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(73) 가 가 2 1 1

(72) 가  
1 4 1 가 가  
1 4 1 가 가  
1 4 1 가 가

(74)

:

(54)

가 (REMC1) 가 (CAPAremc) 2 (REMC2)(  
PAremc) 1 (REMC1) 가 (Kregup)( 1)  
REMC1) 가 (disch1) (Kregup) (DECreg)  
가 (MOTORpower)

1

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1

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2 1

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3 1

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4 1

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5 1

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6 1

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7 5

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8 5

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9 5

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10 5

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11 5

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12 6

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13 6

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14 13

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15 13

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16 1

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가 , , ( ) , ( )

7 - 123509

(開度)가 가 ( 가 ) 가 , 가 ,

가 가 , ( ) ,

가 가 , 가 ,

가 가 , 가 ,

가 가 , 가 ,

가

( 1 ).

( )

가

가

가  
가

가

( 2 ).

가

( )

( 3 ).

( 4 ).

가

가 ( )

( 5 ).

( 6 ).

( ) 가

1 가

1 1 가

1 2 가

1 2 1 가

가

가

(電裝系) 가 ( 8 ) . 2 ,

( DC/DC )

( ) , (

( ) . 가 2 2

가 , 가 ,

가 .

( 9 ) .

가 ( 10 ) .

( 11 ) .

가

( 12 ) .

가 ,

( 13 ) .

가 ,

1 . . . 1 , . . .  
 , 1 ( ) , 3 ( 가 ) . (1)  
 (2) (4) (5) (3) (2)  
 ( ) (3) (2) (3) ( ) (1)  
 (3) (power drive unit)(13)( , PDU(13))  
 (14) , PDU(13) 가 .  
 , (14)

(14) ( 180V) ( 12V)  
 ( (車載) , ) , ( (17)(DC/DC ) ) , (17) (14) (14)  
 (18) (18) (18) (14) (17) (14)  
 (18) (14)

(1) (11)( , ENG/ECU(11)) , (3)  
 (12)( , MOT/ECU (12)) , (14) (1) (3)  
 (15)( , MG/ECU(15)) , (4) (1)  
 6)( , TM/ECU(16))  
 ECU(11 16) (21) , (21)

2 (1), ENG/ECU(11) (1) (吸氣管)(102)  
 (103)가 (103) ( th) ( )  
 14)가 (104) (103) ( th) ( )  
 ENG/ECU(11) , (103) (drive by wire)(DBW) ,  
 ( th)( , ( th)) (105)가  
 (105) ENG/ ECU(11)

(1) (103) (102) , ( )  
 1) ( ) (106)가 (106) ( )  
 ( ) (106) (開) ENG/ECU(11) , ENG/ECU(11)  
 , (1) 가 (106)

(103) (102) (107) (PBA)( (102)  
 ) (108)가 (108) (PBA)  
 ( ) ENG/ECU(11)

(108) (吸氣溫)(TA) (109)가  
 (109) (TA) ( ) ENG/ECU(11) .

(1) (1) ( ) (TW) (110)가  
 (110) (1) (TW) ( ) ENG/ECU (11)

(1) ( ) (1) (NE)  
 (111)가 (111) (1) ( ) 180  
 ( ) ( , TDC ) , TDC  
 (1) (NE) ENG/ECU(11) .

2 , 112 (1) (CYL) (112)  
 (CYL) ENG/ECU(11) .  
 ENG/ ECU(11)가 (1) .

2 , 113 (1)  
 (113) ENG/ECU(11) , ENG/ECU(11) 가 .

(1) (114) , 가 HC, CO, NOx (115)가  
 (115) (1) (LAF) (117)가  
 (117) 가 (LAF)  
 , ENG/ECU(11) (117) , (1)  
 (LAF) , (理論) .

(115) (TCAT) (118)가 (118)  
 (115) (TCAT) ( ) ENG/ECU(11) ,  
 (Vcar) (119) ( ap)( , ( ap))  
 (120)가 ENG/ECU(11) , (119, 120) 가 ENG/ECU(11) .

ENG/ECU(11) , ( ) (整形),  
 (A/D )  
 , ( , CPU) , CPU  
 , (106), (113), (105)  
 . ECU(12 16) , ENG/ECU(11) .

