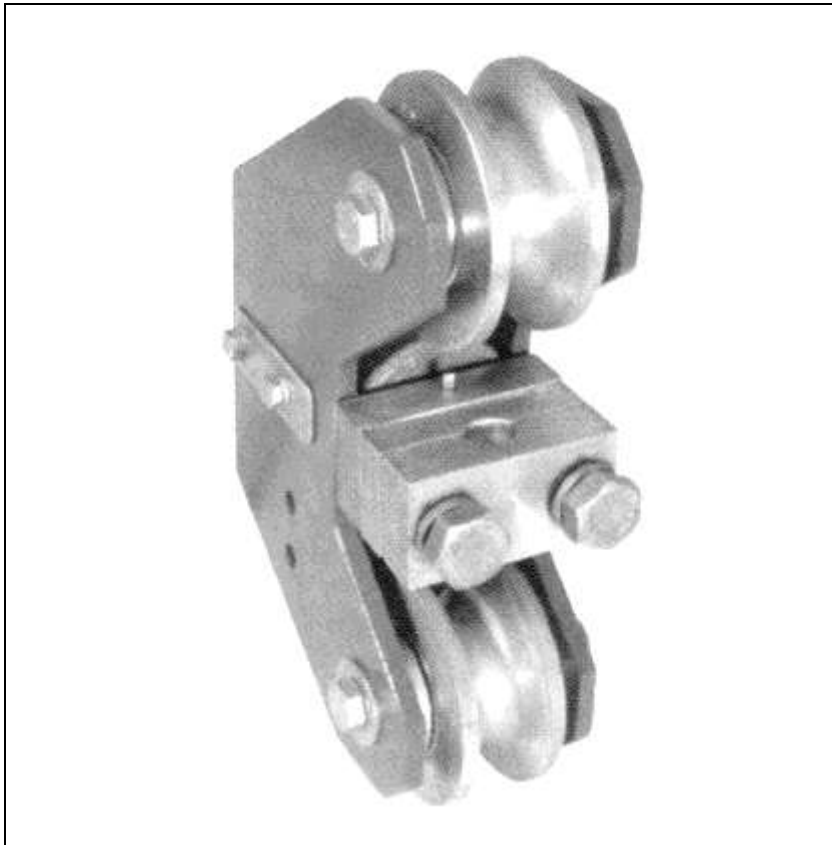


## ***BOT LOAD LIMITER***



**TECHNICAL INSTRUCTION**

## 1. THE PRINCIPAL DIAGRAM (Fig. 1)

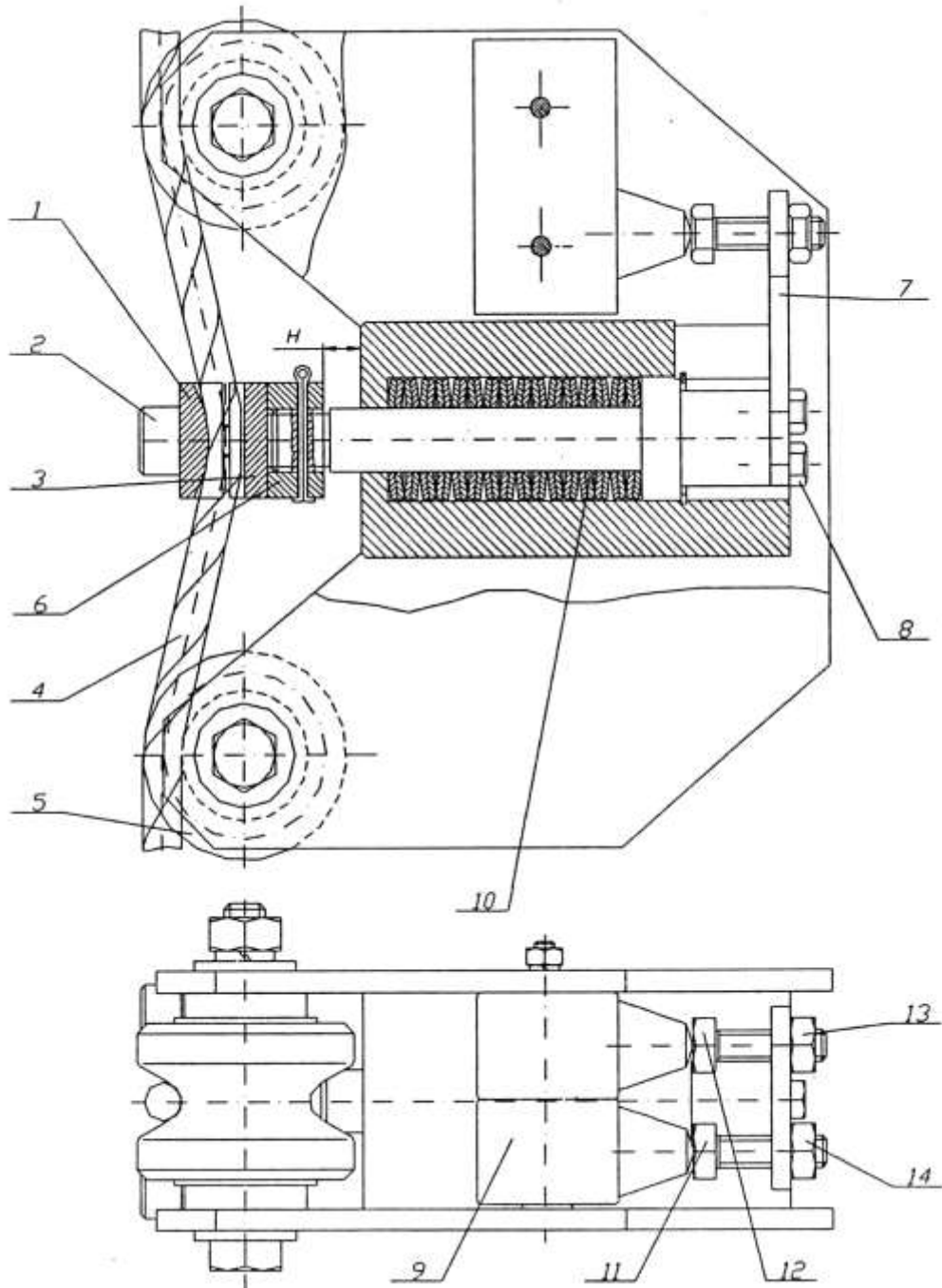

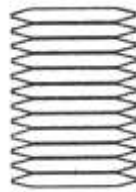
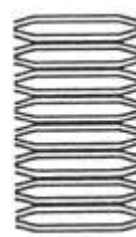
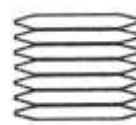
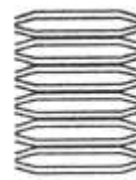
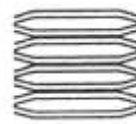
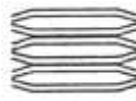
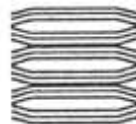


Fig. 1

## 2. MECHANICAL PART

The spring sets of the load limiter, pos. 10, are shown in Table 1

Table 1

| Designation      | Set   | Quantity | Spring                   |
|------------------|---|----------|--------------------------|
| BOT025           |    | 16       | 23x12.2x1.25<br>DIN 2093 |
| BOT025A          |    | 24       | 23x12.2x1.5<br>DIN 2093  |
| BOT050           |   | 32       | 23x12.2x1.25<br>DIN 2093 |
| BOT050A          |  | 14       | 23x12.2x1.5<br>DIN 2093  |
| BOT100           |  | 24       | 34x16.3x2<br>DIN 2093    |
| BOT160           |  | 16       | 34x16.3x2<br>DIN 2093    |
| BOT250           |  | 12       | 45x22.4x2.5<br>DIN 2093  |
| BOT400<br>BOT500 |  | 18       | 45x22.4x2.5<br>DIN 2093  |

## 2.1. ASSEMBLY OF THE LOAD LIMITER

1. Unscrew screws 2.
2. Rope 4 is placed between the clamps 1 and 3.
3. The clamps with the rope are fixed using screws 2, and the rope is placed in the rollers 5 groove.

