

**Technical Product Information No. 791**

**TENSIOBAR**

**Pneumatic line tension feedback control system for unwinding devices with pneumatically actuated tension brakes**

**- Measuring device**

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## About this technical product information note (TPI)

### To whom is this TPI addressed?

This technical product information note is addressed to the final manufacturer's methods engineers and fitters and the final customer's works fitters and machine operators.

### What will you find in the TPI?

The TPI offers you all the important information needed for the installation and operating of the series 0-087-456-00- . . . **measuring device** of the TENSIOBAR pneumatic line tension feedback control system.

Series	Nominal measuring force	Force range	
0-087-456-00-005-00.	2000 N	200 N - 2000 N	
0-087-456-00-006-00.	600 N	60 N - 600 N	
0-087-456-00-007-00.	170 N	30 N - 170 N	
0-087-456-00-152-00.	30 N /300 N	30 N - 300 N	Installation in acc. with section A
0-087-456-00-155-00.	2000 N/4000 N	200 N - 4000 N	
0-087-456-00-156-00.	600 N/1200 N	60 N - 1200 N	
0-087-456-00-157-00.	2000 N	200 N - 2000 N	
0-087-456-00-159-00.	600 N	60 N - 600 N	
0-087-454-00-161-00.	600 N/1200 N	60 N - 1200 N	
0-087-454-00-162-00.	3000 N/6000 N	300 N - 6000 N	
0-087-454-00-163-00.	170 N /750 N	30 N - 750 N	
	0 measuring device I		
	1 measuring device II		
0-087-456-00-010-000	170 N	20 N - 170 N	Installation in acc. with section B
0-087-456-00-153-000	170 N	20 N - 170 N	
0-087-456-00-154-000	170 N	20 N - 170 N	
0-087-456-00-158-000	35 N	5 N - 35 N	
0-087-454-00-160-000	35 N	5 N - 35 N	

You will find information on the installation of the operating console in TPI 780.

### What will you not find in the TPI?

The TPI does not provide information to support you in design work. You will find such information in the catalogue and in the prospectuses.

### Significance of the symbols accompanying the text

There is a danger of injury during installation and in the course of production!



There is a danger of damage to materials during installation and in the course of production!



### Please pass on this TPI to your customers

You can order further copies of it from us for your customers. You may also make copies of this TPI to pass on to your customers.

## On the product

### Application and mode of functioning of the line tension feedback control system TENSIOBAR

The line tension feedback control system enables a uniform unwinding line tension to be achieved with unwinding devices with pneumatically actuated brakes. The preset line tension command value is compared with the actual value at the measuring device. A variance leads to the brake pressure being increased or decreased.

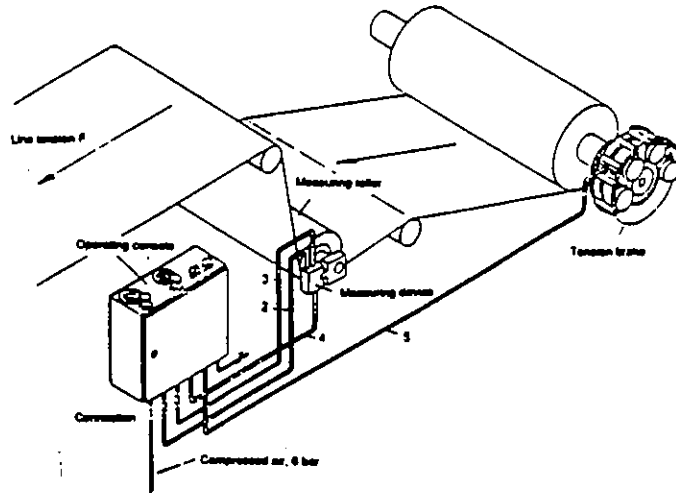


Fig. 1

### Scope of delivery of the line tension feedback control system TENSIOBAR

The line tension feedback control system TENSIOBAR consists of the measuring device 0-087-456-00-... and the operating console 0-087-454-00-007-...

You will find information on the installation of the operating console in TPI 780. The measuring device is available for different line tension ranges:

Series	Nominal measuring force	Force range	
0-087-456-00-005-00.	2000 N	200 N - 2000 N	
0-087-456-00-006-00.	600 N	60 N - 600 N	
0-087-456-00-007-00.	170 N	30 N - 170 N	
0-087-456-00-152-00.	30 N /300 N	30 N - 300 N	Installation in acc. with section A
0-087-456-00-155-00.	2000 N/4000 N	200 N - 4000 N	
0-087-456-00-156-00.	600 N/1200 N	60 N - 1200 N	
0-087-456-00-157-00.	2000 N	200 N - 2000 N	
0-087-456-00-159-00.	600 N	60 N - 600 N	
0-087-454-00-161-00.	600 N/1200 N	60 N - 1200 N	
0-087-454-00-162-00.	3000 N/6000 N	300 N - 6000 N	
0-087-454-00-163-00.	170 N /750 N	30 N - 750 N	
	0 measuring device I		
	1 measuring device II		
0-087-456-00-010-000	170 N	20 N - 170 N	Installation in acc. with section B
0-087-456-00-153-000	170 N	20 N - 170 N	
0-087-456-00-154-000	170 N	20 N - 170 N	
0-087-456-00-158-000	35 N	5 N - 35 N	
0-087-454-00-160-000	35 N	5 N - 35 N	