3 (3), PDU(13), (14), MOT/ECU(12) MG/ECU (15)

(3) , (NM) (202)가 , 가 MOT/ECU(1  
 2) (202) , (3) (NM) (1) (NE) ,  
 (111) MOT/ECU(12) .

PDU(13) (3) , (3) (3)  
 / (201)가 PDU(13) (TD), PDU(13)  
 IGBT ( ) (TD) (203)가 (201,203)  
 가 MOT/ECU(12) .



(14) PDU(13) , (14) , (14)  
 (14) / (204)가 , 가 MG/ECU  
 (15) .  
 , MG/ECU(15) , MOT/ ECU(12)  
 . , MG/ECU(15) ,  
 .  
 4 (4) TM/ECU(16) (4) ( ) (GP)  
 (301)가 , 가 TM/ECU(16) ,  
 (4) (302)가 . (302) TM/ECU(16)  
 ( (4) ) .  
 5 6 , 가 (3) (1)  
 , MG/ECU(15)가 ( 1 msec)  
 . , MOT/ECU(12) .  
 5 , 1 , (14) (CAPAremc) , .  
 , / (204) (14) ( ) ( )  
 (14) ( 가 ) , (14)  
 (CAPAdisch) , (CAPAchg) ,  
 (CAPAdisch) , (CAPAchg)  
 , (CAPAdisch) (CAPAchg) (1) (14)  
 (CAPArem)

$$CAPArem = CAPAfull - (CAPAdisch + CAPAchg).....(1)$$

, CAPAfull (14) 가 .  
 , (CAPArem) , (14)  
 , (14) (CAPAremc) , (14)  
 (CAPAremc) (14) 가 (CAPAfull) (%) .  
 , (1) (CAPAdisch) (CAPAchg) (14) ,  
 , (CAPAdisch) , EEPROM  
 (CAPAchg) (14)가  
 「0」 .  
 , (CAPAdisch) (CAPAchg) (14)  
 , (14) ( (14) )  
 , (14) .  
 , 2 , (3) , (14) (CAPAremc) (3)  
 (3) , 5 (POWERcom) ,  
 (14) (CAPAremc) (3)가 ( (POWERcom)  
 )(PRATIO) 1 (CAPAremc) , 7

(POWERcom) (3) (PRATIO) (PRATIO)

(14) (CAPAremc) (PRATIO) (PRATIO)

7 (14) (CAPAremc), (PRATIO) (14) 가

(PRATIO) (3) (CAPAremc) (14) 가

3 (120) ( ap) , 8 (105)

( th) ( thcom)( , ( thcom))

8 ( ap) ( thcom) ( thcom = ap).

4 , 3 ( thcom) , 9 (PRATIO) (乘算) (PRATIO) (3) (PRATIOth) (POWERcom) (3) ( thcom) (全開近傍) ( 50 ) , , 가 가 (3) ( )

( ap) , PRATIOth ( thcom) 1

5 , 3 ( thcom) (111) (NE) , 10 (map) (POWERcom), 가 (POWERcom)

10 (POWERcom) ( thcom) (1) (NE) (1) (3) ( thcom) ( th) (1) (POWERcom) (前者) (POWERcom) ( thcom) 「0」 , , ( ap)가 (全閉) 「0」 .

(POWERcom) ( thcom) ( ap) 1 1 ( thcom) ( ap)

6 (POWERcom) (1) ( th) ( thcom) ( thadd) ( thadd) (1) (POWERcom) 가 ( thcom) 가 ( th) ( thcom) 가

$$(\text{POWERcom}) = \text{thcom} + \text{thadd} \quad (1)$$

$$\text{EXPOWER} = \text{VSTATUS} \cdot \text{Vcar} \quad (119)$$

$$\text{RUNRST} = \text{EXPOWER} - \text{POWERcom} \quad (2)$$

EXPOWER = POWERcom - RUNRST . . . (2)

(RUNRST) 가 (EXPOWER) (POWERcom) (Vcar) (EXPOWER) (POWERcom) (RUNRST) KW( ) (EXPOWER) 「0」 (cruise) ( ) (POWERcom) (RUNRST) KW( )