## 2.2. ADJUSTMENT

1. Bolts 11 and 12 are tightened to plate 7 to hold upper end position.
2. The rope is stretched with force  $1.1S_H$  ( $S_H$  – rated rope force).
3. Bolt 12 is unscrewed till the end limit switch 10 is cut off. It is fixed by lock nut 13.
4. The rope is stretched with force corresponding to load  $1.25S_H$ .
5. Bolt 11 is unscrewed till the end limit switch 9 is cut off. It is fixed by lock nut 14.
6. The heads of the tightened bolts 8 and the lock nuts 13 and 14 are marked with red or yellow paint.
7. The piston stroke is determined by measuring the distance  $H$  between the head of the body 12 and nut 13 in position with load and for 10 loadings of the load limiter with load  $S_H$ ,  $1.1S_H$  and  $1.25S_H$ . The difference between the reading in position without load and the average arithmetic value of the reading with load should vary within the limit data shown in Tables 2, 3 and 4. The actual stroke is written in the passport of the load limiter by the person responsible for performing the testing.

Table 2

| Load limiter | Rated rope force $S_H$ , kg | Rated stroke at $S_H$ , mm | Limit value, mm |
|--------------|-----------------------------|----------------------------|-----------------|
| BOT025       | 250                         | 2.74                       | 2.33-3.15       |
| BOT050       | 500                         | 2.59                       | 2.20-5-2.98     |
| BOT100       | 1000                        | 2.27                       | 1.93-2.61       |
| BOT160       | 1600                        | 2.41                       | 2.05-2.77       |
| BOT250       | 2500                        | 2.41                       | 2.05-2.77       |
| BOT400       | 4000                        | 2.45                       | 2.08-2.81       |
| BOT500       | 5000                        | 2.34                       | 2.00-2.69       |
| BOT500       | 6300                        | 2.92                       | 2.48-3.35       |

