FIG. 1

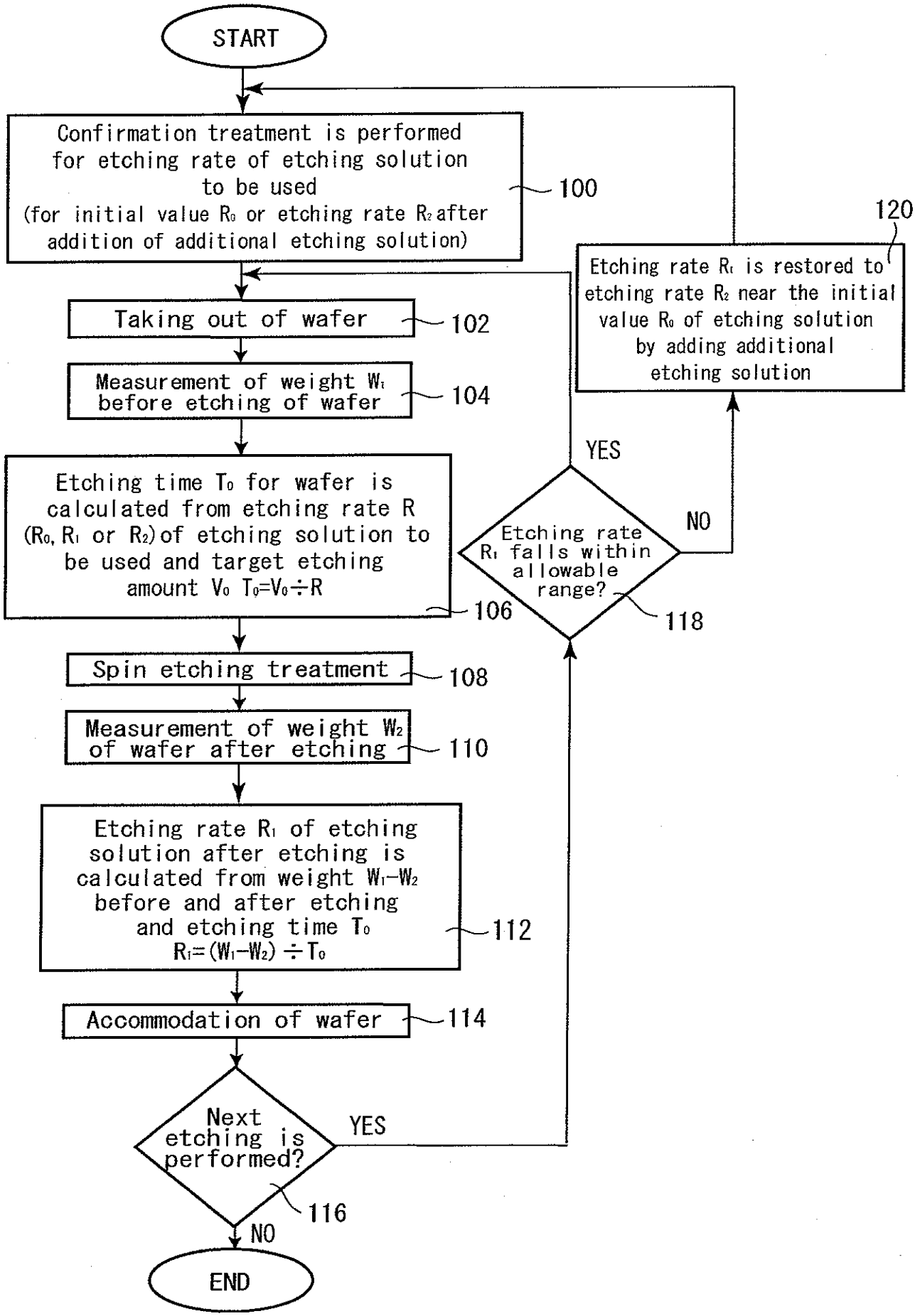

START
Confirmation treatment is performed for etching rate of etching solution to be used (for initial value R0 or etching rate R2 after addition of additional etching solution)
100
Taking out of wafer
102
Measurement of weight W1 before etching of wafer
104
Etching time T0 for wafer is calculated from etching rate R (R0, R1 or R2) of etching solution to be used and target etching amount V0 T0=V0÷R
106
Spin etching treatment
108
Measurement of weight W2 of wafer after etching
110
Etching rate R1 of etching solution after etching is calculated from weight W1−W2 before and after etching and etching time T0 R1=(W1−W2)÷T0
112
Accommodation of wafer
114
Next etching is performed?
116
YES
NO
END
Etching rate R1 falls within allowable range?
118
YES
NO
Etching rate R1 is restored to etching rate R2 near the initial value R0 of etching solution by adding additional etching solution
120

