

**SINGER**















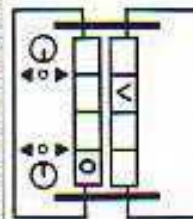




113

$$\Sigma$$


## Timeline



2

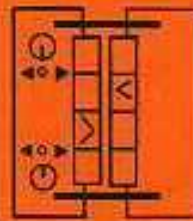
3


$$T = \frac{1}{2}$$


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7

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115



1-800-441-4444

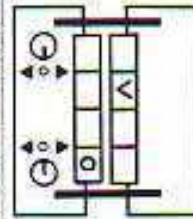
to

1

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1

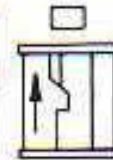
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二

$$\Sigma$$

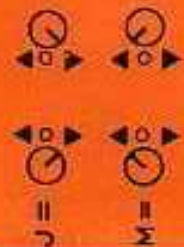
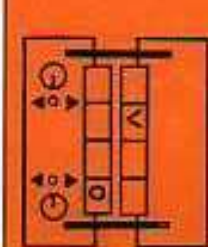

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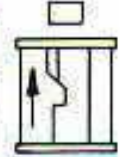
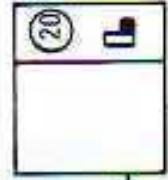
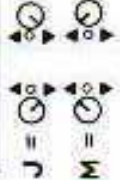
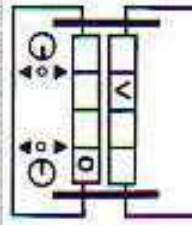
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2 1 1 1 1  
2 1 1 1 1  
2 1 1 1 1  
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2 1 1 1 1  
2 1 1 1 1

7 3 1 1  
7 3 1 1  
7 3 1 1  
7 3 1 1  
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2 3 1 1  
2 3 1 1

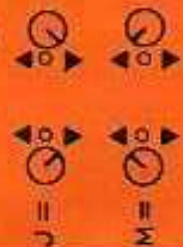
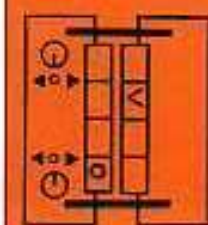
▼ J M T



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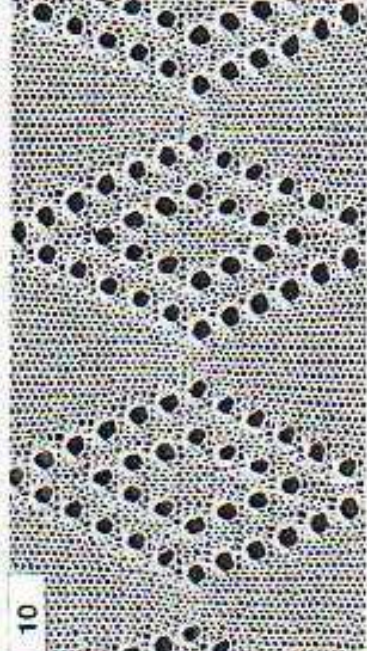
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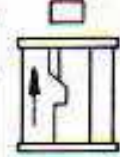
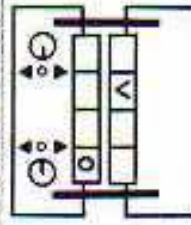
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2 1 1 1 1  
2 1 1 1 1  
2 1 1 1 1  
2 1 1 1 1  
2 1 1 1 1  
2 1 1 1 1

4 3 1 1  
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4 3 1 1  
4 3 1 1  
4 3 1 1  
4 3 1 1  
4 3 1 1  
4 3 1 1

▼ J M T

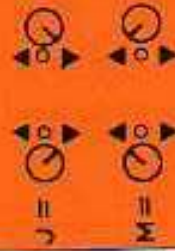
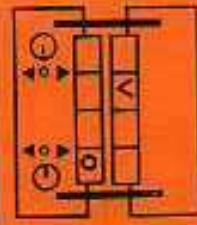