## Section A - installation of the measuring device

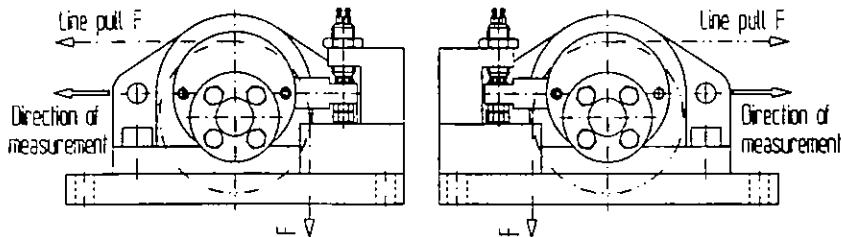


Fig. 2

### ● Observe direction of measurement!

- To enable the measuring direction to be matched to the particular way in which the line is guided, the form of assembly of the measuring device can be changed.

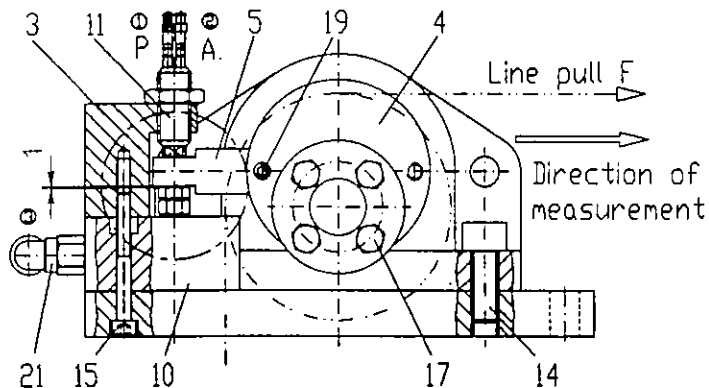


Fig. 3

- For this slacken screws (15)
- Remove clamping piece (3) with sensor (11) and short stroke cylinder (10). The sensor does not need to be released from the clamping piece.
- Slacken screw (19).
- Remove stud (5) from eccentric shaft (4) and secure it on the opposite side.
- Position the stud in such a way that its flattened sides lie parallel to the base plate.
- Secure clamping piece (3) with sensor (11) and short stroke cylinder (10) on the side of the stud.
- If the rotating of eccentric shaft (4) causes the stud to be brought into a horizontal position, there may be no play between stud and sensor.
- There must be a gap of  $1 \text{ mm} + 0.5 \text{ mm}$  between the stud and the short stroke cylinder (when depressurized).

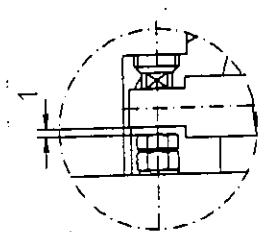


Fig. 4

In the case of variances, the size of the gap must be reset.  
Safeguard the screws again after doing this!

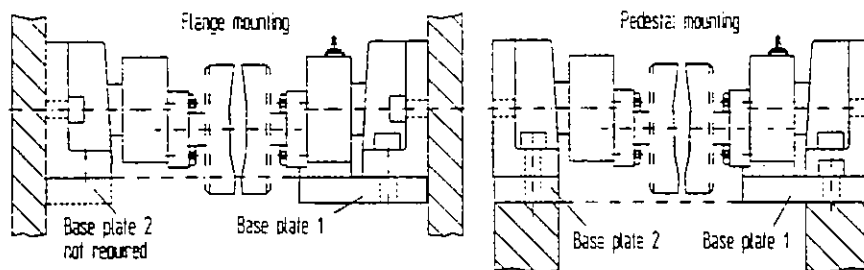


Fig. 5

- Secure the measuring device to the machine frame as a pedestal bearing or a flange bearing (Fig. 5). When the measuring device is set up as a flange bearing, base plate (2) is not required. Arrange the base plates (1 and 2) horizontally.
- Link the two bearings with the line guiding roller (= measuring roller). Align the measuring roller carefully. The alignment error (axial displacement) must not be more than 3°.
- Secure the clamping elements.
- Small oscillating movements of the measuring roller must be able to take place freely and without load.
- Observe the direction of measurement when leading the material around the measuring roller.