FIG. 2

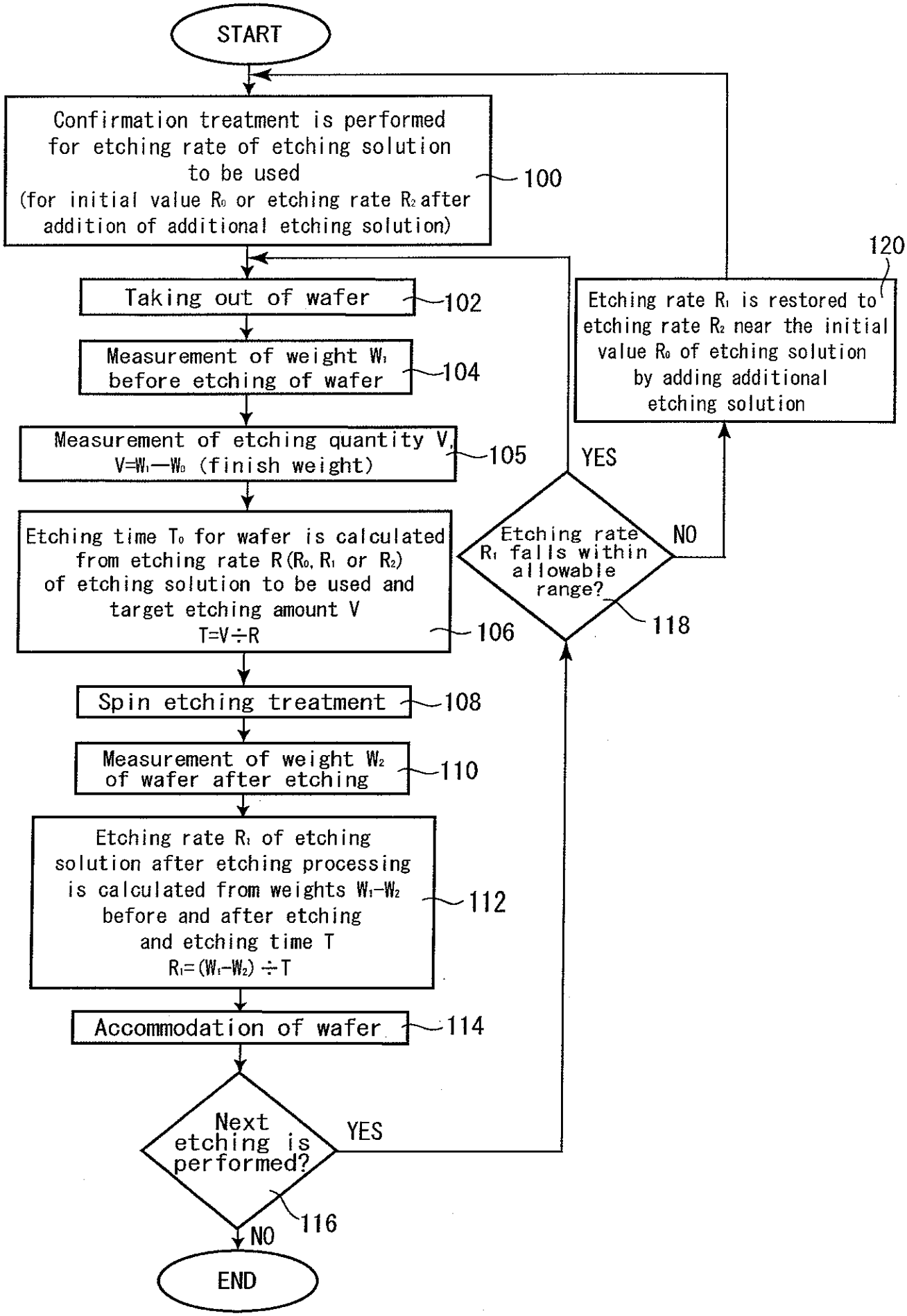

START
Confirmation treatment is performed for etching rate of etching solution to be used (for initial value R0 or etching rate R2 after addition of additional etching solution)
100
Taking out of wafer
102
Measurement of weight W1 before etching of wafer
104
Measurement of etching quantity V, V=W1—W0 (finish weight)
105
Etching time T0 for wafer is calculated from etching rate R(R0, R1 or R2) of etching solution to be used and target etching amount V T=V÷R
106
Spin etching treatment
108
Measurement of weight W2 of wafer after etching
110
Etching rate R1 of etching solution after etching processing is calculated from weights W1-W2 before and after etching and etching time T R1=(W1-W2)÷T
112
Accommodation of wafer
114
Next etching is performed?
116
YES
NO
END
Etching rate R1 falls within allowable range?
118
YES
NO
Etching rate R1 is restored to etching rate R2 near the initial value R0 of etching solution by adding additional etching solution
120