(STATUS) (EXPOWER) (Vcar) 11 (EXPOWER) (Vcar) (VSTATUS) (3) (PRATIO) (POWERcom) (3) (0 200%) (POWERcom)

(EXPOWER) 가 가 (EXPOWER) (VSTATUS) 11 (Vcar) (EXPOWER) 가 가 11 (Vcar)

(VSTATUS) (3) (VSTATUS) (ap = 0) (2) (EXPOWER) 「0」 (POWERcom) (RUNRST) (RUNRST) VSTATUS = 0 (POWERcom) (VSTATUS) (EXPOWER) 「0」 (POWERcom) (RUNRST) (RUNRST) VSTATUS 0 (POWERcom)

(VSTATUS) 「0」 (3) (VSTATUS) 「0」 (3) (가 ) (가 )

8 , (VSTATUS) 「0」 , , VSTATUS 0, (3)  
 가 ( 9). , 7  
 (VSTATUS) 「0」 , 9 ,  
 가 가 , (3) (DISCHG) 「0」 (1  
 4) ( 10), 6 11 (DISCHG) , 9 , 가  
 , (DISCHG) 6 11 .  
 (DISCHG) 가 「0」

8 VSTATUS 0 , , 6 15 .  
 (3)

(3) (VSTATUS 0 ) 11 , 5,  
 2, 4, 7 (POWERcom), (1) (CAPAremc)  
 (PRATIO), ( thcom) (PRATIOth), (VSTAT  
 US) , (3) , (3) (MOTORpower)( , (MOTOR power))

MOTORpower = POWERcom × PRATIO × PRATIOth

× VSTATUS.....(3)

12 , (MOTORpower) (3)  
 ( ) (MOTORcom)( , (MOTORcom))  
 12 , (MOTORcom) (MOTORpower)  
 (MOTORpower) (MOTORcom) (M

(MOTORcom) (MOTORpower)  
 (MOTORpower) (3) (MOTORpowe  
 r) (3) (1) ( )  
 (3) (1) (MOTORcom)  
 (MOTORpower) (1) (MOTORcom)

(MOTORpower) (MOTORcom) (3)  
 ( ) (MOTORpower) (3)  
 (MOTORpower) (MOTORcom) (3)  
 (MOTORpower) (MOTORcom) (MOTORc

om) (3)

, (MOTORcom) MG /ECU(15) MOT/ECU(12)  
 , MOT/ECU(12) (MOTORcom) (3) ( ) PDU(13)

12 (CAPAAdisch) 13 (가) (14) (CAPAremc) (204) (14) (DISCHG), (14) (DISCHG) (DISCHG) 가

14 (閉方向) 12 (MOTORcom) ( th) 21

( thassist) (MOTORcom) (3) ( th) (thassist) (1)  
 3 ( thcom) 6 ( thadd) ( th) (105) ( thassist)

3 ( th) ( thcom) 6 ( thadd) (= thcom + thadd) (POWERcom) (3) (POWERcom) (3) (POWERcom) (1)  
 (1) ( ) 12 (MOTORcom) 가 (3) 가 (1) 가 ( th) ( thadd)

6 14 가 (VSTATUS) (EXPOWER) 「0」 (EXPOWER) ( ap) (DAP) (DAPD) (DAP) DAPD (DAP) (DAPD) (DAP) DAPD

14 (EXPOWER) 0 (EXPOWER가 「0」) (POWERcom) (RUNRST) (3) 13 (16).

13 31 , (Vcar) (I) (NE)(= (3) (NM)) ,  
 , (Vcar) (NE) (3) ( ) (DE  
 Creg)( (DECreg)) . (Vcar) 가  
 , (NE)가 가 (DECreg) 가 .

1 (14) (CAPAremc) 1 (REMC1)  
 ( 32). , CAPAremc REMC1 , (CAPAremc) 1 (REM  
 C1) 2 (REMC2) ) 13 (D  
 ISCHG) (disch1) ( 33). , CAPAremc < REMC1 ,  
 REMC1 CAPAremc < REMC2 DISCHG disch1 , (Vcar) , 14  
 p)( , (Kregup)) ( 35). (Kregup) 31 (Kregu  
 (DECreg) , (3) (Kregup) 「1.0」 , (Vcar)  
 . , 14 ,  
 가 가 .

