

**(4) -**

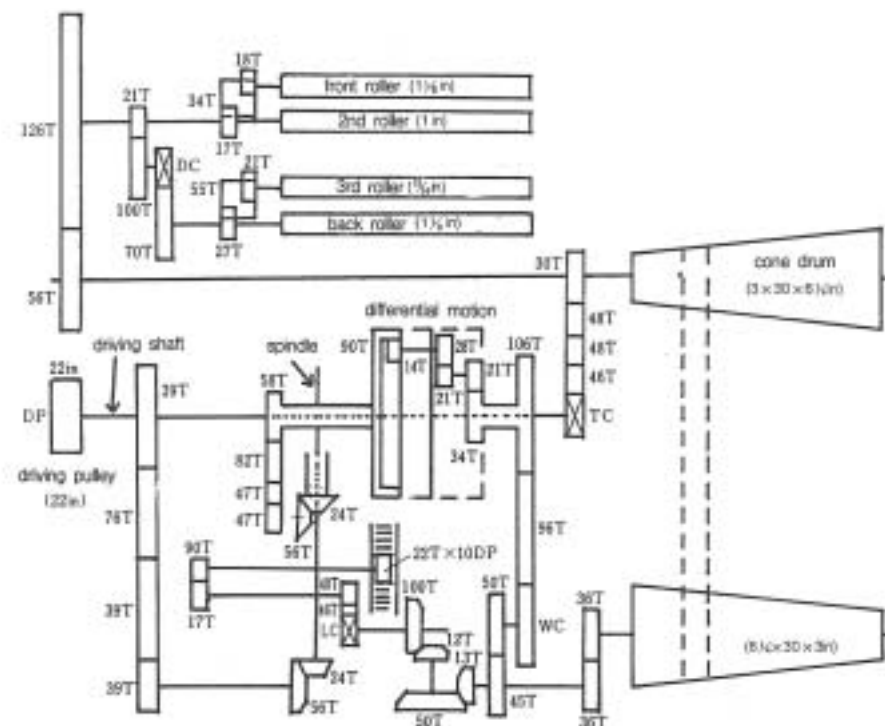
### 5.3

(1)

(2)

(3)

< 5.10>



< 5.10>

(1)

- driving shaft : N rpm
- twist change wheel : TC
- draft change wheel : DC
- lifter change wheel : LC

1) back roller

$$N \times \frac{TC \times 56 \times 21 \times DC}{30 \times 126 \times 100 \times 70} = 0.00004444 \times N \times TC \times DC$$

2) 3rd roller

$$N \times \frac{TC \times 56 \times 21 \times DC \times 27}{30 \times 126 \times 100 \times 70 \times 21} = 0.00005741 N \times TC \times DC$$

3) 2nd roller

$$N \times \frac{TC \times 56}{30 \times 126} = 0.01481 \times N \times TC$$

4) front roller

$$N \times \frac{TC \times 56 \times 17}{30 \times 126 \times 18} = 0.01399 \times N \times TC$$

$$= \times 1 \frac{1}{8} \pi$$

5) spindle

$$N \times \frac{39 \times 56}{39 \times 24} = 2.3333 \times N$$

(2)

1) back roller ~ 3rd roller (break draft)

$$\frac{27 \times \frac{15}{16} \pi}{21 \times 1 \frac{1}{8} \pi} = \frac{276.543}{DC}$$

2) 3rd roller ~ 2nd roller (main draft)

$$\frac{21 \times 70 \times 100 \times 1 \pi}{27 \times DC \times 21 \times \frac{15}{16} \pi} = \frac{276.543}{DC}$$

3) 2nd roller ~ front roller ( zone)

$$\frac{17 \times 1 \frac{1}{8} \pi}{18 \times 1 \pi} = 1.06$$

4) back roller ~ front roller (total draft)

$$\frac{70 \times 100 \times 17 \times 1 \frac{1}{8} \pi}{DC \times 21 \times 18 \times 1 \frac{1}{8} \pi} = \frac{314.815}{DC}$$

5)

|                                                 |
|-------------------------------------------------|
| $\frac{\quad \times \quad}{\quad \times \quad}$ |
|-------------------------------------------------|

(3) (1in : TPI)

1in .

$$\begin{aligned} 1\text{in} &= \frac{\text{(rpm)}}{\text{(in/ min)}} \\ &= \frac{1}{\text{(in)}} \\ &= \frac{18 \times 126 \times 30 \times 39 \times 56}{17 \times 56 \times \text{TC} \times 39 \times 24 \times 1\frac{1}{8}\pi} = \frac{148.235}{\text{TC}} \end{aligned}$$

(4)

layer (lift) , 1in

.

$$1\text{in} = \frac{1}{\times}$$

, : B(in)

: d(in)

,

$$1\text{in} = \frac{100 \times 50 \times 45 \times \text{WC} \times \text{TC} \times 56 \times 17 \times 1 \times \frac{1}{8}\pi}{12 \times 13 \times 50 \times 106 \times 30 \times 126 \times 18 \times \text{B} \pi \times \text{d}}$$