FIG. 3

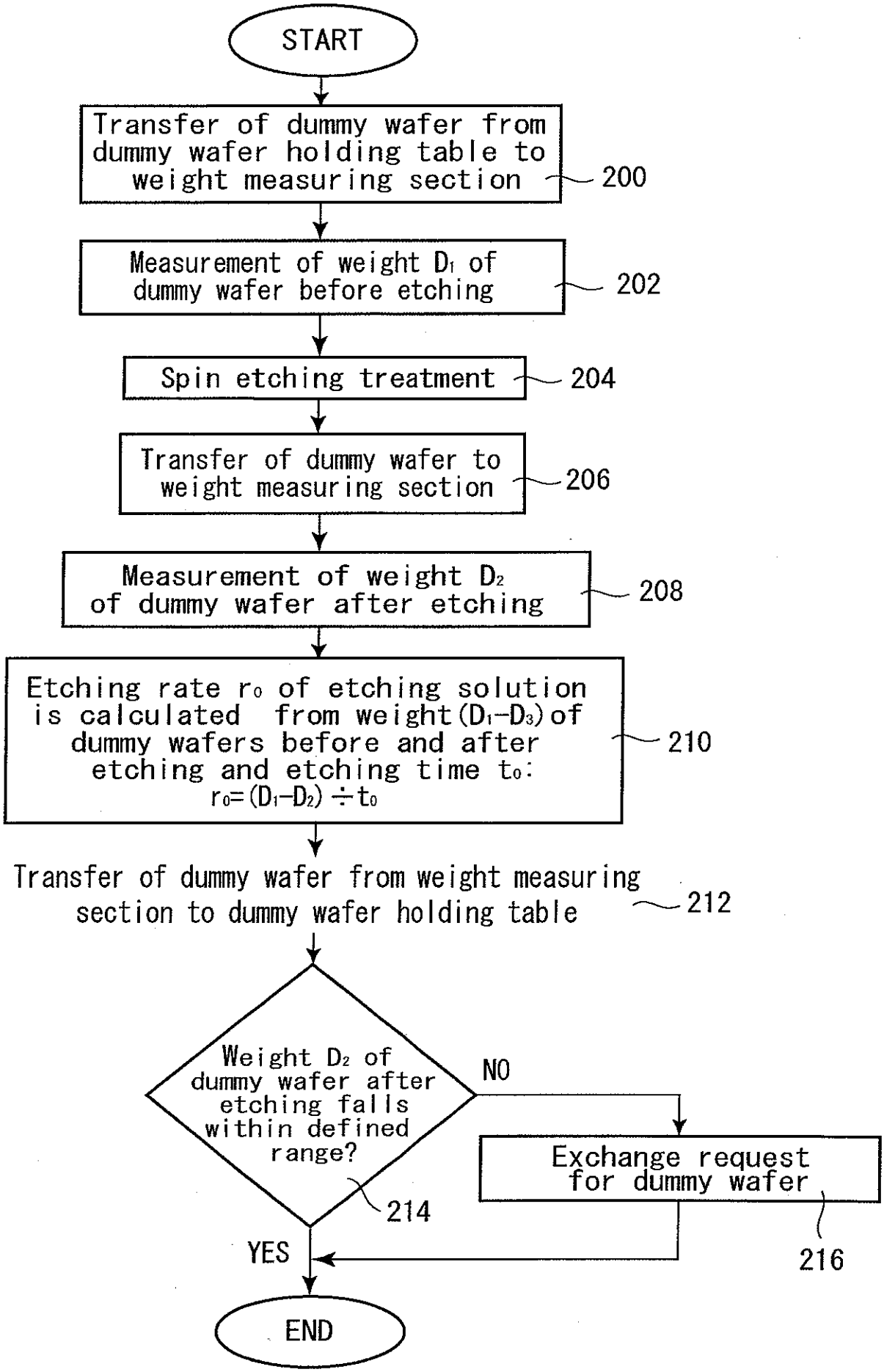

START
Transfer of dummy wafer from dummy wafer holding table to weight measuring section
200
Measurement of weight D1 of dummy wafer before etching
202
Spin etching treatment
204
Transfer of dummy wafer to weight measuring section
206
Measurement of weight D2 of dummy wafer after etching
208
Etching rate r0 of etching solution is calculated from weight (D1-D3) of dummy wafers before and after etching and etching time t0: r0=(D1-D2)÷t0
210
Transfer of dummy wafer from weight measuring section to dummy wafer holding table
212
Weight D2 of dummy wafer after etching falls within defined range?
214
NO
Exchange request for dummy wafer
216
YES
END