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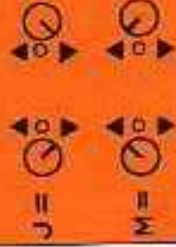
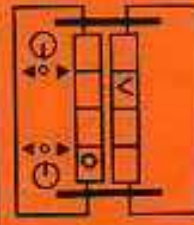


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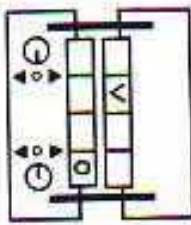
2.  $|x| \leq 1$ 

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|---|---|---|---|
| 4 | 3 | 1 | 1 |
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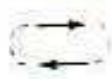
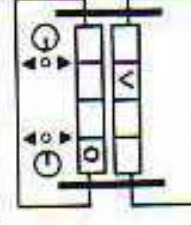


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The diagram illustrates four basic types of joints, each represented by a circle with a dot in the center and arrows indicating degrees of freedom:

- Revolute Joint:** A circle with a dot and a single arrow pointing horizontally, indicating one degree of freedom (rotation).
- Prismatic Joint:** A circle with a dot and a single arrow pointing vertically, indicating one degree of freedom (translation).
- Ball-and-Socket Joint:** A circle with a dot and three arrows pointing horizontally, vertically, and diagonally, indicating three degrees of freedom (rotation and translation).
- Planar Joint:** A circle with a dot and two arrows pointing horizontally and vertically, indicating two degrees of freedom (translation).

$$T =$$
[illegible]

















車

三



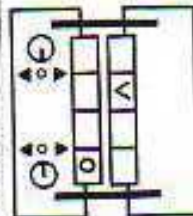
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1

|   |       |   |   |   |
|---|-------|---|---|---|
| 1 | ..... | 7 | 2 | 1 |
| 1 | ..... | 7 | 2 | 1 |
| 1 | ..... | 6 | 2 | 1 |
| 1 | ..... | 5 | 2 | 1 |
| 1 | ..... | 4 | 2 | 1 |
| 1 | ..... | 3 | 2 | 1 |
| 1 | ..... | 3 | 2 | 1 |



19



二

33



|   | 5 | 10 | 12 | 14 | 16 | 20 | J | M |
|---|---|----|----|----|----|----|---|---|
| 1 |   |    |    |    |    |    |   |   |



11

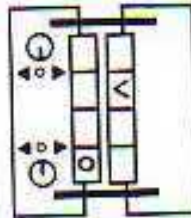


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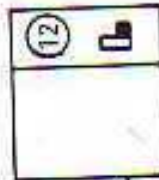
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五

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二

[illegible]





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T M J



|   |   |    |    |    |    |    |   |   |   |
|---|---|----|----|----|----|----|---|---|---|
| 1 | 5 | 10 | 12 | 14 | 16 | 20 | J | M | T |
|---|---|----|----|----|----|----|---|---|---|



|   |   |    |    |    |    |    |   |   |   |
|---|---|----|----|----|----|----|---|---|---|
| 1 | 5 | 10 | 12 | 14 | 16 | 20 | J | M | T |
|---|---|----|----|----|----|----|---|---|---|





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3

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M  
J  
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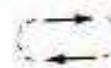
T M T







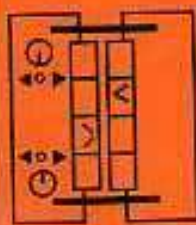
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

 $\Sigma$ [illegible]





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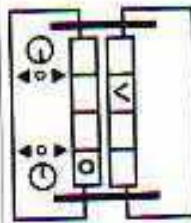
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1111

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|---|---|---|

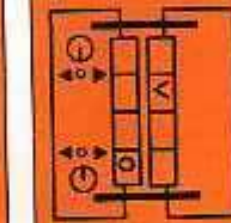
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

