

## Technical Product Information No. 951

### Pneumatically released, spring-applied multi-plate brake Series 0-415

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## About this Technical Product Information

### Who is this TPI directed at?

This TPI is directed at qualified personnel who

- are entrusted with the assembly, commissioning and operation of the product and who
- have obtained the necessary qualifications by reading and understanding the instructions by training or instruction

It is intended for

- Fitters at the manufacturer of the machine / plant
- Maintenance fitters at the machine users.

### What will you find in the TPI?

The TPI provides all the necessary information for the assembly and maintenance of the product described on the title page

### Notes on the symbols used in the text

On the pages which follow, important sections of text are highlighted with the following symbols.



This symbol means:

There is a risk of injury during the activity described or in operational running!



This symbol means:

There is a risk of material damage during the activity described or in operational running!



This symbol indicates sections of text to which particular attention must be paid.

### The Ortlinghaus numbering system

Example:

0 - 111 - 222 - 33 - 444 - 555

0 = Code for products

Code number for the model range

Code number for design features

Size

Sequential number

Other design features

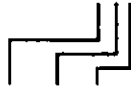


Pass this TPI on to your customers! You can either order further copies of this TPI from us or you are free to make copies, for use by your customers.

### Design variations

Available design combinations, with model code:

0 - 415 - . . . - size - . . .



2			Open design	
3			Closed design	
	0		with internal hub	Pipe connection G 1/8
	1			Pipe connection M10 x 1
	2		without internal hub	Pipe connection G 1/8
	3			Pipe connection M10 x 1
		0	normal emergency release	without micro-switch (Option 1)
		1		with micro-switch (Option 1 with 2)
		3	hand lever emergency release	without micro-switch (Option 3)
		4		with micro-switch (Option 2 with 3)
		2	without emergency release resp. hand lever	without micro-switch
		5		with micro-switch (Option 2)



Brakes in this range are only suitable for dry-running

### Delivered state

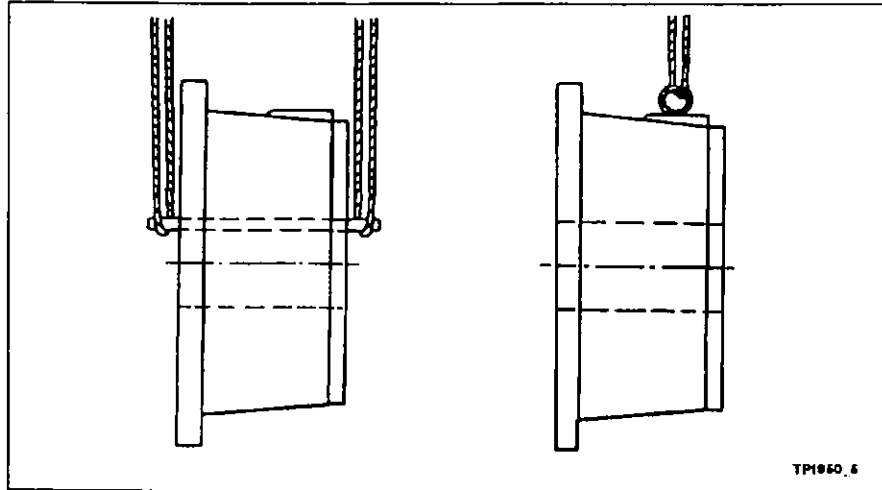
Spring-applied multi-plate brakes are supplied completely assembled. The spring loaded plate pack is centralised and aligned. When the internal hub is part of the delivery specification it is supplied loose with the brake.

## Transport



Avoid any heavy impacts during transportation as these may de-centralise the brake plates.

Handling equipment can be used for transporting the brake



- A pipe or similar object can be pushed through the brake and slings of suitable carrying capacity used.
- An eye bolt can be screwed into the pneumatic connection (Size G 1/8 or M 10 x 1)



### Risk of damage

If the brake is fitted with a hand lever for emergency release, the brake must not be lifted or carried with this lever mechanism.

## Initial assembly and commissioning

- Fit the internal hub, with its key, onto the shaft using a copper based anti-friction paste (do not use a graphite based paste)
- Slide the brake onto the internal hub, guiding the brake plates into the external splines.
- Secure the brake to the body of the machine with suitable screws. For screw sizes and torque settings, see Page 10.
- After assembly or after painting remove the **protective plugs** from the housing.



Before running the machine, always take care to check that the brakes emergency release system has not been activated.



The maximum working pressure of the brake is 10 bar. Do not run the brake with an air pressure which is too low, since this will not be sufficient to release the brake. The air pressure for operation must be at least 5.5 bar.