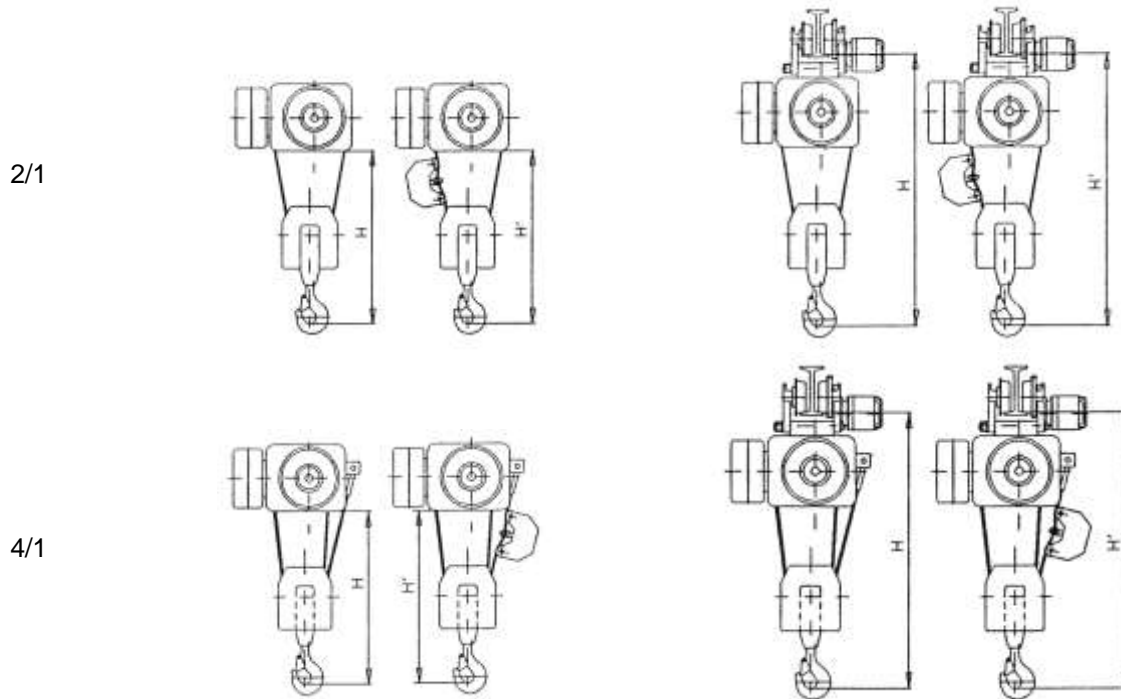
Table 3

| Load limiter | Rated rope force<br>$S_H$ , kg | Rated stroke at<br>$1.1Q_H$ , mm | Limit value, mm |
|--------------|--------------------------------|----------------------------------|-----------------|
| BOT025       | 250                            | 3.04                             | 2.58-3.50       |
| BOT050       | 500                            | 2.88                             | 2.45-3.31       |
| BOT100       | 1000                           | 2.52                             | 2.15-2.90       |
| BOT160       | 1600                           | 2.68                             | 2.28-3.08       |
| BOT250       | 2500                           | 2.69                             | 2.28-3.10       |
| BOT400       | 4000                           | 2.72                             | 2.30-3.12       |
| BOT500       | 5000                           | 2.60                             | 2.21-3.00       |
| BOT500       | 6300                           | 3.10                             | 2.63-3.56       |

Table 4

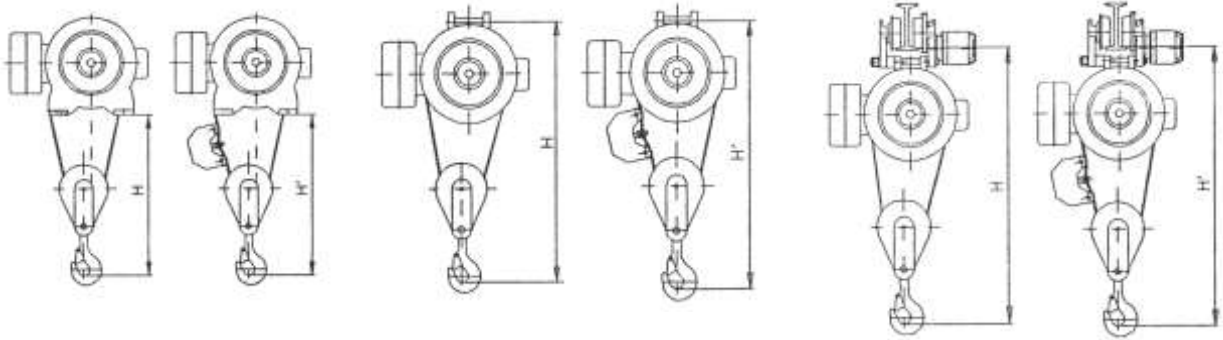
| Load limiter | Rated rope force<br>$S_H$ , kg | Rated stroke at<br>$1.25Q_H$ , mm | Limit value, mm |
|--------------|--------------------------------|-----------------------------------|-----------------|
| BOT025       | 250                            | 3.42                              | 2.91+3.93       |
| BOT050       | 500                            | 3.24                              | 2.75+3.73       |
| BOT100       | 1000                           | 2.83                              | 2.41+3.25       |
| BOT160       | 1600                           | 3.01                              | 2.56+3.46       |
| BOT250       | 2500                           | 3.01                              | 2.56+3.46       |
| BOT400       | 4000                           | 3.06                              | 2.60+3.52       |
| BOT500       | 5000                           | 2.93                              | 2.49+3.37       |
| BOT500       | 6300                           | 3.60                              | 3.06+3.75       |