FIG. 4

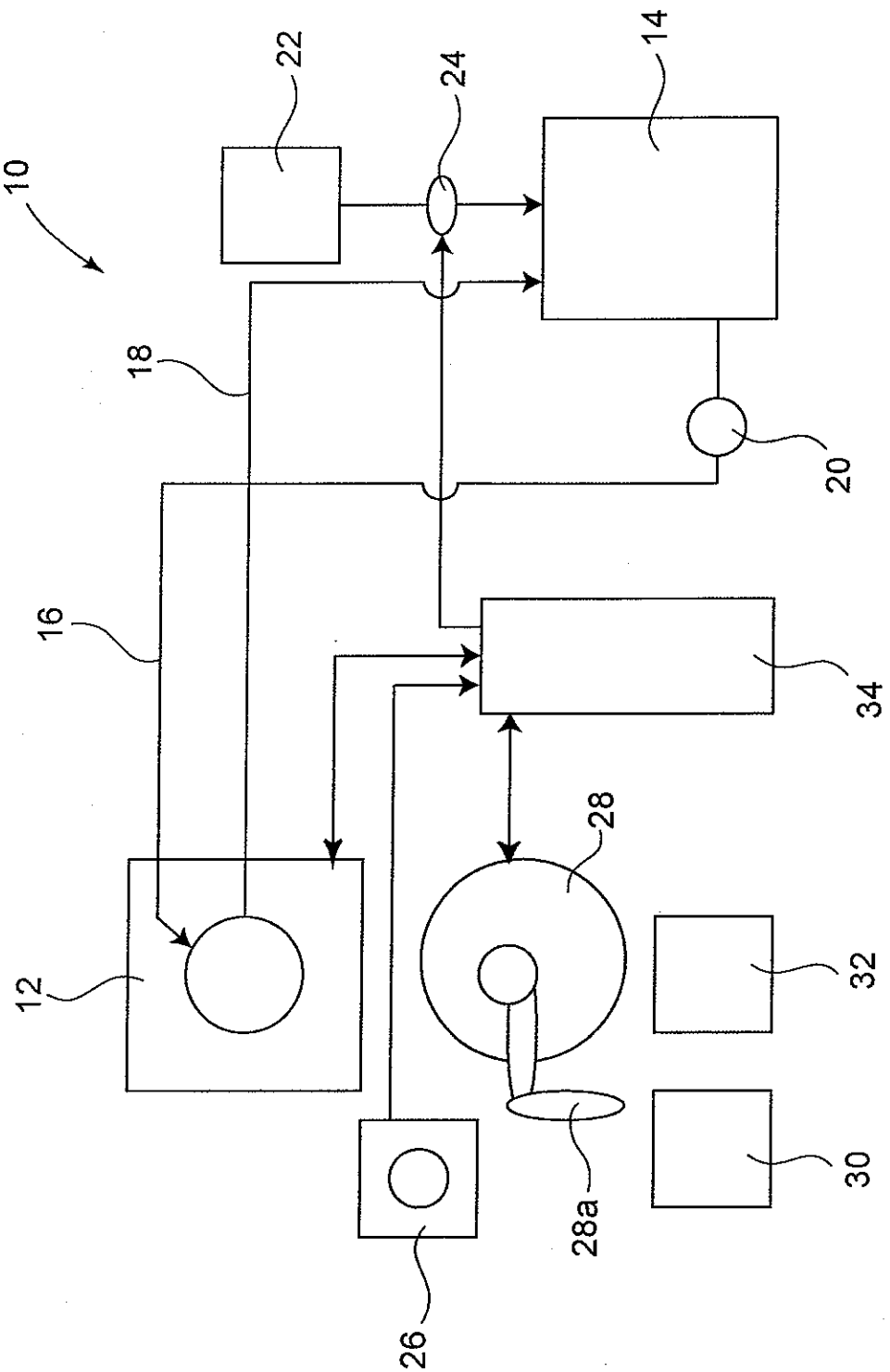


FIG. 5

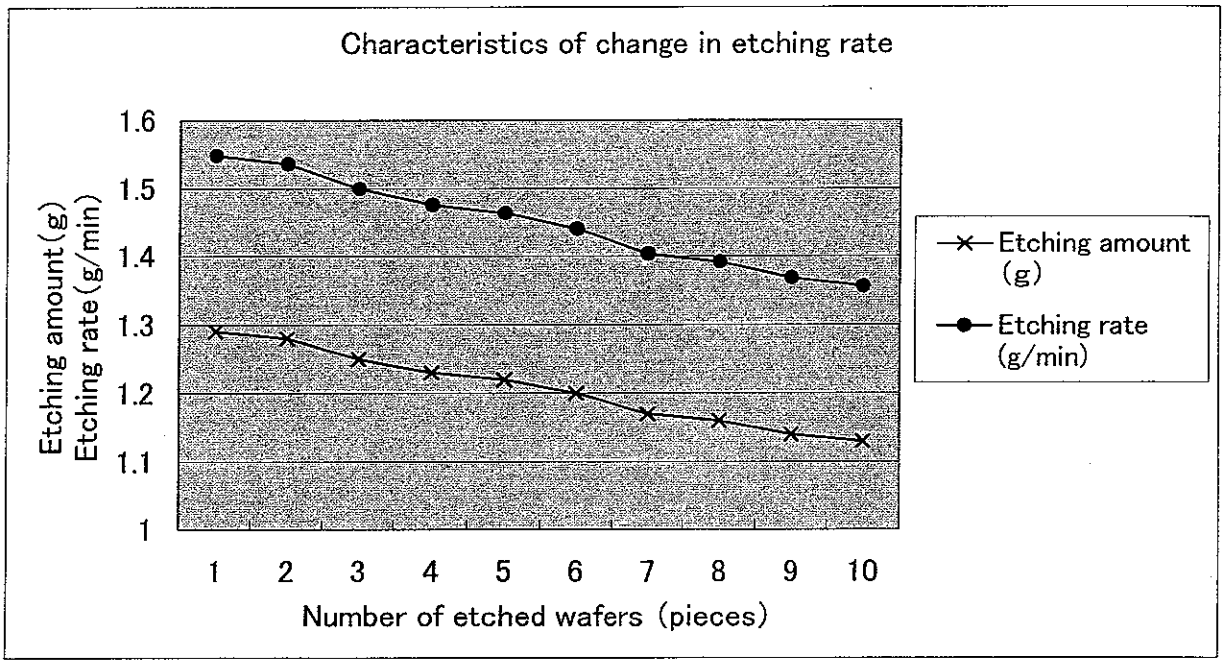

Characteristics of change in etching rate
Etching amount (g)
Etching rate (g/min)
1.6
1.5
1.4
1.3
1.2
1.1
1
1 2 3 4 5 6 7 8 9 10
Number of etched wafers (pieces)
Etching amount (g)
Etching rate (g/min)

