

Technical Product Information No. 1081

Pneumatic line tension open-loop control for stranding machines

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About this technical product information note

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 electricians, 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 operation of the operating console of the pneumatic line tension open-loop control for stranding machines, series 0-087-454-05-002 and 0-087-454-05-003. The type plate with the article number for the identification of the device is to be found on the inside of the door of the housing.

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 our catalogue and 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, quoting the article number used in the order documentation. You may also make copies of this TPI to pass on to your customers.

About the product

Application and mode of functioning of the line tension open-loop control

The pneumatic line tension open-loop control ensures a constant unwinding tension on unwinding devices and in particular on the wire unwinding devices for stranding machines.

The roll diameter is captured with a sensing roller and converted into a proportional stroke acting on a diaphragm cylinder. The cylinder space is filled with air under pressure prior to the commencement of unwinding. The changes to the volume of the cylinder brought about by the proportional stroke cause the pressure in the cylinder to be changed. This change in pressure acts via an amplifier valve directly on the brake on the unwinding roller. The components are constructed and matched to one another in such a way that the brake pressure can be adjusted in accordance with the diameter of the roll at the particular moment in a sensitive manner.

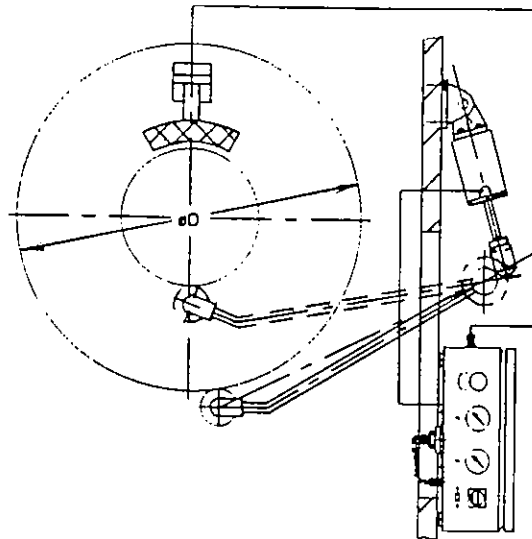


Fig. 1

Form of delivery of the line tension control

The operating console of the pneumatic line tension control for stranding machines is available in two versions, namely 0-087-454-05-002 and 087-454-05-003. The only difference between the two versions is that the operating elements are arranged in a mirror-inverted manner; the one version is for mounting on the left-hand end of the machine, the other on the right-hand end. The type plate with the article number for the identification of the device is to be found on the inside of the door of the housing.

In addition to the operating console, the following components are required for the full installation of the line tension control. These are not included in the scope of delivery of the operating console and must be ordered separately.

- Diaphragm cylinder 0-087-030-00-009
- Compressed air accumulator The relevant safety regulations for the installation and operation of pressure vessels are to be observed.
- Brake 0-454-930-34-004-000

Initial installation

Installation of the operating console

The operating console is to be mounted on a vertical surface (e.g. machine frame) near the unwinding station (Fig. 2). The device must not be subjected to severe vibration.

In terms of its installation depth (120 mm), the device is to be mounted parallel to the axis of rotation of the stranding carriage.

Maximum ambient temperature: 40 °C.
It should not be subjected to direct sunlight.

