

Technical Product Information No. 931

**Hydraulically actuated clutch
Series 0-023**

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About this technical product information note (TPI)

To whom is this TPI addressed?

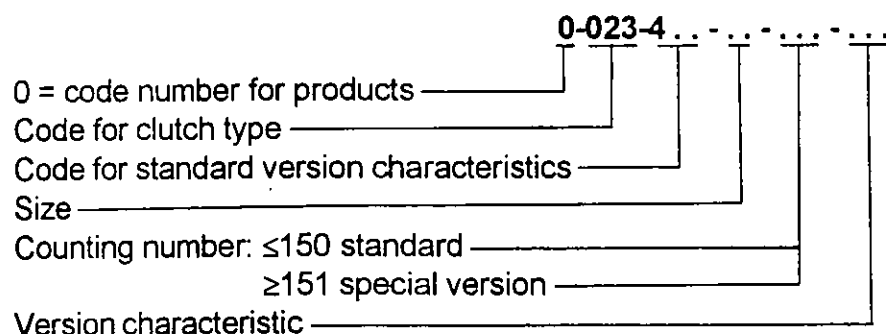
This technical product information note is addressed to

- 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 maintenance of series 0-023 clutches. Part of the TPI is represented by a general drawing which you should have received in the course of the processing of your order. If you have not, please request one from us quoting the article number stated in the order documentation.

The Orthinghaus numbering system:



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. Please find information on accessories (oil inlets, hydraulic aggregates etc.) in the separate TPI 731.

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.

About the product

Application and mode of functioning of the clutch

Hydraulically-actuated clutches for incorporation in presses are characterised by the low amount of space they take up, by their low moment of inertia and by the high rates at which they can be reliably engaged and disengaged. They are maintenance-free to a large extent. In addition their multi-plate form of construction enables them to transmit high torques without the production of a large amount of heat.

Furthermore, even without additional sound insulation, the clutch produces only a low level of noise of around 85 dB (A) when being engaged/disengaged.

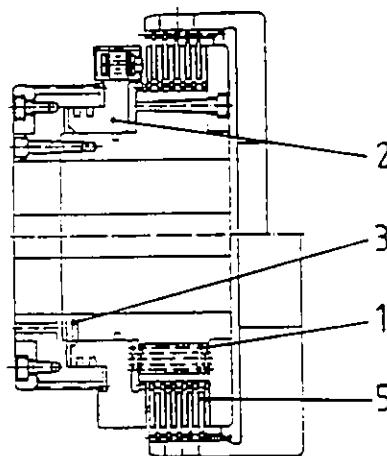


Fig. 1: Function of the clutch

Engaging of the clutch: Springs 1 press against piston 2 in the cylinder so that the plates are no longer pressed together. The clutch is disengaged.

Hydraulic oil 3 causes the piston to push back the springs. As a result the clutch plates 5 become frictionally connected. The clutch is engaged.



The normal operating pressure is **60 bar**, the maximum permissible pressure **65 bar**. **Never** operate the clutch **with a higher pressure** since then there is the risk of bolts shearing.



Fit a throttle directly upstream of the main valve in order to prevent short-term pressure peaks in excess of 70 bar.

Form of delivery of the clutch

The clutch is supplied with the housing in place.

Transport

Avoid hard impacts during transport.

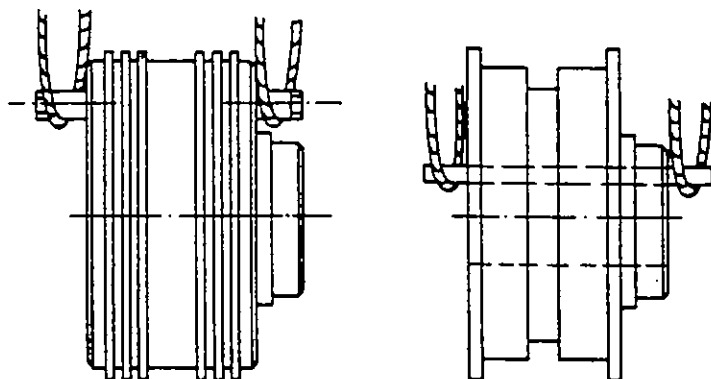


Fig. 2: Transport aids

You can fit transport aids as shown.

You will find three tapped holes for fitting transport bolts on each end of the clutch.

Size of the tapped transport holes

Size	63	75	80	86	90	94	96	98
Thread	M10	M12	M16	M16	M20	M20	M24	M30

Different forms of execution

The 0-023 series clutches can be supplied in three different versions **whereby these can also be combined together with one another.**

- standard version,
- strengthened version with lengthened set of plates,
- version with internal oiling for increased thermal loading.