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二

$$\Sigma$$


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21

## 2.1.1.

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$$T =$$

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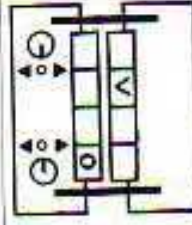
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

4311

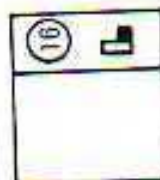
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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

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▶ J M T


$$1 = \frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right)$$

20

[illegible]

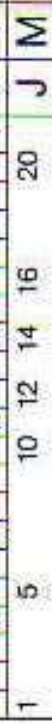
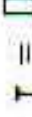






























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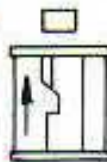
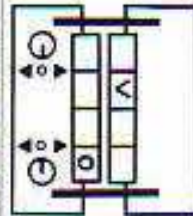




三

 $\Sigma$ 
$$T = \square$$


二

 $\Sigma$ 

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|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 1 | 6 | 2 | 1 |
| 1 | 1 | 6 | 2 | 1 |
| 1 | 1 | 6 | 2 | 1 |
|   |   | 3 |   | 6 |
| 1 | 1 | 3 | 2 | 1 |
| 1 | 1 | 3 | 2 | 1 |
| 1 | 1 | 3 | 2 | 1 |
|   |   | ▶ | J | M |
|   |   |   |   | T |

|    | 1 | 5 | 10 | 12 | 14 | 16 | 20 | J | M |
|----|---|---|----|----|----|----|----|---|---|
| 16 |   |   |    |    |    |    |    |   |   |
| 15 |   |   |    |    |    |    |    |   |   |
| 14 |   |   |    |    |    |    |    |   |   |
| 13 |   |   |    |    |    |    |    |   |   |
| 12 |   |   |    |    |    |    |    |   |   |
| 11 |   |   |    |    |    |    |    |   |   |
| 10 |   |   |    |    |    |    |    |   |   |
| 9  |   |   |    |    |    |    |    |   |   |
| 8  |   |   |    |    |    |    |    |   |   |
| 7  |   | X | X  |    |    |    |    |   | 2 |
| 6  |   | X | X  |    |    |    |    |   | 2 |
| 5  |   | X | X  |    |    |    |    |   | 2 |
| 4  |   |   |    |    |    |    |    |   | 6 |
| 3  | X |   |    |    |    |    | X  |   | 2 |
| 2  | X |   |    |    |    |    | X  |   | 2 |
| 1  | X |   |    |    |    |    | X  |   | 2 |

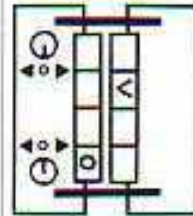


三

Σ

$$\tau = \tau_0$$


= 2

$$\Sigma$$


↑

**Abstract**

[illegible][illegible]











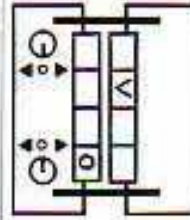


三

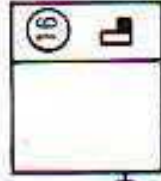
Σ



—



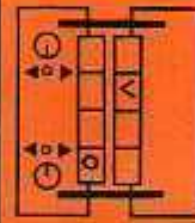
二

11  
Σ

18



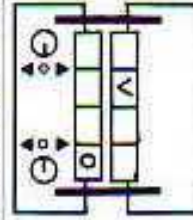
25

[illegible]

11

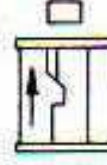
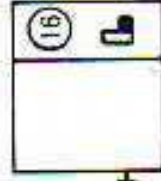


4



三

2



26

[illegible]



