

()

4.

4.1

20tex , 가 20%
2/3
가
가

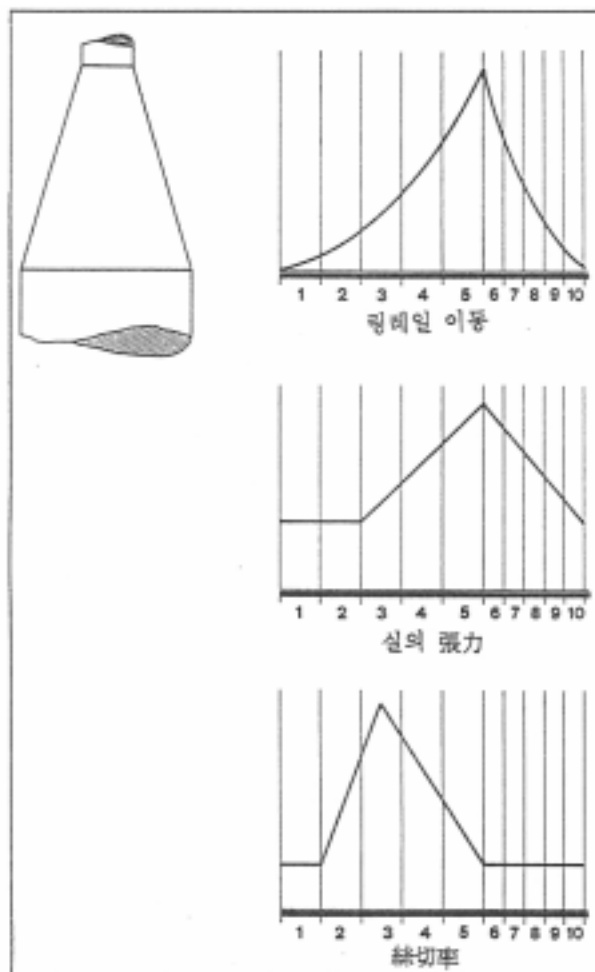
25,000 7,000
100 10% 가

- () : 65~70%
- : 25%
- : 5~10%

38).

가 , 가 , 24cN
40cN 가 ,

Zinser , () 가 . 가 ().



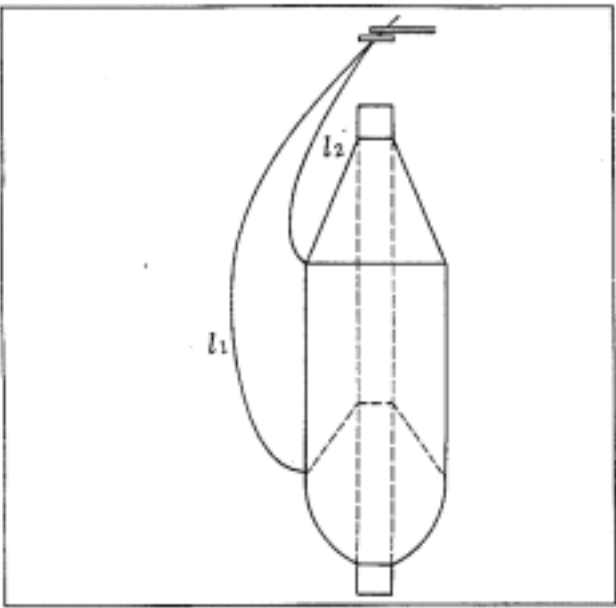
< 38> 1 , (Zinser)

가

(l_1)가 ,

(l_2) 가 (39).
 ().
 가
 variator,

(), (base
) (main body)가 .
 ,



< 39>

4.2

○ ()

○ star-delta

○ variator

○

○ ; (A.S.S.)

○ ,

○

4.3

4.3.1

가

.

,

가

.

가

.

-

가

.

(Δ)

,

(Y)

.

가

,

$1/3$

.

가

.

4.3.2

4

6

가

.

4

6

4

6

$2/3$

.

,

(f)

.

(rpm)		
	F=50	F=60
6	950	1,130
4	1,450	1,730

4.3.3. Variator

가

가

, variator

가 V

,

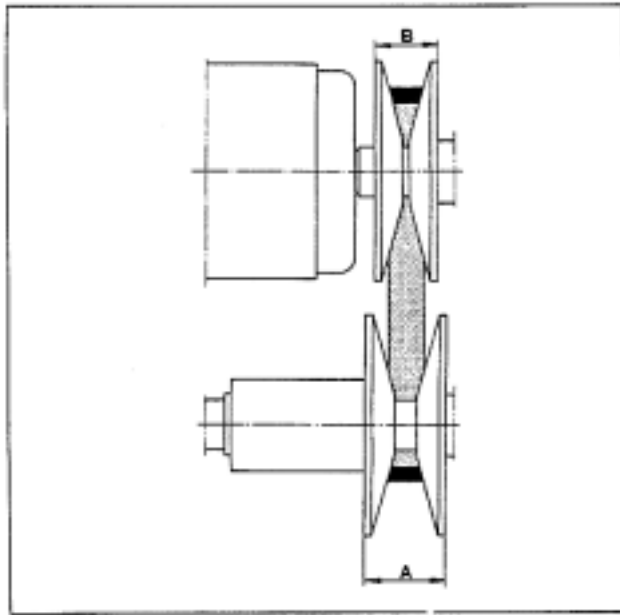
,

(40).