## 3. ATTACHMENT OF "BOT" LOAD LIMITER TO "MH" ELECTRIC HOISTS



| Capacity, kg             | Force in a rope branch, kg | Reeving | Load limiter | Designation              | H     | H'    |
|--------------------------|----------------------------|---------|--------------|--------------------------|-------|-------|
| 1000                     | 500                        | 2/1     | BOT050       | MH3-05 2/1...            | 450   | 512   |
|                          |                            |         |              | EKN...MH3-05 2/1 H01...  | 915   | 970   |
|                          |                            |         |              | EKN...MH3-05 2/1 H02...  |       |       |
|                          |                            |         |              | EKN...MH3-05 2/1 H03...  |       |       |
|                          |                            |         |              | EKN...MH3-05 2/1 H04...  | 940   | 1005  |
| EKN...MH3-05 2/1 H05...  |                            |         |              |                          |       |       |
| 2000                     | 1000                       | 2/1     | BOT100       | MHM4...2/1...            | 550   | 658   |
|                          |                            |         |              | EKN...MHM4-10 2/1 H01... | 1075  | 1185  |
|                          |                            |         |              | EKN...MHM4-10 2/1 H02... |       |       |
|                          |                            |         |              | EKN...MHM4-10 2/1 H03... |       |       |
|                          |                            |         |              | EKN...MHM4-10 2/1 H04... | 1115  | 1225  |
| EKN...MHM4-10 2/1 H05... |                            |         |              |                          |       |       |
| 2000                     | 500                        | 4/1     | BOT050       | MH3-05 4/1...            | 415   | 445   |
|                          |                            |         |              | EKN...MH3-05 4/1...      | 905   | 935   |
| 3200                     | 1600                       | 2/1     | BOT160       | MHM5-16 2/1...           | 620   | 728   |
|                          |                            |         |              | EKN...MHM5-16 2/1 H01... | 1145  | 1255  |
|                          |                            |         |              | EKN...MHM5-16 2/1 H02... |       |       |
|                          |                            |         |              | EKN...MHM5-16 2/1 H03... |       |       |
|                          |                            |         |              | EKN...MHM5-16 2/1 H04... | 1185  | 1295  |
| EKN...MHM5-16 2/1 H05... |                            |         |              |                          |       |       |
| 4000                     | 1000                       | 4/1     | BOT100       | MHM4-10 4/1...           | 525   | 590   |
|                          |                            |         |              | EK...MHM4-10 4/1...      | 1090  | 1155  |
| 5000                     | 2500                       | 2/1     | BOT250       | MH6-25 2/1...            | 710   | 905   |
|                          |                            |         |              | EKN...MH6-25 2/1 H01...  | 1320  | 1515  |
|                          |                            |         |              | EKN...MH6-25 2/1 H02...  |       |       |
|                          |                            |         |              | EKN...MH6-25 2/1 H03...  |       |       |
|                          |                            |         |              | EKN...MH6-25 2/1 H04...  | 1355  | 1550  |
| EKN...MH6-25 2/1 H05...  |                            |         |              |                          |       |       |
| 6300                     | 1575                       | 4/1     | BOT160       | MHM5-16 4/1...           | 565   | 630   |
|                          |                            |         |              | EK...MHM5-16 4/1...      | 1136  | 1195  |
| 8000                     | 4000                       | 2/1     | BOT400       | MH7-40 2/1...            | 840   | 1035  |
|                          |                            |         |              | EKN...MH7-40 2/1 H01...  | 1625  | 1815  |
| 10000                    | 2500                       | 4/1     | BOT250       | MH6-25 4/1...            | 695   | 830   |
|                          |                            |         |              | EKN...MH6-25 4/1 H01...  | 1360  | 1495  |
| 16000                    | 4000                       | 4/1     | BOT400       | MH7-40 4/1...            | 775   | 910   |
|                          |                            |         |              |                          | (825) | (960) |

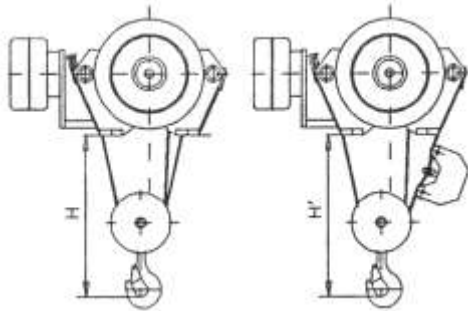
## 4. ATTACHMENT OF "BOT" LOAD LIMITER TO "T" ELECTRIC HOISTS



T01..