11  
Σ

► **MAN**



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|  |
|--|
|  |
|--|







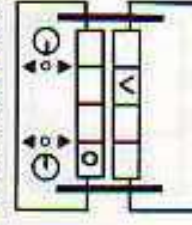






## 2. Results

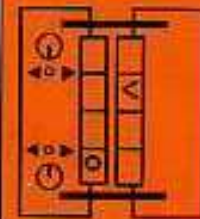
|   |   |   |   |
|---|---|---|---|
| 4 | 3 | 1 | 1 |
| ▼ | J | M | T |



The diagrams show the construction of the word 'Σ' using the 'Σ' symbol. The first diagram shows the 'Σ' symbol above the letter 'Σ'. The second diagram shows the 'Σ' symbol above the letter 'Σ' with a horizontal line through the middle. The third diagram shows the 'Σ' symbol above the letter 'Σ' with a horizontal line through the middle and a vertical line through the middle. The fourth diagram shows the 'Σ' symbol above the letter 'Σ' with a horizontal line through the middle and a vertical line through the middle, forming the word 'Σ'.



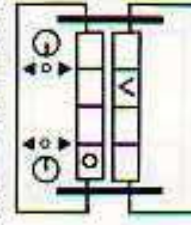


[illegible]



21-11-2025

|   |   |   |   |
|---|---|---|---|
| 6 | 5 | 1 | 1 |
| 3 | 5 | 1 | 1 |







$T =$  

[illegible]





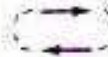
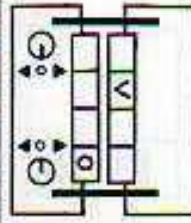




二

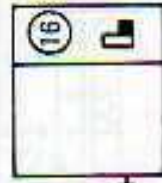
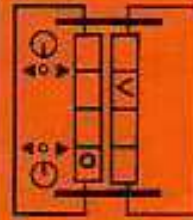
五

**T =**

[illegible]

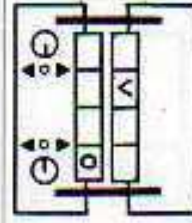
二

$\Sigma$

[illegible]

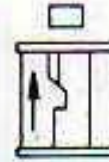
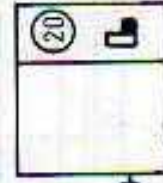


$\tau = 2$

[illegible]



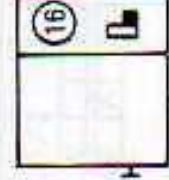
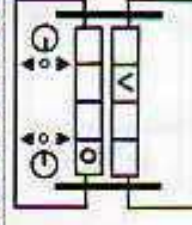
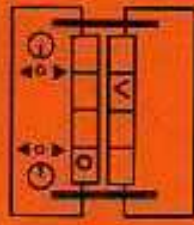
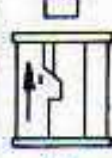
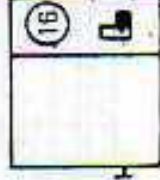
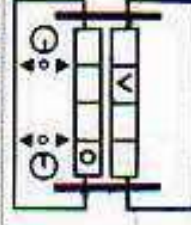
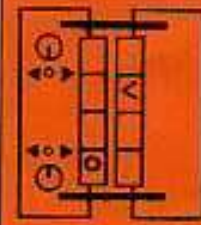



[illegible]

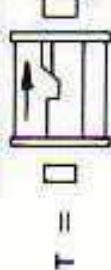
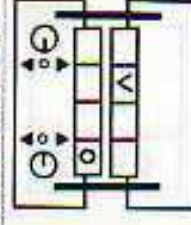
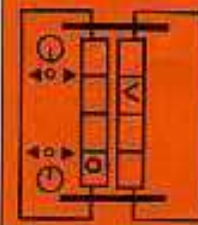
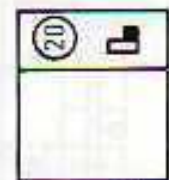
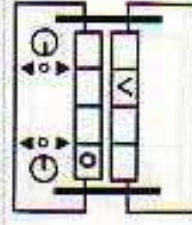






[illegible][illegible]



[illegible][illegible][illegible][illegible]