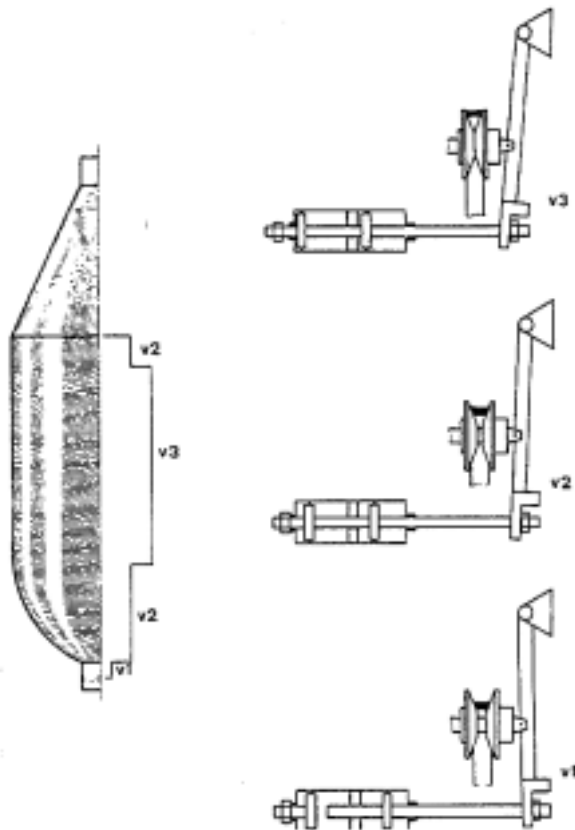
,

,

(41).



< 40> Variator



< 41> Variator

(Rieter)

4.3.4. A.S.S

A.S.S

A.S.S

,
()
가 . 가
34kW 가
6~8 ,

220V

A.S.S

가

, . A.S.S

4.4

()

“spinning regulator”가

,
()
() 가
, 가 , ()
) 가 , 가

가 가 , , .

4. 5

4 가
가

5.

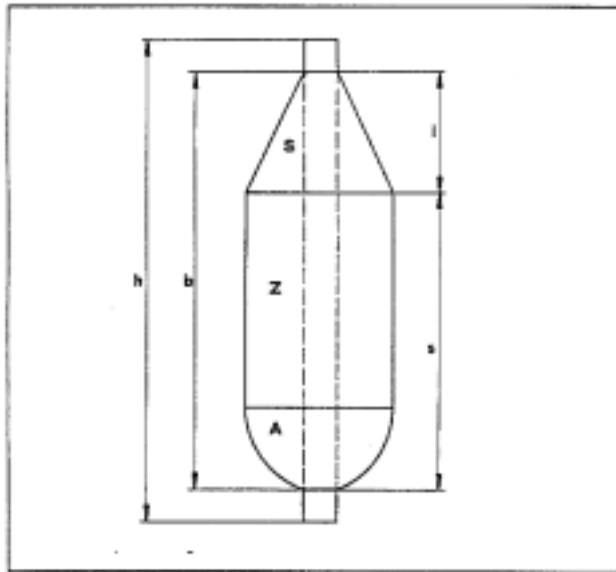
5.1

(A), (Z) (S)
(42).

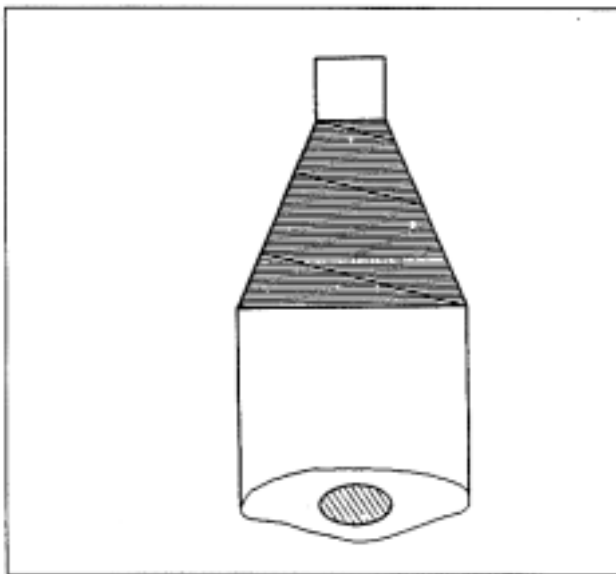
10mm

main winding cross winding

(43).