## Emergency release

### Series 0-415-..3 /..4



The brake is released by rotating the hand lever.

Releasing the brake using the hand lever must not be carried for trial runs. The emergency release facility, using the hand lever, only gives limited clearance between the plates.

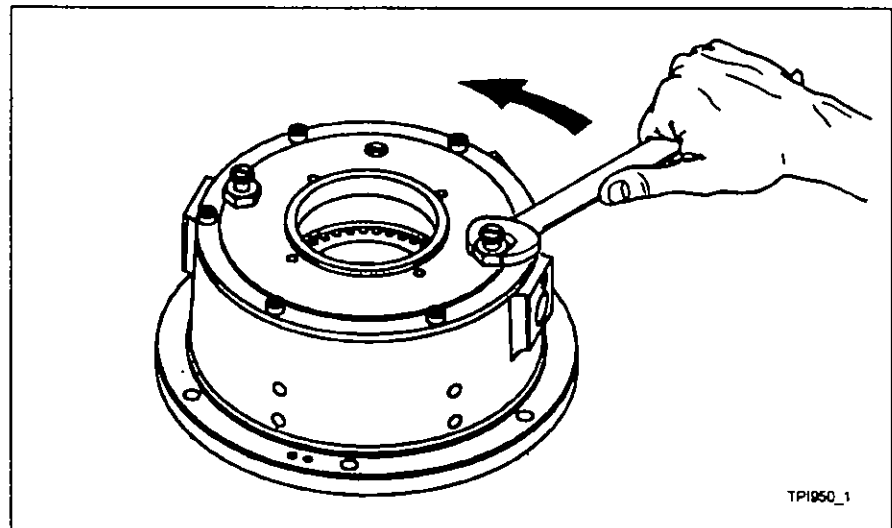
### Series 0-415-..0 /..1

The brake is released using the two release nuts:

- Turn the two release nuts on the flange up to the underside of the head of the round head screws.



The round head screw must not be unscrewed.



TPI950\_1

- Now rotate the release screws a further half turn

## Maintenance

The spring-applied multi-plate brake will be effectively free of wear and will thus require little maintenance. Improper operation (e.g. air pressure too low, excessively high operating temperature), however, can lead to wear on the plates.



**N.B.: Plate wear will lead to an increase in the braking time:**

If you find that the braking time has increased significantly, you must stop the machine immediately. Call for Customer Service.

## Fault finding and elimination table

Fault	Possible cause	Remedy
Braking time too long; load is not being held	Load torque too high	Discussion with Ortlinghaus technical support is needed.
	Air pressure is applied to the brake.	Check the pneumatic controller
	Fault in the pneumatic system (dirt, leakage)	Repair the pneumatic system
	The brake, which is designed for dry running, has oil contamination on the plates. (e.g. due to oil in the compressed air)	Replace the faulty seal inside the brake or on the gearbox or motor (spare part). Change the complete set of plates
	Friction linings are worn down.	Change the complete set of plates
	Cannot be determined (machine fault)	Call in Customer Service
Brake will not release	Air pressure too low	Increase the air pressure to the required level

## Servicing and repair (only for Customer Service)



When working on the brake ensure that no unintentional machine movements can occur:

### Changing the plates

- Release the fixing screws and remove the brake from the shaft. If necessary use the transport equipment mentioned on page 4.

#### Series 0-415-..0 /..1 /..3 /..4

- Release the brake see page 5 „Emergency release“

#### Series 0-415-..2 /..5

- Put the brake on a suitable surface with the flange side upwards



#### Caution: The flange is under spring pressure!

When removing the screws, due to spring pressure, the flange could suddenly spring off, therefore proceed as follows:

- Remove two screws, opposite to each other, and in their place fit two screws which are 10 mm longer.
- Remove the normal screws and in two positions, opposite to each other, fit screws which are 20 mm longer.
- Remove the two screws which are still under spring pressure.
- Extract the last two screws only until the springs are no longer under pressure.

#### Series 0-415-..0 /..1 /..2 /..3 /..4 /..5

- Put the brake on a suitable surface with the plate side upwards



#### Danger from circlip springing off !

When removing and fitting the circlips in the brake, ensure that they cannot spring off unintentionally.

- Remove the circlip and take out the disc
- Remove the plate pack
- Examine the inner and outer drive splines for damage (marks made by the plates). Damaged components must be replaced.
- Examine the plates for thermal overload and for corrosion. Dis-coloured or corroded plates must be replaced



#### Risk of damage to the brake

The first and last plates must always be outer plates.