T02..

T10..

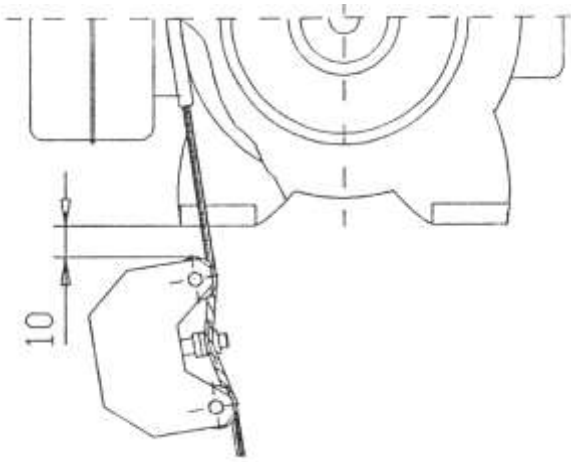


T35..

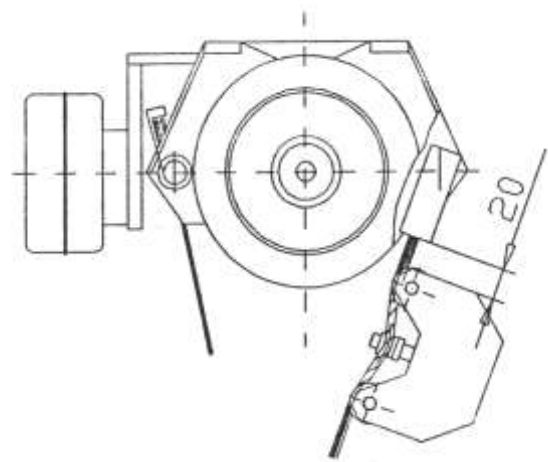
T39..

| Capacity, kg | Force in a rope branch, kg | Reeving | Load limiter | Designation | H    | H'   |
|--------------|----------------------------|---------|--------------|-------------|------|------|
| 500          | 250                        | 2/1     | BOT025       | T01...      | 420  | 485  |
|              |                            |         |              | T02...      | 720  | 785  |
|              |                            |         |              | T10...      | 780  | 845  |
| 1000         | 500                        | 2/1     | BOT050       | T01...      | 505  | 570  |
|              |                            |         |              | T02...      | 805  | 870  |
|              |                            |         |              | T10...      | 860  | 925  |
| 2000         | 1000                       | 2/1     | BOT100       | T01...      | 590  | 700  |
|              |                            |         |              | T02...      | 990  | 1100 |
|              |                            |         |              | T10...      | 1065 | 1175 |
| 2000         | 500                        | 4/1     | BOT050       | T39...      | 945  | 945  |
|              |                            |         |              | T35...      | 525  | 525  |
| 3200         | 1600                       | 2/1     | BOT160       | T01...      | 665  | 775  |
|              |                            |         |              | T02...      | 1065 | 1175 |
|              |                            |         |              | T10...      | 1140 | 1250 |
| 4000         | 1000                       | 4/1     | BOT100       | T3943       | 1130 | 1130 |
|              |                            |         |              | T3944       | 1280 | 1280 |
|              |                            |         |              | T35...      | 584  | 584  |
| 5000         | 2500                       | 2/1     | BOT250       | T01...      | 745  | 940  |
|              |                            |         |              | T02...      | 1225 | 1420 |
|              |                            |         |              | T10...      | 1300 | 1495 |
| 6300         | 1575                       | 4/1     | BOT160       | T3953       | 1190 | 1190 |
|              |                            |         |              | T3954       | 1345 | 1345 |
|              |                            |         |              | T35...      | 650  | 650  |
| 8000         | 4000                       | 2/1     | BOT400       | T01...      | 905  | 1100 |
|              |                            |         |              | T02...      | 1500 | 1695 |
|              |                            |         |              | T10...      | 1745 | 1940 |
| 10000        | 2500                       | 4/1     | BOT250       | T39...      | 1560 | 1660 |
|              |                            |         |              | T35...      | 770  | 870  |
| 16000        | 4000                       | 4/1     | BOT400       | T35...      | 820  | 920  |