< 42>



< 43> main winding cross winding

가

,

.

5.2

(point of lay)

,

.

Rieter

,

.

가

.

.

○

()

○

(

)

.

,

.

(

44 b)

(44 c)

(44 a)

,

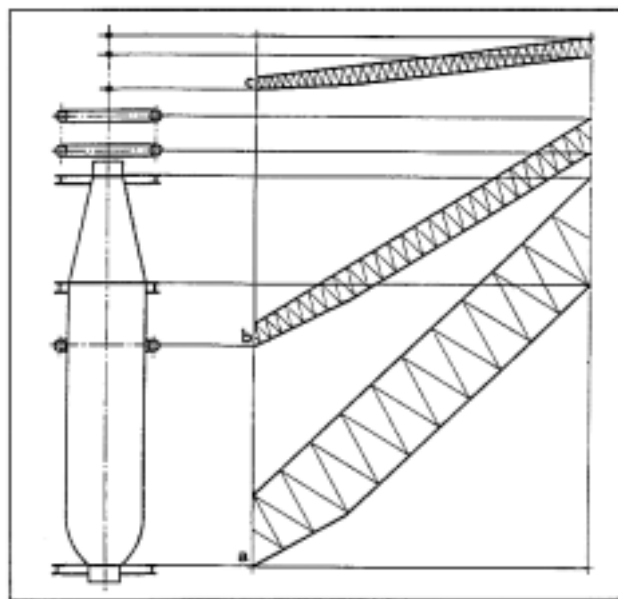
가 ,

2 : 1 .

(main cross winding)

가 5m (4m가).

15 ~ 18% 가 .



< 44> :

(a) , (b) , (c)

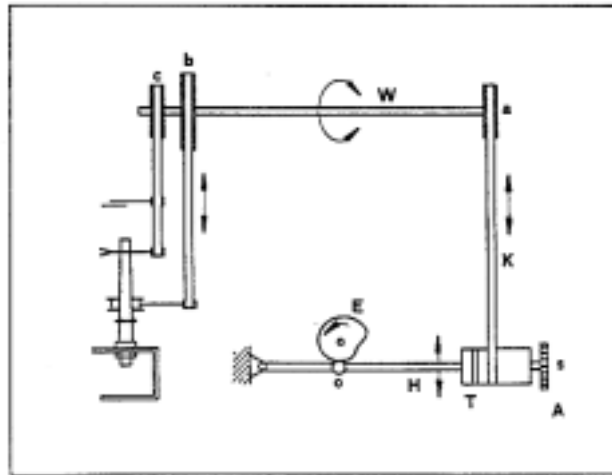
5.3 (45)

(R) (W) (b)

,

(turning moment) . (a)

가 , (K) (T)
(E) (O)가 (H) .



< 45>

, (a b)

가 (A)

, (T)

, (a), (W)

(b)가 (R) 가 () .

(W) (c) ,

(B) (F) .

(c) ,

(c) (b) 가

5.4

가

(42 A).

, (46 N), thumb, deflector

(E) (H) ,
(a)가 (R)
(a) (N) ,
(rest)

(a) < 46> ,
(K) , (H)
N

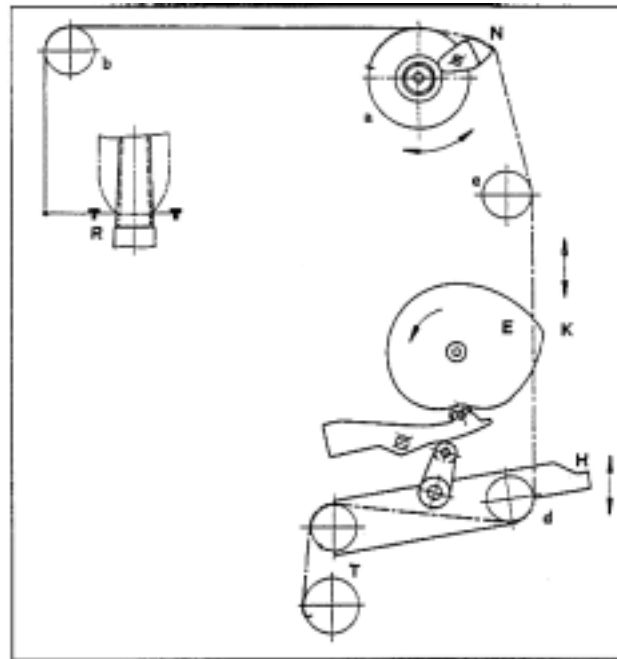
가

(T)

(a) 가

(N)

3



< 46>

(N)