- Refit the plate pack
- Align and centralise the plate pack with the aid of the inner hub.
- Insert the disc and fit the circlip

**Series 0-415-..0 /..1 /..3 /..4**

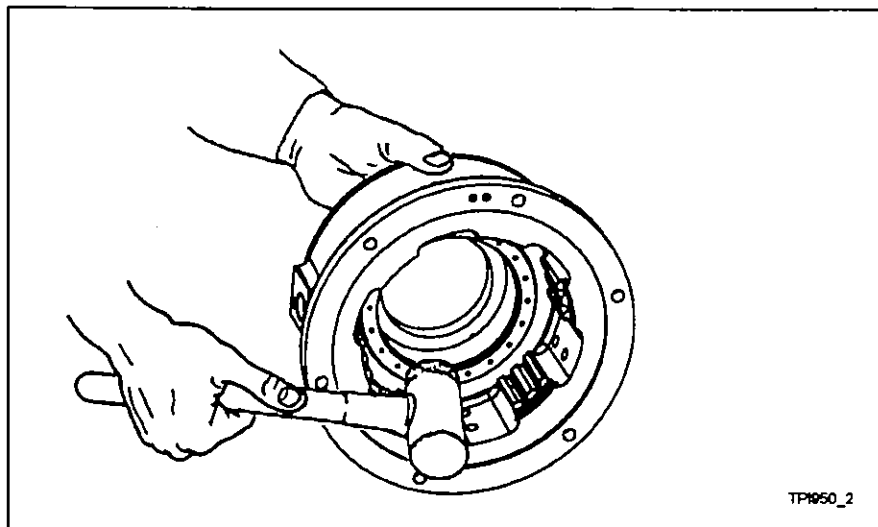
- Undo the brake release (see page 5 „Emergency release“)

**Series 0-415-..0 /..1 /..3 /..4**

- Screw the flange onto the cylinder housing using longer screws (see page 7), alternatively, use a hand press.

**Removing the piston****Series 0-415-..0 /..1**

- Put the brake on a suitable surface with the flange side upwards.
- Release the brake (see page 5).
- Release and remove the fixing screws from the flange.
- Bring the brake into the upright position and carefully knock out the piston using a plastic hammer or a plastic drift.



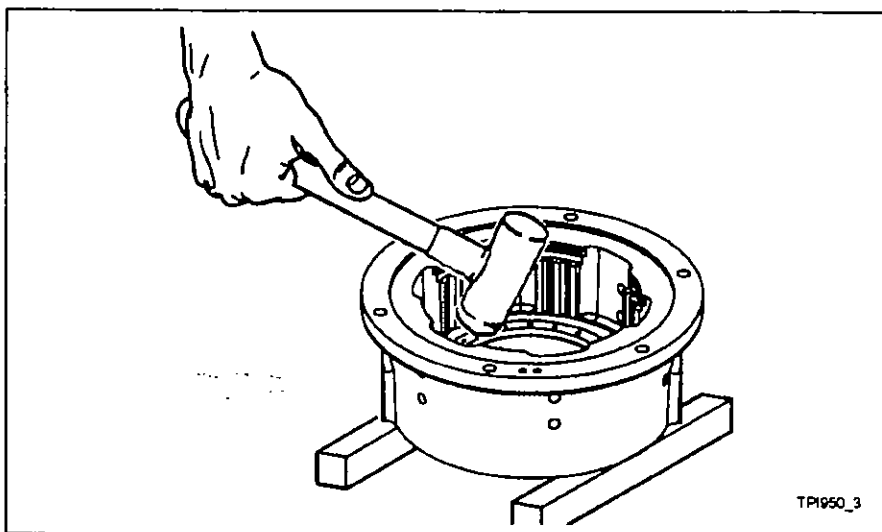
**Series 0-415-..2 /..3 /..4 /..5**

- Put the brake on a suitable surface with the flange side upwards

**Caution: The flange is under spring pressure!**

When removing the screws, due to spring pressure, the flange could suddenly spring off, therefore proceed as follows:

- Remove two screws, opposite to each other, and in their place fit two screws which are 10 mm longer.
- Remove the normal screws and in two positions, opposite to each other, fit screws which are 20 mm longer.
- Remove the two screws which are still under spring pressure.
- Remove the last two screws, remove the flange and take out the springs.
- Remove the piston by putting the brake onto two square timbers or something similar, alternatively bring the brake into the upright position and hold it with the hand.



- Carefully knock out the piston using a plastic hammer or a plastic drift.

