

Technical Product Information No. 1101

Hydraulically engaged clutch Series 0-224

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About this technical product information note (TPI)

To whom is this TPI addressed?

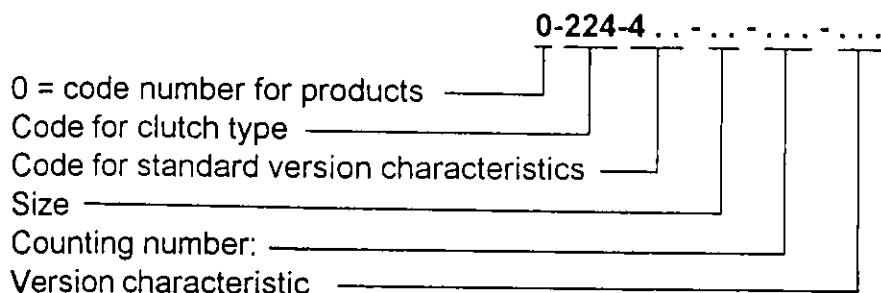
This technical product information note is addressed to

- 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 0-224 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 Ortlinghaus 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 730.

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-engaged 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.

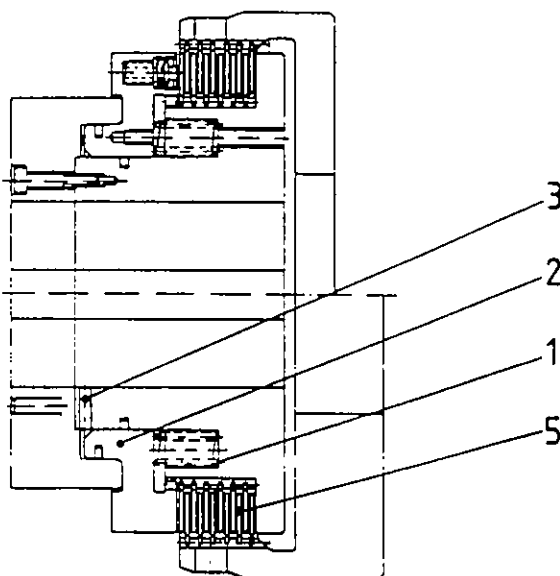


Fig. 1: Function of the clutch

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 **63 bar**, the maximum permissible pressure **68 bar**. **Never** operate the clutch **with a higher pressure** since then there is the risk of bolts shearing.



Fit a throttle directly before 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.

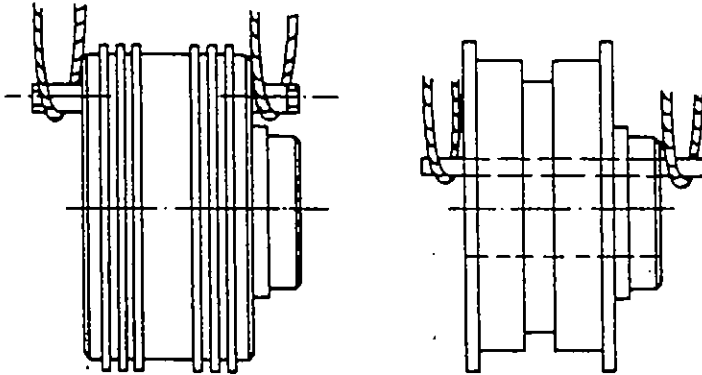


Fig. 2: Transport aids

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	80	86	90
Thread	M16	M16	M20

Different forms of execution

The 0-224 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

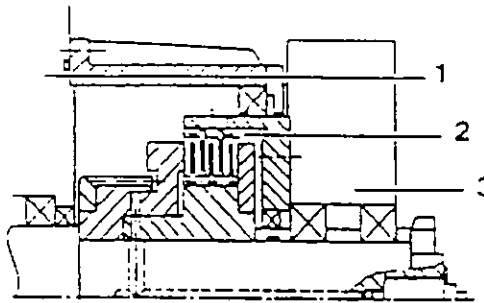


Fig. 3: Mounting variant 1

- Clutch 2 mounted between machine body 1 and flywheel 3

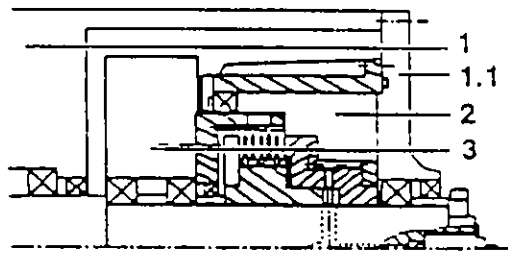


Fig. 4: Mounting variant 2

- 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 ...)	Restore the 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.