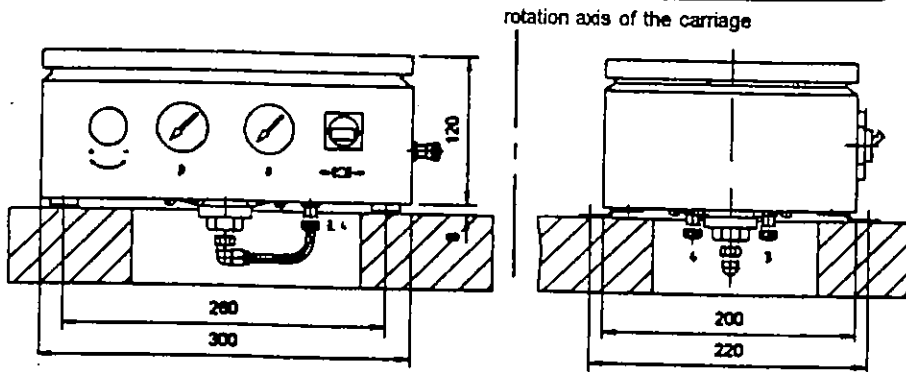


Fig. 2

Installation of the diaphragm cylinder

Important: The piston rod of the cylinder may not be moved when the air outlet openings are restricted or closed since this would lead to failure at the diaphragm system.



The diaphragm cylinder is supplied preassembled ready to install. Secure the cylinder to the machine with the articulated flange and the fork head. Mount the sensing arm in such a way that no traverse forces act on the cylinder rod. Limit the stroke of the cylinder with mechanical stops in such a way that the cylinder cannot contact its end positions.

Ambient temperature: 0 °C - 80 °C. It should be not subjected to direct sunlight.

Note: There is an O-ring as seal between the cylinder housing and the articulated flange. If the articulated flange has to be dismantled, care must be taken at reassembly that the O-ring is fitted correctly.

Compressed air connections

The compressed air connections are to be made as shown in the pneumatics diagram in the appendix. All connections are designed for 6 x 1 mm plastic hose.

The connections are to be made with the greatest care. Take care to avoid leaks since these can lead to failure of the line tension control during operations.



Operating elements

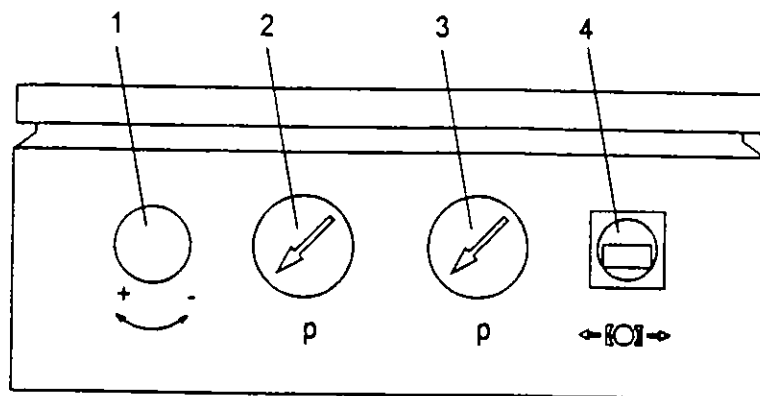


Fig. 3

1 Pressure regulating valve

The brake pressure is set with the pressure regulating valve. For more information on this see the section "Commissioning".

2 / 3 Brake pressure display

The pressure gauges show the brake pressure that has been set.
Pressure gauge 2: display in the range between 0 and approx. 2 bar

Pressure gauge 3: display in the range between approx. 2 and 6 bar.

4 "Release brake" switch

The brake can be released with the switch

Note: The brake pressure can only be displayed and set when the operating console is being supplied with compressed air.

Preparing the control for operation

- Lower the sensing arm on to the full roll of material before unwinding is commenced.
- Supply the operating console with compressed air.
- Switch 4 may not be in its "Release brake" position.
- Set the brake pressure, which should act at the commencement of unrolling, with pressure regulating valve 1. To avoid the hysteresis of the pressure regulating valve, it is recommended that the pressure is first set to a pressure approx. 0.8 bar below the desired pressure and that it is then raised to the required value.

To achieve greater resolution in the display area, the control is fitted with an automatic changeover device. Up to approx. 2 bar the brake pressure is shown on pressure gauge 2, at pressures above this on pressure gauge 3. If the pressure changes slowly in the region of 2 bar, it can happen that continuous switching over between the two displays takes place. In this case increase the brake pressure a little.

- Do not move the sensing arm again.
- Disconnect the compressed air supply.
- The control is now ready for use.