FIG. 6

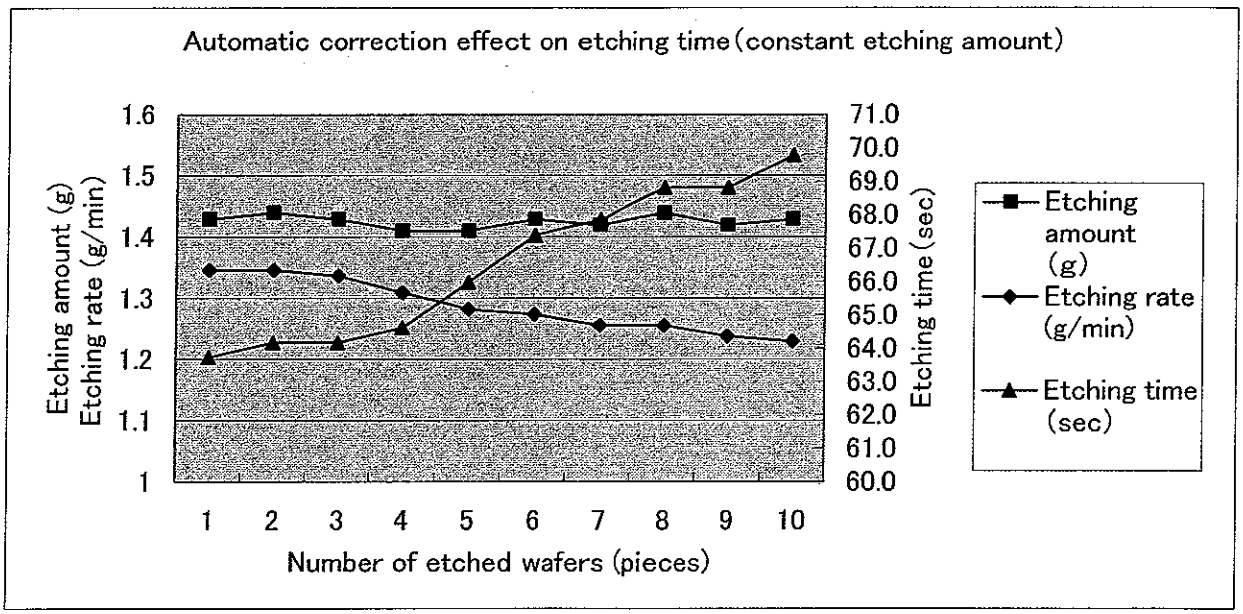

Automatic correction effect on etching time (constant etching amount)
Etching amount (g)
Etching rate (g/min)
1.6
1.5
1.4
1.3
1.2
1.1
1
71.0
70.0
69.0
68.0
67.0
66.0
65.0
64.0
63.0
62.0
61.0
60.0
Etching time (sec)
1 2 3 4 5 6 7 8 9 10
Number of etched wafers (pieces)
Etching amount (g)
Etching rate (g/min)
Etching time (sec)