## Section B - installation of the measuring device

- **Observe the direction of measurement!**

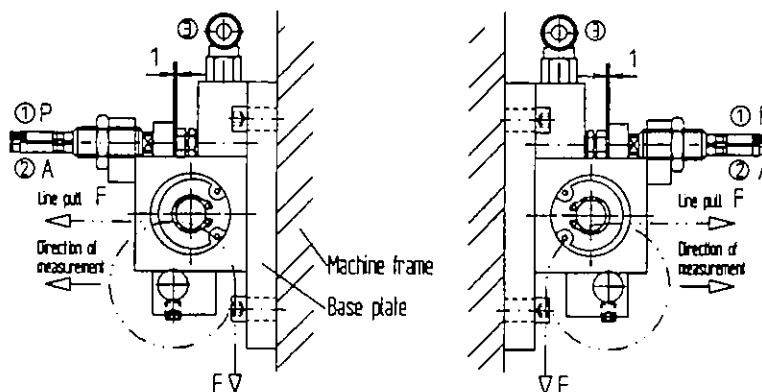


Fig. 6

- Secure the measuring device vertically on the machine frame.
- Link the two bearings with the line guiding roller (= measuring roller). Align the measuring roller carefully. The alignment error (axial displacement) must not be more than 1°.
- Secure the measuring roller with headless set screw.
- Small oscillating movements of the measuring roller must be able to take place freely and without load.
- Observe the direction of measurement when leading the material around the measuring roller.

**Section C - pneumatic connections**  
**- notes on determining the line tension**

**Pneumatic connections**

The measuring device is linked with NW 4 hoses to the operating console 0-087-454-00-...-...

	Connection point on operating console
Sensor connection 1 (black)	3
Sensor connection 1 (yellow)	2
Command value cylinder I	4a
Only versions 0-087-456-00-152, 0-087-456-00-155, 0-087-456-00-156, 0-087-456-00-161, 0-087-456-00-162 and 0-087-456-00-163	
Command value cylinder II	4b

**Notes on determining the line tension**

Only the component of the line tension acting in the direction of measurement acts on the measuring device. The stated tension range applies when the arc of contact of the material as it passes around the measuring roller is 90° and when the command value pressure p is 6 bar. Here the direction of measurement and the direction of force are identical.

In the case of variations therefrom, the maximum tension is calculated as follows:

$$F_{max} = \frac{F_{nom.}}{\cos \alpha + \cos \beta}$$

$F_{nom.}$  = max. nominal force of the measuring device at 90° arc of contact

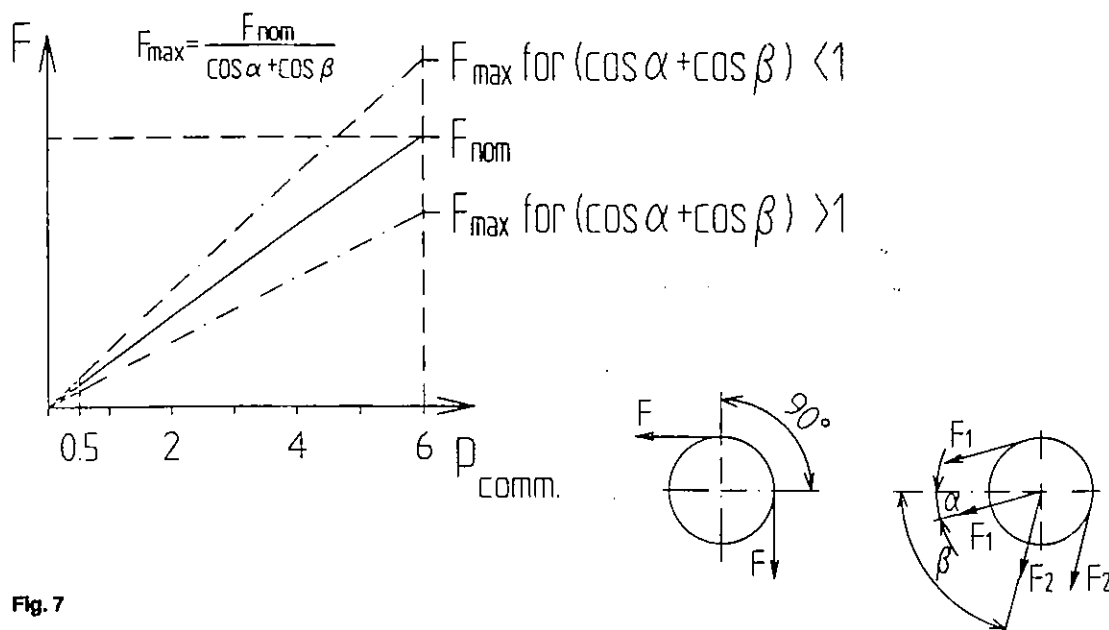


Fig. 7