1 (REMC1) 2 (REMC2) 15  
 . 15 (L1) (14) , (L2) (3)  
 (3) , (L3) (17)  
 . (CAPAremc) , (3) (17)  
 (CAPAremc) ( ) 가 . ,  
 , (3) 가 가 (REMC1)( 25%) 1  
 , (17) 가 (REMC2)( 70%) 2

1 (REMC1) 1 (3)  
 , (14) (CAPAremc) , (REMC1) , (3)  
 (3) . , 1 (REMC1) (3)  
 가 가 .

32 33 (NO) , (Kregup) 「1.0」 ( )  
 34). , 34 35 , (Kregup)  
 31 (DECreg) (4) , (MOTORpower)( )  
 ( 36).

MOTORpower = DECreg × Kregup.....(4)

37 , 12 (MOTORpower) 가  
 (MOTORcom) , 13 .  
 , (MOTORcom)(< 0) MG/ECU(15) MOT/ECU(12)  
 , MOT/ECU(12) (MOTORcom) (3) ( ) PD  
 U(13) .

13 , (14) (CAPAremc) 1 (REMC1)

g) 「1.0」 (Kregup)가 (3) (Vcar) (1) (NE)(= (3) (NM)) (DECre) (14) (CAPAremc) (3) (REMC1) (2) 가 (3) (14) (3) (14) (CAPAremc) (14)

2) (14) (CAPAremc) 1 (REMC1) 2 (REMC (DISCHG) (dischl) (3) 「1.0」 (Kregup) (3) (DECre) (14) (CAPAremc) 1 (REMC1) 가 가 (3) 가 가 (14) (CA PAremc) 1 (REMC1) 가 가 (3)

2 (REMC2) (17) (14) (CAPAremc) (17) 2 (REMC2) (14) ( (18) ) 가 .

3) (14) (CAPAremc) 2 (REMC2) ( (3) (DISCHG) (dischl) (3) (DECre) (14) (C APAremc) (3) (14) (14)

(3) (DECre) (NM)) (Vcar) (1) (NE)(= (3) (14) (CAPAremc) (3) 가 (Kregup) (Vcar) ( 14 ) (3) ( (3) (14) (2) (3) (14)

6 가, 17 ( th) (105) ( tho) , 21 ( th) ( tho) (Kregup)가 「1.0」 (3)

가, (3) 「0」, (tho) 「0」 (Kregup)가 「1. 0」 (1)

3) (3) (Vcar) 가, (1) (3) 가

15, (EXPOWER) 「0」 (8 (NO), (VSTATUS) 「0」), (MOTORpower) (CRUISEpower)( ) (18). (CRUISEpower) (Vcar), (1) (NE) (3) (NM), (14) (CAPAremc)

19, 12, (MOTO power) (MOTO Rcom)

13) (MOTORcom)(< 0) MG/ECU(15) MOT/ECU(12) (MOTORcom) (3) ( ) PDU( ) MOT/ECU(12)

20, (MOTORcom), (th) ( ) (thsub), 21 (thsub), (thassist)

(MOTORpower) (3) ( ) (3) (MOTORpower) (3) ( ) (1) (3)가 (1) 가 ). (POWERcom) (3) (1) (1) (3) (1) 가, (MOTORpower) (3) (thsub)

21, 4, 6, 14, 20 (thcom), (thadd, thassist, thsub) (4) (105) (th) (tho)

$$tho = thcom + thadd + thsub - thassist.....(4)$$

(thsub) 「0」, (thassist) 「0」



22 , ( th) ( tho) ( thref) ,  
tho < thref , , (108) (PBA) (PBAref)  
( 23). , 23 , PBA PBAref , 5  
6 .

19 , tho thref , 20 , PBA PBAref , (4)  
(Low) ( 21) , 5 6 .

21 가 , (1)  
, (4) , (2) ( 21  
) , , TM/E  
CU(16) , MG/ECU (15)

ENG/ECU(11) (1) .

16 , , ENG/ECU(11) ,  
( , TDC ) .

(NE), (PBA) (1) ( 131),  
(I) ( 132).

, (1) (106)  
( 133) , (1) (113)  
( 134) , ( th) (105)

( 135) .