Initial mounting

The clutch is supplied with the housing fitted. Information cannot be given here on special modes of mounting which depend on the particular design of the machine to which the clutch is to be fitted. However one can differentiate between two fundamentally different ways in which the clutch can be mounted.

Different fundamental ways in which the clutch can be mounted

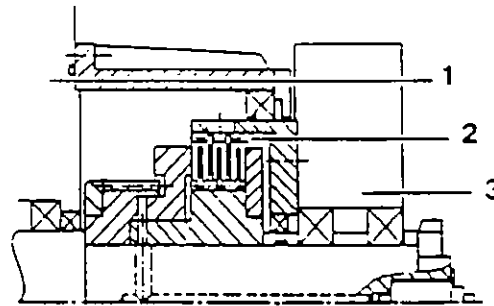


Fig. 3: Mounting variant 1

- Clutch 2 mounted between machine body 1 and flywheel 3

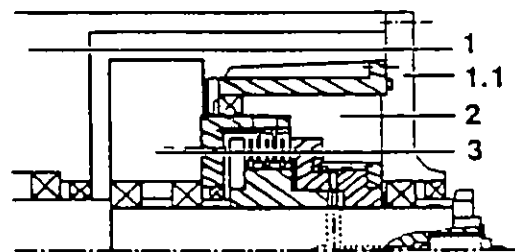


Fig. 4: Mounting variant 2

- Clutch 2 mounted between flywheel 3 and machine body plate 1.

Clutch mounted between machine body and flywheel (mounting variant 1)

- Remove clutch housing.
- Mount the clutch on the shaft with feather keys (apply copper-based friction-reducing paste thinly - **do not use paste containing graphite**).
- Secure clutch housing to the flywheel.
- Slide the clutch housing with flywheel on to the clutch, guiding the clutch plates into the tothing in the housing.

Clutch mounted between flywheel and machine body plate (mounting variant 2)

- Remove clutch housing.
- Secure clutch housing to the flywheel.
- Mount the clutch on the shaft with feather keys (apply copper-based friction-reducing paste thinly - **do not use paste containing graphite**), guiding the clutch plates into the tothing in the housing.

Test run of the clutch

The clutch must be test-run for at least 20 hours. As a rule no further plate wear will take place after this.

Maintenance

Checks during the operation of the machine

The clutch is wear-free and maintenance-free to a large extent. However wear to the plates can take place if the clutch is not used properly (oil pressure too low, operating temperature too high)

Plate wear manifests itself in the form of the operating characteristics of the clutch changing, e.g. the clutch starts to slip.

If you find that the clutch is slipping, you must immediately stop the machine. Contact customer service.



Faultfinding table

Fault	Reason	Remedy
Clutch slips	Oil pressure too low	Increase operating pressure to 60 bar
	Fault in the hydraulic system (dirt, leaks ...)	Repair hydraulic system
	Friction linings worn down (maximum permissible size of the air gap reached)	Get customer service to change the plates
	Reason cannot be established ⇒ Machine-damage	Obtain technical service



If plate wear has taken place, then the clutch must have been improperly operated (operating pressure too low, operating temperature too high...). For this reason you should establish the way in which the clutch has been improperly operated and correct this so that further wear does not occur in the future.

Complete assembly - only for customer service

Preliminary remarks:

When ordering a new set of plates, always order at least three spacer plates at the same time.

Checking for wear prior to dismantling

Check the plates for wear before dismantling the clutch. For this make the clutch housing accessible.

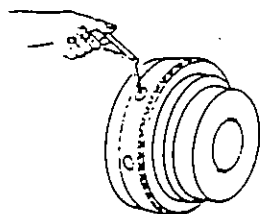


Fig. 5: Air gap

- Measure the air gap between an inner plate and the friction lining of an outer plate through the openings in the clutch housing. The maximum permissible air gap has been reached when the gap has become twice the size it was when the plates were new.

Air gap between inner plate and friction lining of the outer plate

Size	Size of gap when new in mm (standard version, 10 friction surfaces)	Size of gap when new in mm (extended version, 16 friction surfaces) * ¹⁾
63	0.7 - 0.9	1.1 - 1.4
75	0.8 - 1.0	1.3 - 1.6
80	0.9 - 1.1	1.5 - 1.8
86	1.0 - 1.2	1.6 - 1.9
90	1.2 - 1.4	1.9 - 2.2
94	1.3 - 1.6	2.8 - 3.2
96	1.5 - 1.8	3.0 - 3.6
98	1.7 - 2.0	3.4 - 4.0

*¹⁾ 20 friction surfaces with sizes 94, 96 and 98.