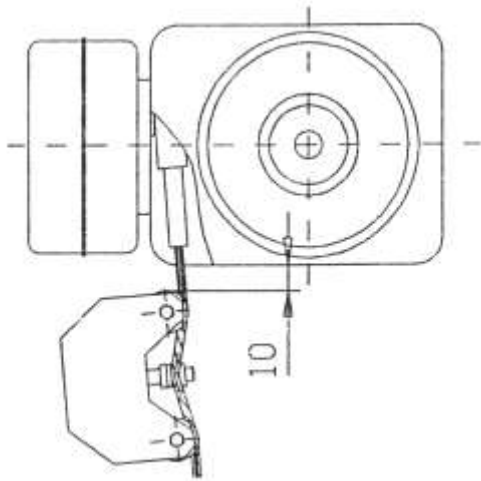
## 5. ASSEMBLY OF "BOT" LOAD LIMITER



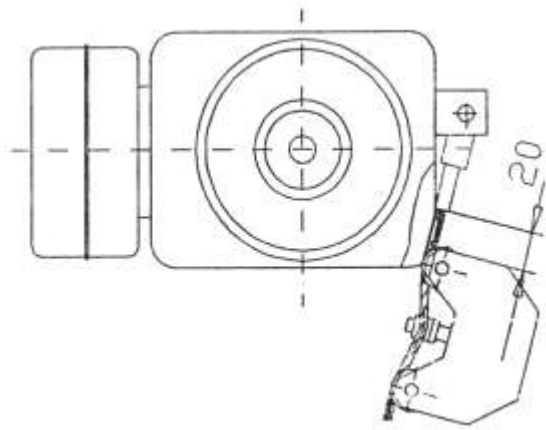
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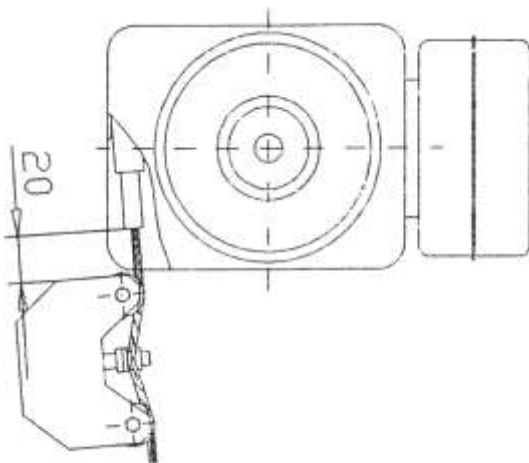
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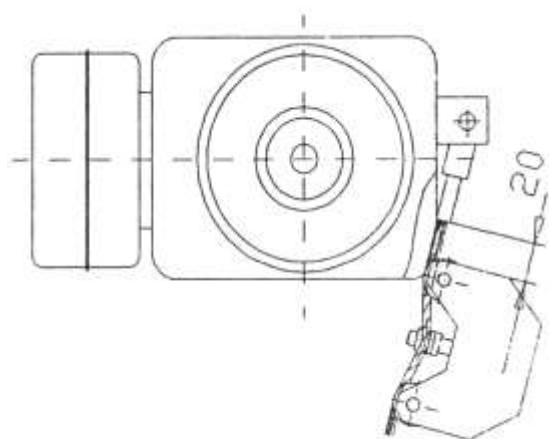
Type "MT" - 2/1



Type "MT" - 4/1



Type "MC" - 2/1



Type "MC" - 4/1