**Changing the seals**

- Lever the seals out of the groove in the cylinder housing using a flat blunt tool.
- Clean the seals or replace damaged seals.
- Inspect the running faces of the piston and the cylinder for scoring. Remove tiny score marks with emery cloth or a lapping stone. For deep score marks replace the complete brake or send it to Ortlinghaus for repair.
- Lubricate the seals and insert into the appropriate grooves.

## Assembling the piston

### Series 0-415-..0 /..1

- Line up the holes in the flange and the cylinder housing. Two long screws can be used as guides.
- Carefully push the piston into its bore. Use either a plastic hammer or a hand press depending on the size of the piston.
- Screw the flange onto the cylinder housing

### Series 0-415-..2 /..3 /..4 /..5

- Series 0-415-..3 /..4 the lever must be in the "brake" position (locked).
- Carefully push in the piston, use either a plastic hammer or a hand press depending on the size of the piston.
- Insert the springs ensuring they are complete and evenly distributed.
- Screw the flange onto the cylinder housing using longer screws (as described in "Removing the piston"), alternatively, use a hand press.
- Before re-fitting onto the machine check the operation of the piston with compressed air.

## Micro-switch

Adjustment of the micro-switch, or the fitting of a new one, must only be done by Customer Service

## Screw sizes and torque settings

Series  Size	Screw (Item 12)		Fixing screws	
	Strength Class 10.9	M <sub>A</sub> [Nm]	Strength Class 8.8	M <sub>A</sub> [Nm]
0-415-...-31-...	M 6 x 20	15.5	M 6	10.4
0-415-...-39-...	M 6 x 20	15.5	M 8	25.0
0-415-...-43-...	M 8 x 20	37.0	M 8	25.0
0-415-...-55-...	M 8 x 25	37.0	M 12	87.0

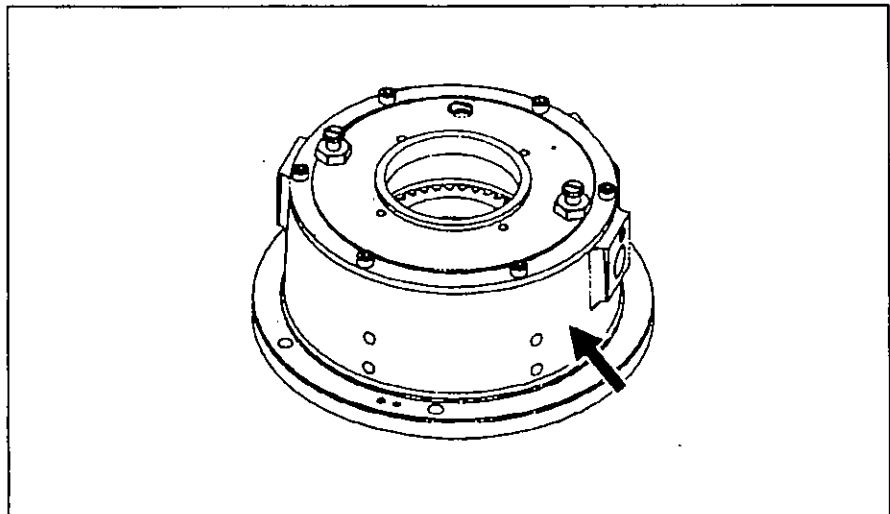
## Spare Parts

We will only give a warranty on our products if genuine Ortlinghaus spare parts are used.

Spare parts should be ordered in writing.

You will find the fabrication number on either the flange. The number consists of two digits, year of manufacture, and a sequential number, e.g. 97/12345.

Always quote this number, plus the series number for the brake, when placing an order.



## Spare parts list

Item No.	Part
1	Cylinder housing
2	Piston
3	Flange
4	Inner hub
5	Disc
6	Outer plate
7	Inner plate
8 / 9	Compression springs
10	Outer seal
11	Inner seal
12	Screw
13	Circlip
<b>Option 1 series 0-415-..0/..1</b>	
14	Sealing plug
15	Screw
<b>Option 2 series 0-415-..1/..4/..5</b>	
16	Micro-switch
17	Cable clamp
18	Screw
19	Bush
20	External circlip
21	Circlip
<b>Option 3 series 0-415-..3/..4</b>	
22	Support strap
23	Screw
24	Screw
25	Spring clip
26	Lever
27	Tapered handle
28	Disc
29	Pin
30	Pin
31	O-ring
32	Spring ring
33	Screw
34	Countersunk screw
35	Screw
36	Disc (only size 39)