Dismantling

- Disconnect the clutch housing and draw off the clutch from the shaft. For this 3 empty tapped holes (also used for transport purposes) are provided on each end to serve for drawing-off purposes.



Dismantling the clutch

The stop plate is under spring pressure. It could release itself suddenly and spring out if you just took the bolts **20** out.

- For this reason first replace three of the bolts with longer auxiliary ones (see table on p. 12).

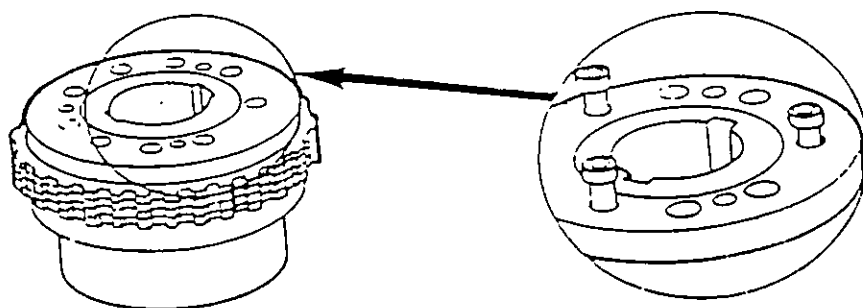


Fig. 6: Safeguarding at dismantling

- Then slacken and remove the remaining ones and finally the auxiliary ones.
- Remove the plate set.
- Remove the bolts on the other end and separate the cylinder, piston and hub.

Reassembly of the dismantled clutch

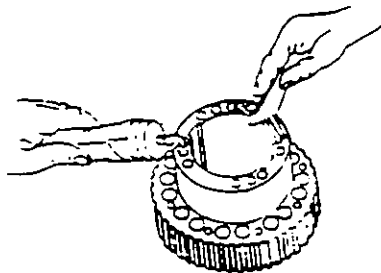


Fig. 7: Sealing

The clutch is assembled in the reverse order to that for dismantling. Observe here the following points:

- Degrease all individual parts.
- Seal the face of the hub that contacts the cylinder with Permatex Form-a-Gasket No. 2 (as sold by Loctite). Apply the sealant thinly with a serrated stopping knife and wait until the surfaces become sticky.
- The sealing between the hub and cylinder with sizes 94, 96 and 98 is with Permatex and an O-ring.

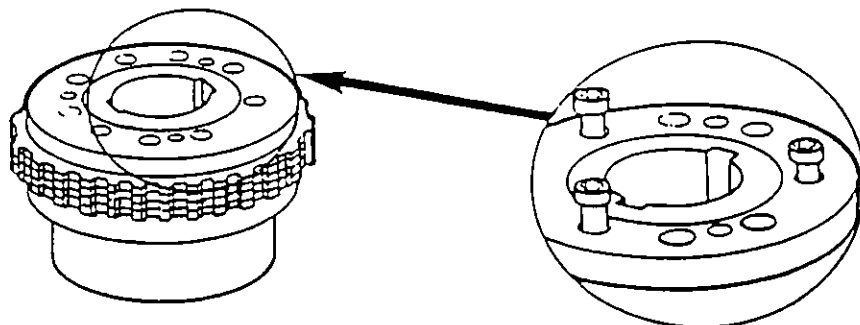


Fig. 8: Auxiliary bolts

- When mounting the stop plate on the clutch side, tighten up first the longer auxiliary bolts and only then the original ones. Finally replace the auxiliary ones.

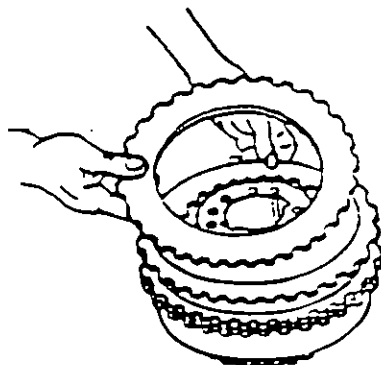


Fig. 9: Inserting the plates

- When inserting the plates, observe the following sequence: Inner plate, outer plate, ..., inner plate.