FIG. 7

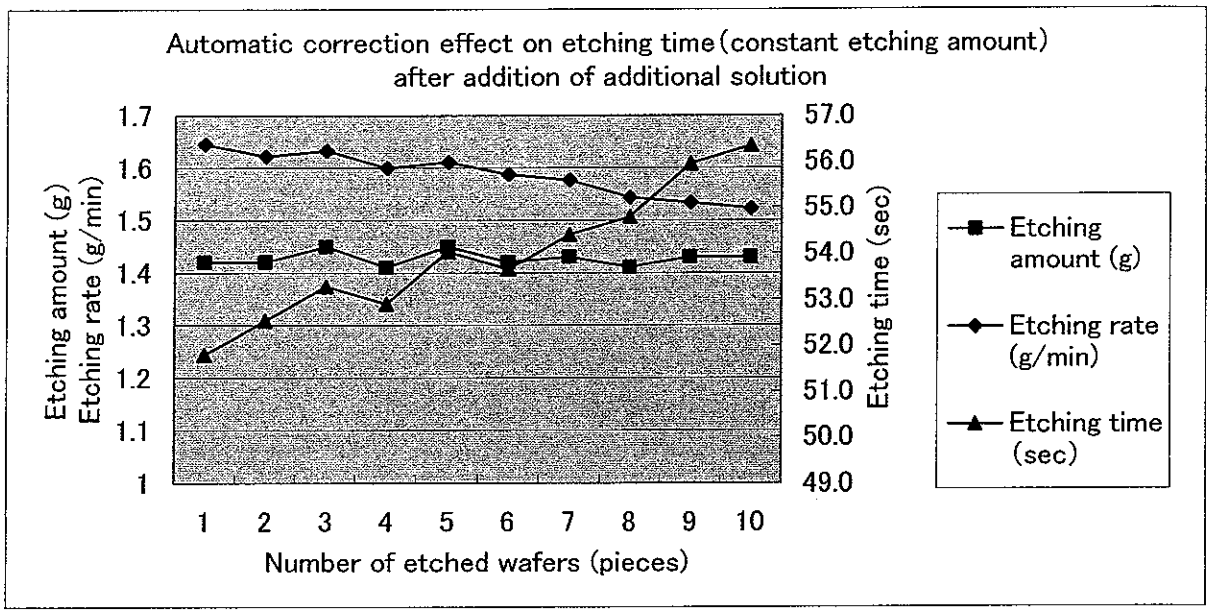
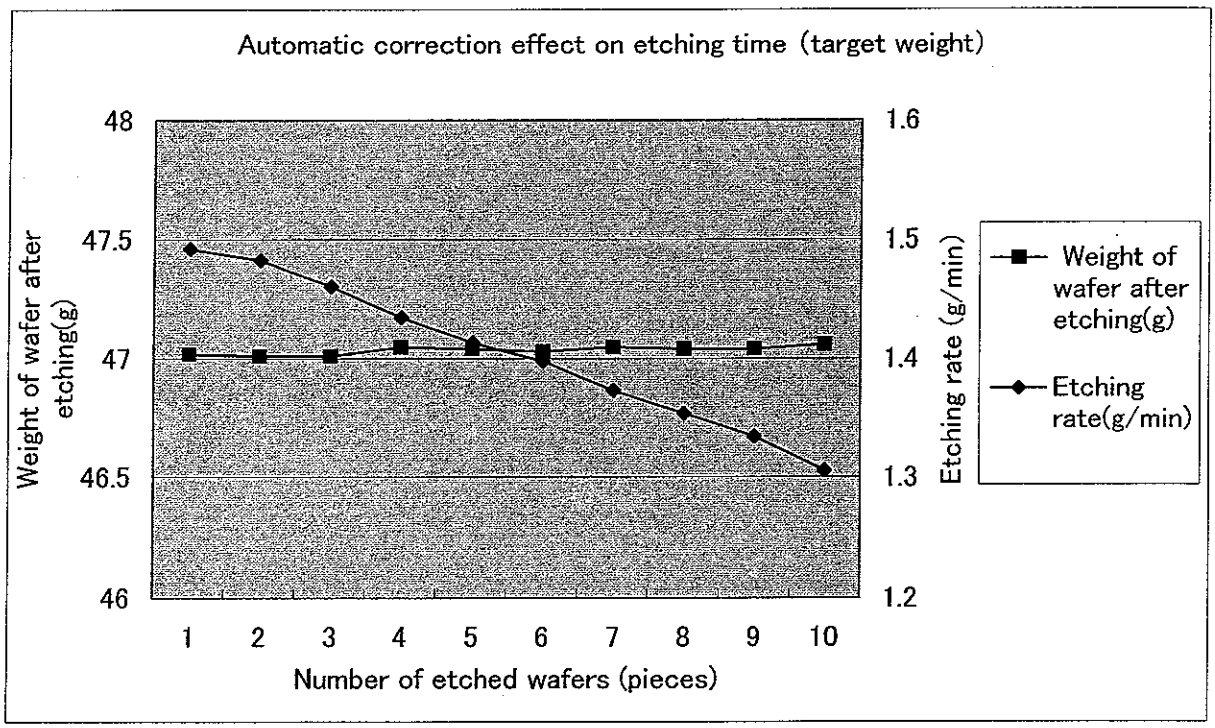

Automatic correction effect on etching time (constant etching amount) after addition of additional solution
Etching amount (g)
Etching rate (g/min)
Etching time (sec)
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
57.0
56.0
55.0
54.0
53.0
52.0
51.0
50.0
49.0
1 2 3 4 5 6 7 8 9 10
Number of etched wafers (pieces)
Etching amount (g)
Etching rate (g/min)
Etching time (sec)

FIG. 8


Automatic correction effect on etching time (target weight)
Weight of wafer after etching(g)
Etching rate (g/min)
48
47.5
47
46.5
46
1.6
1.5
1.4
1.3
1.2
1 2 3 4 5 6 7 8 9 10
Number of etched wafers (pieces)
Weight of wafer after etching(g)
Etching rate(g/min)