1 (NE), (PBA)  
133, 134 . , 135 , MG/ECU(15) ENG/ECU(11) ( th)가  
th) ( tho)( 6 17 21 ( th)) ( th)가  
(105) .

, 가 , ,  
, ( ) .

13 (14) (CAPAremc) 95% , ,  
(Kfegup) 「1.0」 , ,  
(14) 가 , (14) .

, DBW , ,  
가 . , (電磁) ( 가 ,  
) .

, (4) (無) 가 , (GP)

(57)

1.

2.

1 ,

3.

1 ,

4.

3 ,

가 ,

5.

1 ,  
1 ,

6.

5 , 1

7.

5 , ,  
1 , 2 , ,

8.

7 , , 2

9.

5 7 ,  
가 .

10.

9 , 가 .

11.

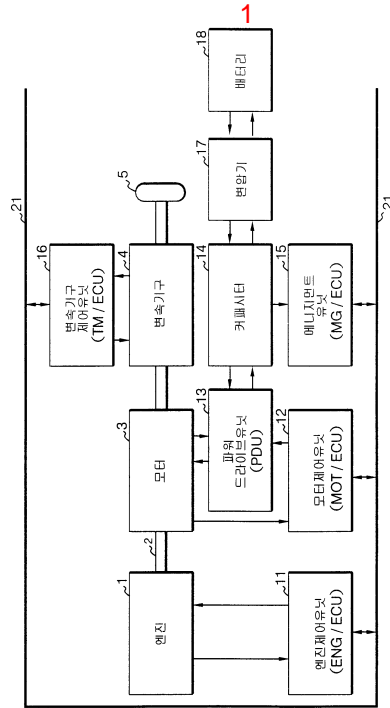
1 , , .

12.

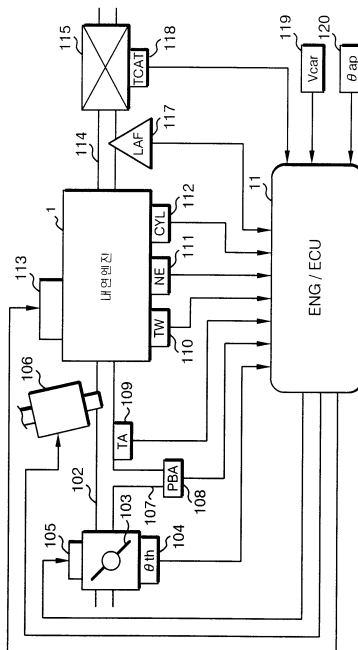
1 , ,  
가 .

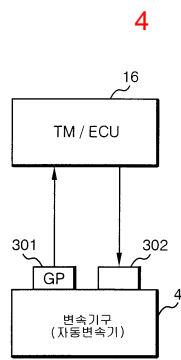
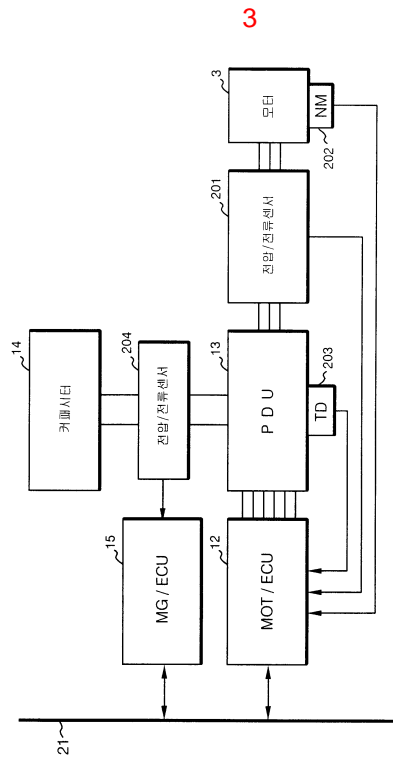
13.

1 , .