(5) (1 · 1 )

$$\begin{aligned}
 &= \frac{(\text{rpm}) \times 60}{\text{TPI} \times 36} (\text{yd} / \text{h}) \\
 &= \frac{\times 60}{\text{TPI} \times 36 \times 840} (\text{HK} / \text{h}) \\
 &= \frac{\times 60}{\text{TPI} \times 36 \times \times 840} (\text{HK} / \text{h}) \\
 &= \text{—————} \times 100(\%)
 \end{aligned}$$

(6)

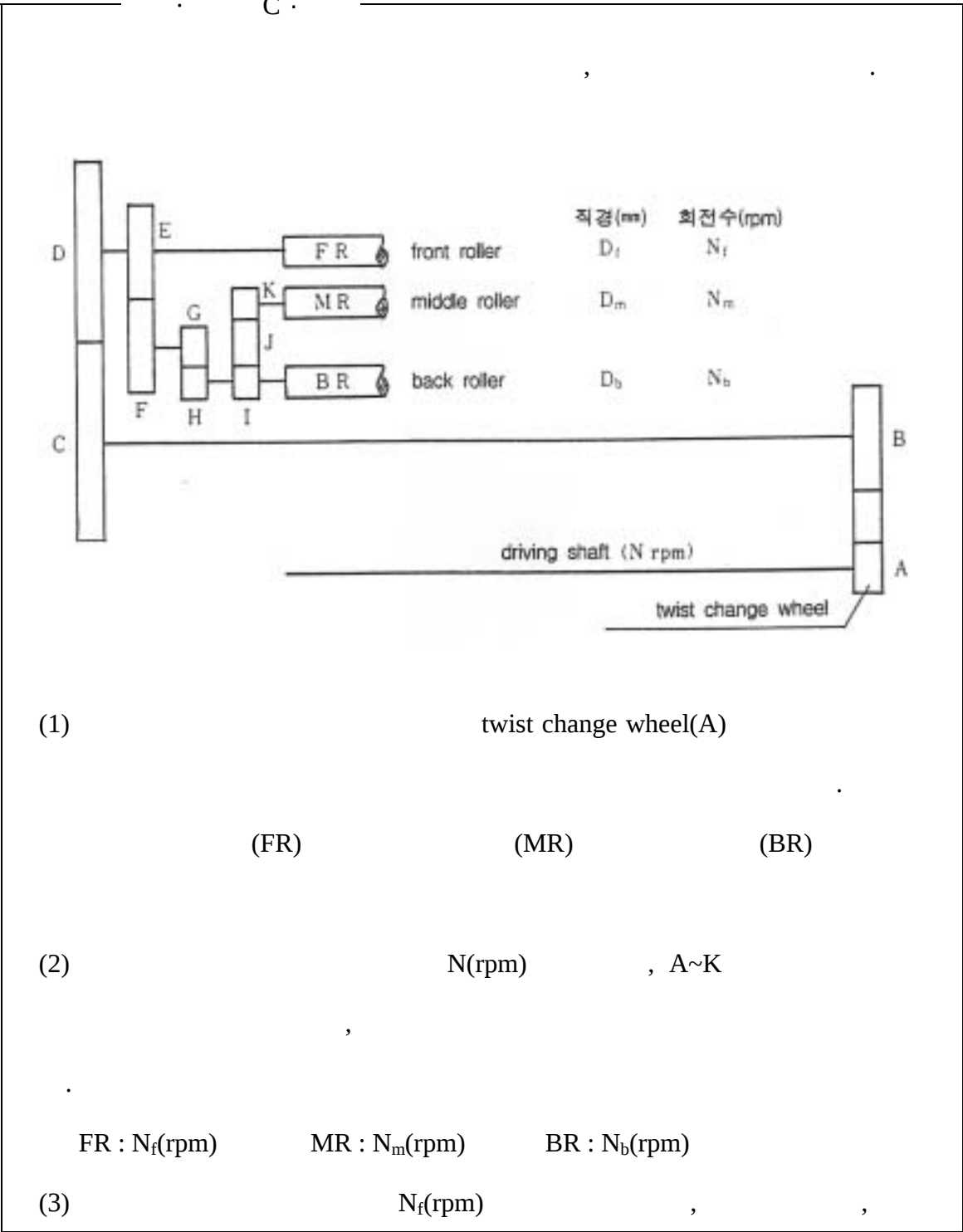
30yd (gr, g) , 15yd 10yd  
 (gr, g) , 15yd 10yd (gr/g)  
 . , ,  
 ,  
 가 .

$$= \text{—————}$$

(7)

가  
 , , , ,  
 , , , ,  
 .  
 , paddle

가 30% 가 .



