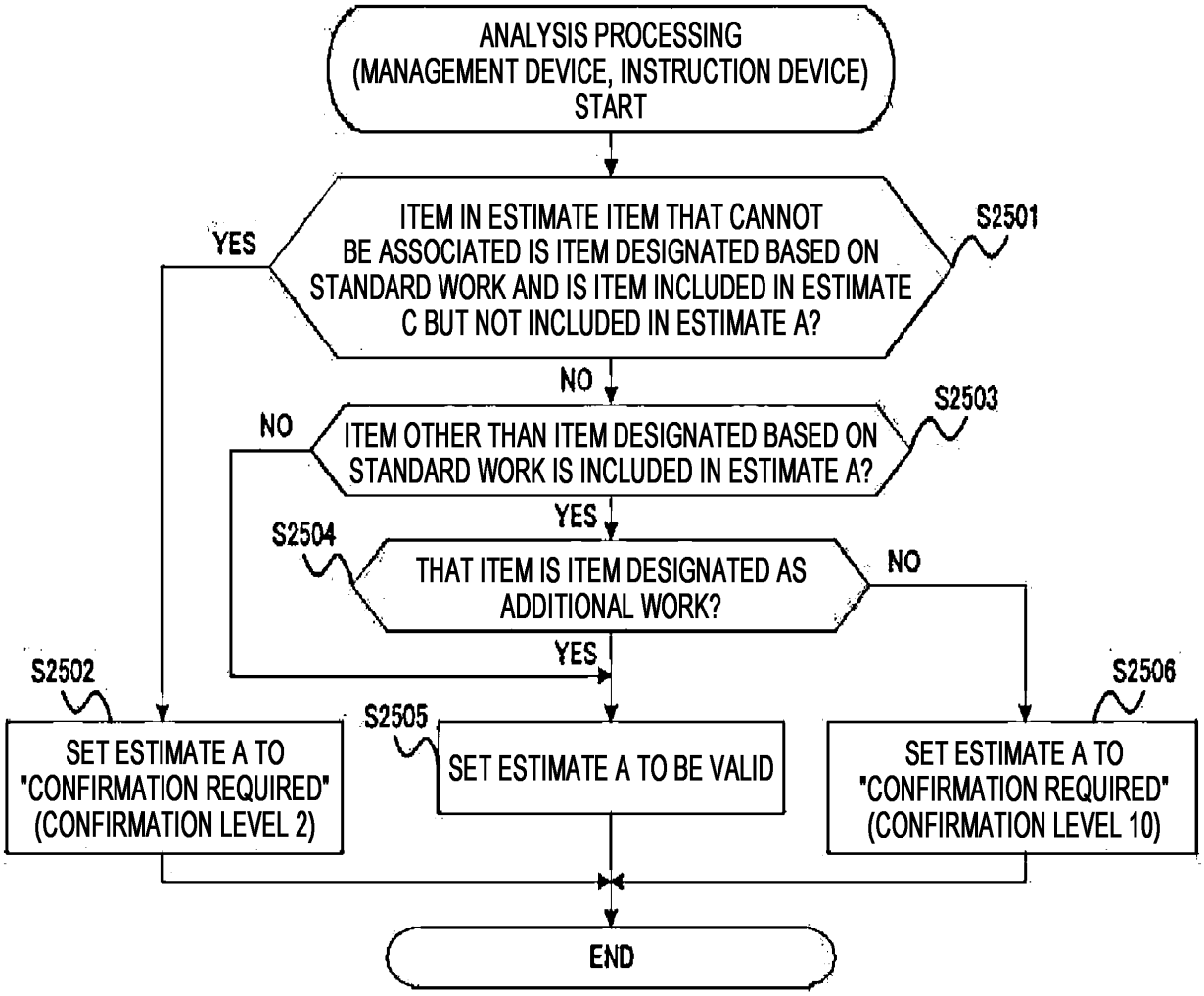
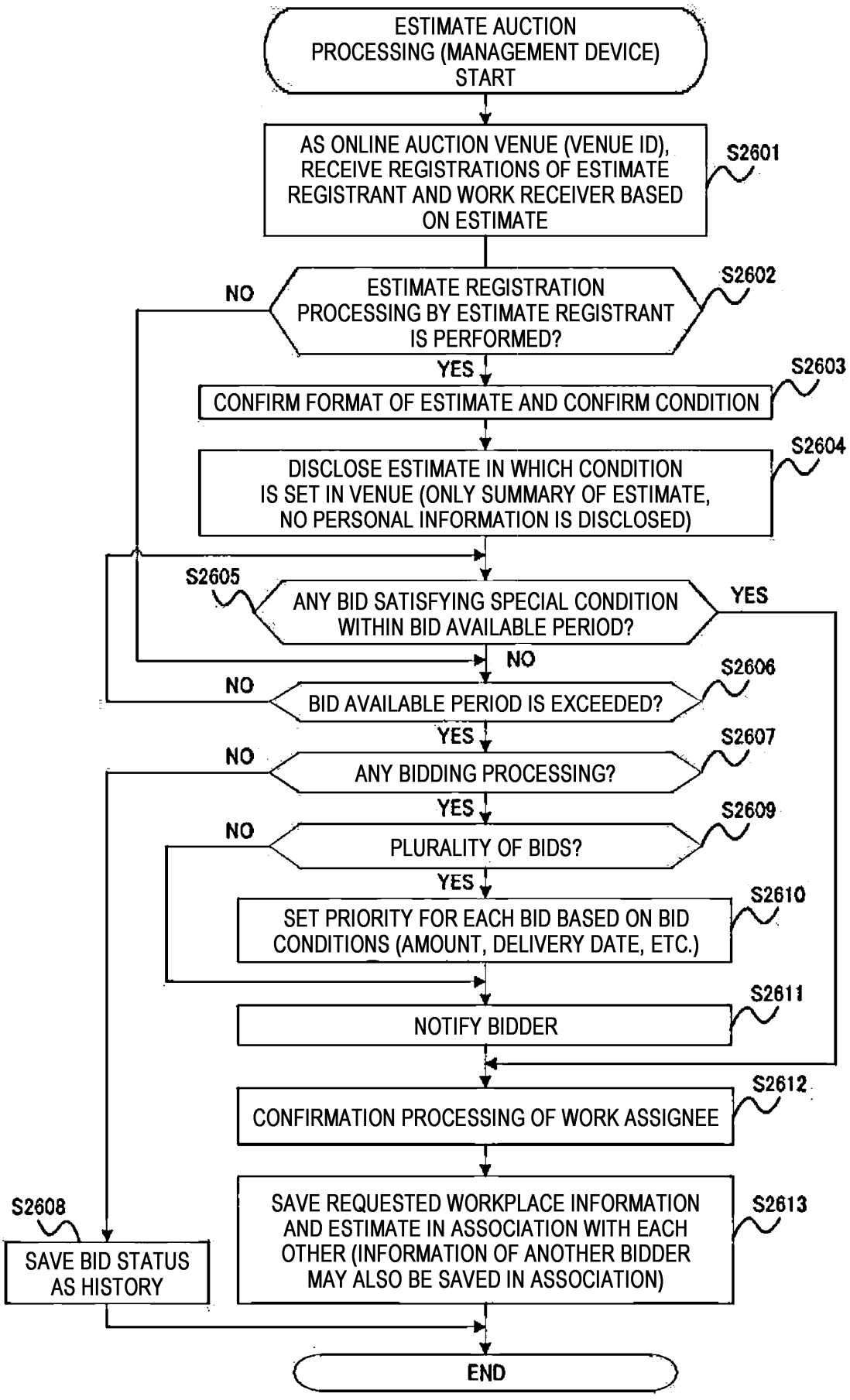