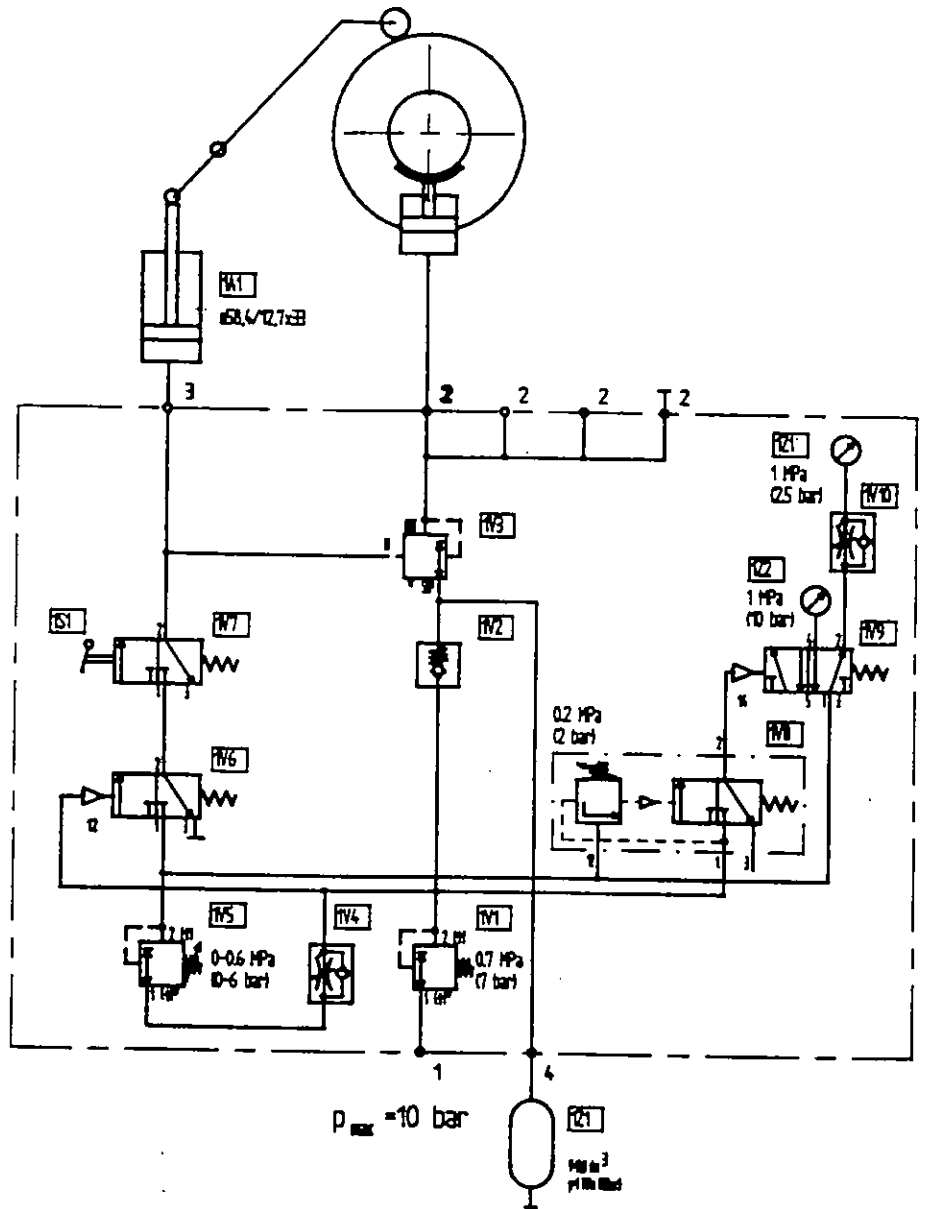
The brake pressure can only be displayed and set when the operating console is being supplied with compressed air.

Maintenance

The operating console and the diaphragm cylinder require no maintenance.

Pneumatics diagram

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Alle Verbindungen druckdicht ausführen!