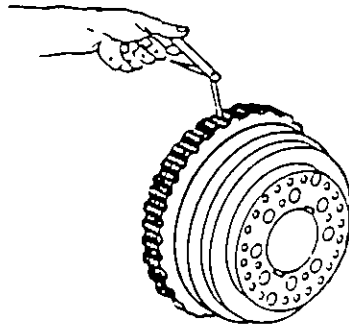


Fig. 10: Air gap

Air gap between inner plate and friction lining of the outer plate

Size	Size of gap when new in mm (standard version, 10 friction surfaces)	Size of gap when new in mm (extended version, 16 friction surfaces) * ¹⁾
63	0.7 - 0.9	1.1 - 1.4
75	0.8 - 1.0	1.3 - 1.6
80	0.9 - 1.1	1.5 - 1.8
86	1.0 - 1.2	1.6 - 1.9
90	1.2 - 1.4	1.9 - 2.2
94	1.3 - 1.6	2.8 - 3.2
96	1.5 - 1.8	3.0 - 3.6
98	1.7 - 2.0	3.4 - 4.0

*¹⁾ 20 friction surfaces with sizes 94, 96 and 98.

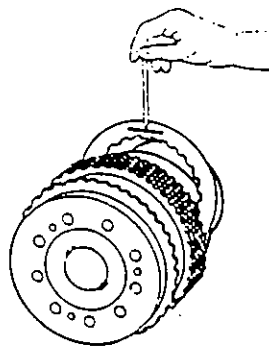


Fig. 11: Spacer plates

- To set the air gap, use spacer plates in place of inner plates.

Size and tightening torques of the bolts (see sectional drawing at the end for numbering)

Strength class: **10.9**

Locking: Loctite 262

Item Size	20	Auxiliary bolt for 20	21	21 With extended version	4	4 With extended version	MA (Nm)
63	M 8 x 35	M 8 x 40	M 8 x 12	M 8 x 20	M 8 x 35	M 8 x 45	37
75	M 8 x 35	M 8 x 50	M 8 x 16		M 8 x 35		37
80	M 10 x 45	M 10 x 60	M 10 x 20	M 10 x 4	M 10 x 45		75
86	M 14 x 60	M 14 x 75	M 14 x 25	M 14 x 25	M 14 x 60	M 14 x 90	205
90	M 16 x 70	M 16 x 90	M 16 x 30	M 16 x 70	M 16 x 70	M 16 x 110	310
94	M 20 x 80	M 20 x 100	M 20 x 80		M 20 x 80		620
96	M 24 x 100	M 24 x 110	M 24 x 100		M 24 x 100		1060
98	M 30 x 110	M 30 x 130	M 30 x 55		M 30 x 110		2100

Spare parts

Our guarantee for our products only applies when you use original Ortlinghaus spare parts. Please order spare parts only in writing.

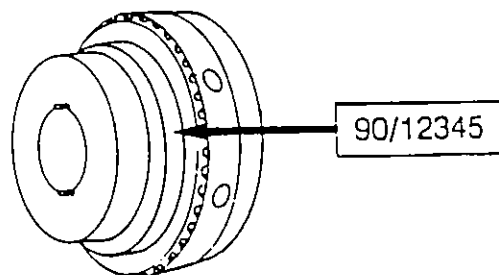


Fig. 12: Fabrication number

You will find the fabrication number, under which your clutch was manufactured, on the outside of the piston. Always state this number. It is made up of two digits for the year and a consecutive number, e.g. 90/12345.

In addition state if possible the article number of your clutch.

Approved oils

We approve the oils listed below for the operating of the clutch. These have all been tested by us and enable the clutch to perform optimally.

Oil type	Manufacturer	Oil sort
HL/CL	Agip	Agip OTE 32...68
	ARAL	Kosmol TF 32...68 Vitam UF 46, 68
	BP	BP Energol HL 46
	DEA	Astron HI 22...68
	FINA	Cirkan 22...68
	Mobil	Mobil Turbine Oil Light Mobil Turbine Oil Medium
	Shell	Morlina 22, 46, 68
ATF	Aral	ATF 33
	BP	Autran G
	Esso	Glide
	Fuchs	ATF TF M2C 33-F
	Mobil	ATF 210
	Shell	ATF Donax TF
Synthetic Oils	Castrol	Alphasyn T 32...68
	Monsanto	Santotrac 20...50

List of parts

(see sectional drawings)

Item	Part
1	Hub
2	Cylinder
3	
4	Bolt
5	Clutch housing (here flange housing)
6	Clutch housing (here pot housing)
7	Piston
8	
9	Stop plate
10	
11	Spring
12	Spring
13	
14	
15	Outer plate
16	Inner plate
17	Plain compression ring
18	Plain compression ring
19	Damping element
20	Bolt
21	
22	O-Ring

Clutch parts