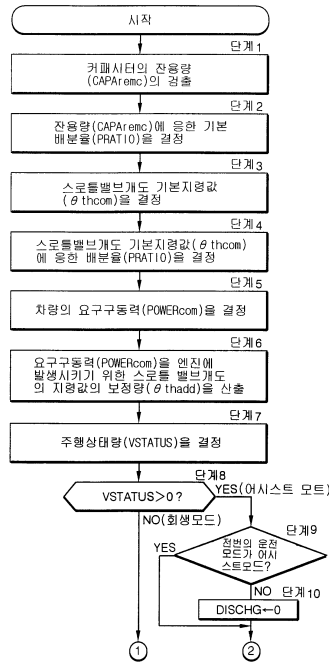


2

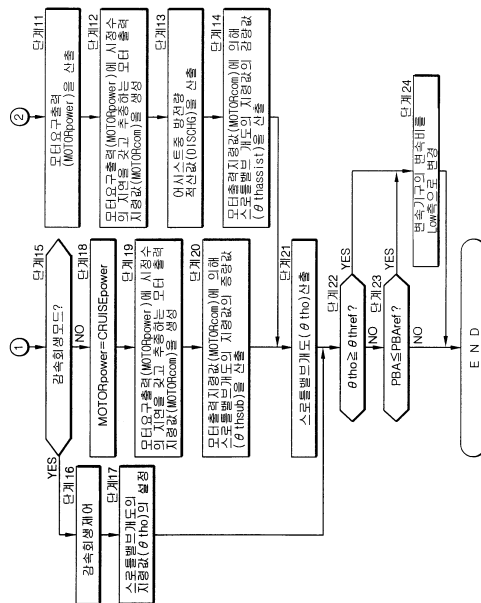




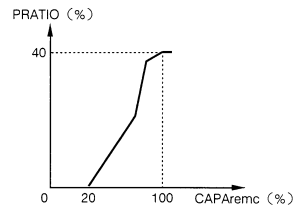
5



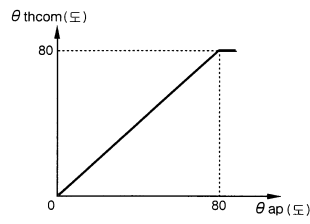
6



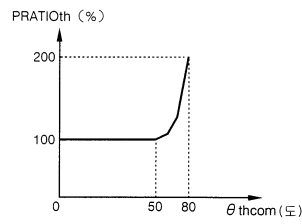
7



8



9



10

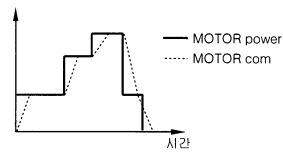
		→ NE (rpm)				
		0	500		9500	10000
theta thcom (도) ↓	0					
	1					
	⋮					
				요구동력 POWERcom (KW)		
	89					
	90					

11

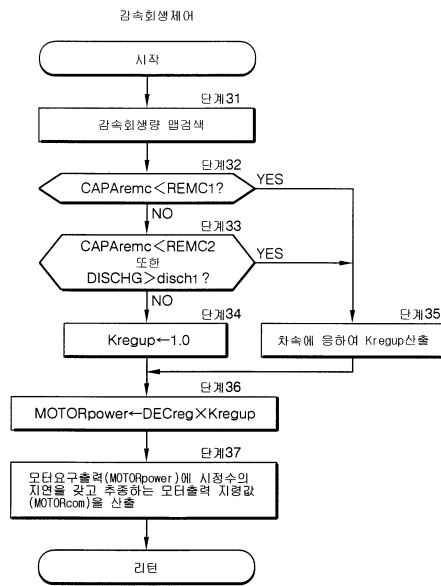
	→ Vcar (Km/h)			
EXPOWER (Kw)	0	10	160	170
0				
1				
⋮				
99				
100				

주행상태량  
VSTATUS (%)

12

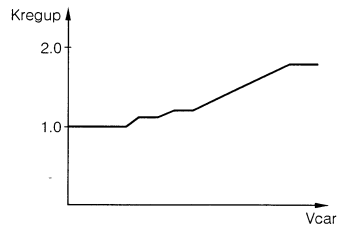


13

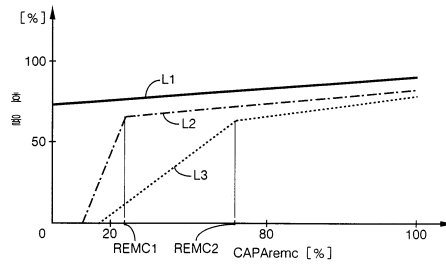




14



15



16