|     |                                                       |                                                       |                                                       |
|-----|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
|     | $N_m, N_b$                                            |                                                       | .                                                     |
| (4) | $N_f, N_m, N_b(\text{rpm})$                           | ,                                                     | $(\text{m/min})$                                      |
|     | .                                                     | ,                                                     | $\pi$                                                 |
|     | FR                                                    | MR                                                    | BR                                                    |
| (5) |                                                       |                                                       | ,                                                     |
|     | .                                                     |                                                       |                                                       |
|     | FR ~ MR                                               | MR ~ BR                                               | FR ~ BR                                               |
| (6) | (A ~ K)                                               |                                                       | ,                                                     |
|     | .                                                     |                                                       |                                                       |
|     | FR ~ MR                                               | MR ~ BR                                               | FR ~ BR                                               |
| (7) |                                                       | ,                                                     | .                                                     |
|     | $\frac{F \times H \times D_f}{E \times G \times D_b}$ | $\frac{F \times H \times D_b}{E \times G \times D_f}$ | $\frac{E \times G \times D_b}{F \times H \times D_f}$ |

[     ] (1)     FR : A → B → C → D

MR: A → B → C → D → E → F → G → H → I → J → K

BR : A → B → C → D → E → F → G → H

(2)      $N_f = N \times \frac{A \times C}{B \times D}$

$N_m = N \times \frac{A \times C \times E \times G \times I}{B \times D \times F \times H \times K}$

$N_b = N \times \frac{A \times C \times E \times G}{B \times D \times F \times H}$

|   |       |             |           |
|---|-------|-------------|-----------|
|   | ·     | B ·         |           |
| < | 5.10> |             | ,         |
| , |       | : 1,745rpm, | : 3.5in , |
| · |       |             |           |

|     |                  |              |  |        |                          |
|-----|------------------|--------------|--|--------|--------------------------|
| (1) |                  |              |  |        |                          |
| (2) |                  |              |  |        |                          |
| (3) |                  |              |  |        |                          |
| (4) | 25.4mm           | 1.03         |  |        | . Twist change wheel(TC) |
|     |                  | 가            |  |        |                          |
| (5) |                  | : 230gr/30yd |  | : 0.98 | . 1in twist              |
|     | change wheel(TC) |              |  |        | .                        |

[     ] (1)  $(DR) = \frac{1,745 \times 3.5}{22} = 277.6(\text{rpm})$

(2)  $= DR \times \frac{TC \times 56 \times 17}{30 \times 126 \times 18} = 3.88 \times TC(\text{rpm})$

(3)  $= DR \times \frac{39 \times 56}{39 \times 24} = 647.3(\text{rpm})$

(4)  $= \frac{18 \times 126 \times 30 \times 39 \times 56}{17 \times 56 \times TC \times 39 \times 24 \times 1\frac{1}{8} \times \pi} = \frac{47.21}{TC} \quad 1.03 = \frac{47.21}{TC}$

$TC = 47.2/1.03 = 45.8$  , TC 46T .

(5) 230gr/30yd ,

$$\frac{7,000 \times 30}{840 \times 230} = 1.087$$

$$s = 0.98 \times \sqrt{1.087} = 1.022$$

: 1.022 twist change wheel ,

$$1.022 = \frac{47.21}{TC} \quad TC = 47.21/1.022 = 46.2$$

, TC 46T .

|     |            |  |         |  |   |
|-----|------------|--|---------|--|---|
|     | < 5.10>    |  | ,       |  | . |
| (1) | ~          |  | (       |  | ) |
|     | , DC = 37T |  | .       |  |   |
| (2) | ~ 3rd      |  | (       |  | ) |
|     | , 3rd      |  | 1.037in |  | . |

$$[ \quad ] (1) = \frac{70 \times 100 \times 17 \times 1\frac{1}{8}}{DC \times 21 \times 18 \times 1\frac{1}{8}} = \frac{314.8}{DC} = \frac{214.8}{37} = 8.51$$

$$(2) = \frac{27 \times 1.037}{21 \times 1\frac{1}{8}} = 1.185$$

$$[ \quad ] : \quad 3rd =$$

$$\frac{15}{16} \times 25.4 + 1.4 \times 0.9 \times 2 = 26.33(\text{mm}) = 1.037(\text{in})$$

「 , 가 1.4mm ,  
1.4 × 0.9mm .」

|         |             |           |           |
|---------|-------------|-----------|-----------|
|         | .           | B .       |           |
|         | 250gr/30yd, | 800(rpm), | 1.02/in , |
| 1 (96 ) | .           | 15h,      | 85%       |
| .       |             |           |           |

$$[ \quad ] 1 = \frac{(\text{rpm}) \times 60( \quad ) \times \quad \times \quad}{\times 36(\text{in}) \times 840(\text{yd}) \times}$$

$$= \frac{800 \times 60 \times 15 \times 96 \times 0.85}{1.02 \times 36 \times 840 \times 250 \div 250} = 1,905(\text{lb/ } \quad )$$