ANALYSIS PROCESSING
(MANAGEMENT DEVICE, INSTRUCTION DEVICE)
START
ITEM IN ESTIMATE ITEM THAT CANNOT BE ASSOCIATED IS ITEM DESIGNATED BASED ON STANDARD WORK AND IS ITEM INCLUDED IN ESTIMATE C BUT NOT INCLUDED IN ESTIMATE A?
S2501
YES
NO
ITEM OTHER THAN ITEM DESIGNATED BASED ON STANDARD WORK IS INCLUDED IN ESTIMATE A?
S2503
NO
YES
S2504
THAT ITEM IS ITEM DESIGNATED AS ADDITIONAL WORK?
NO
YES
S2502
SET ESTIMATE A TO "CONFIRMATION REQUIRED" (CONFIRMATION LEVEL 2)
S2505
SET ESTIMATE A TO BE VALID
S2506
SET ESTIMATE A TO "CONFIRMATION REQUIRED" (CONFIRMATION LEVEL 10)
END

FIG. 26


ESTIMATE AUCTION PROCESSING (MANAGEMENT DEVICE) START
AS ONLINE AUCTION VENUE (VENUE ID), RECEIVE REGISTRATIONS OF ESTIMATE REGISTRANT AND WORK RECEIVER BASED ON ESTIMATE
S2601
ESTIMATE REGISTRATION PROCESSING BY ESTIMATE REGISTRANT IS PERFORMED?
S2602
NO
YES
CONFIRM FORMAT OF ESTIMATE AND CONFIRM CONDITION
S2603
DISCLOSE ESTIMATE IN WHICH CONDITION IS SET IN VENUE (ONLY SUMMARY OF ESTIMATE, NO PERSONAL INFORMATION IS DISCLOSED)
S2604
S2605
ANY BID SATISFYING SPECIAL CONDITION WITHIN BID AVAILABLE PERIOD?
YES
NO
BID AVAILABLE PERIOD IS EXCEEDED?
S2606
NO
YES
ANY BIDDING PROCESSING?
S2607
NO
YES
PLURALITY OF BIDS?
S2609
NO
YES
SET PRIORITY FOR EACH BID BASED ON BID CONDITIONS (AMOUNT, DELIVERY DATE, ETC.)
S2610
NOTIFY BIDDER
S2611
CONFIRMATION PROCESSING OF WORK ASSIGNEE
S2612
SAVE REQUESTED WORKPLACE INFORMATION AND ESTIMATE IN ASSOCIATION WITH EACH OTHER (INFORMATION OF ANOTHER BIDDER MAY ALSO BE SAVED IN ASSOCIATION)
S2613
S2608
SAVE BID STATUS AS HISTORY
END