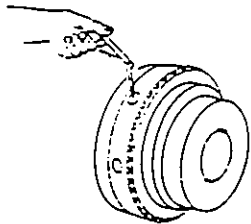


Fig. 5: Air gap

- 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	[mm] new with friction surfaces (FS) / outer plates (OP)			
	10 FS / 5 OP	12 FS / 6 OP	16 FS / 8 OP	18 FS / 9 OP
80	0.9 - 1.1	1.1 - 1.3	1.5 - 1.8	1.7 - 2.0
86	1,0 - 1,2	1,2 - 1,4	1,6 - 1,9	1,8 - 2,2
90	1,2 - 1,4	1,4 - 1,7	1,9 - 2,2	2,2 - 2,5

Dismantling

- Disconnect the clutch housing and draw off the clutch from the shaft. For this 2 tapped transport holes are provided on each end to serve for drawing-off purposes.



The inner parts of the unit are under spring pressure. They will release themselves and spring out if you just simply take the bolts out.

- For this reason always first insert threaded rods through the transport holes on the clutch side and screw them into the piston.
- Fit washers and nuts on the rods.
- Tighten up the nuts uniformly. In this way the piston is drawn against the clutch plates and the springs are safeguarded.

Auxiliary tapped holes in piston

Size	80	86	90
Thread	M10	M12	M16

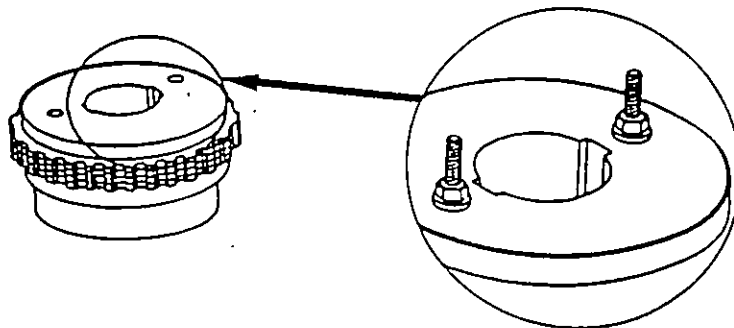


Fig. 6: Safeguarding at dismantling

- Only then remove the bolts and draw out the pins. Draw off the cylinder from the piston/hub.
- Slacken the nuts uniformly so that the pressure in the springs is released. The clutch separates itself from the clutch plates.
- Draw the piston and plates from the hub.

Reassembly of the dismantled clutch

- Degrease all individual parts.

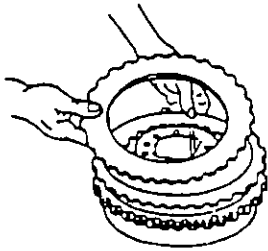


Fig. 7: Inserting the plates

- Fit the plates on the clutch side.
Insert the plates in the following order:
 - Outer plate, inner plate...., inner plate
- Insert the set of springs with them arranged symmetrically.
- Slide the piston on to the hub; the tapped holes in the piston must line up with the transport holes in the hub.

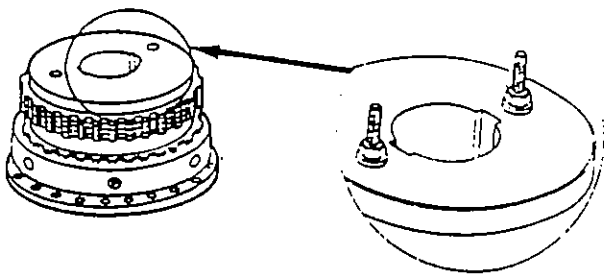


Fig. 8: Threaded rods

- Draw the piston up to the clutch plates, compressing thereby the springs, using the threaded rods / washers / nuts.
- Guide the cylinder with plates on to the hub.

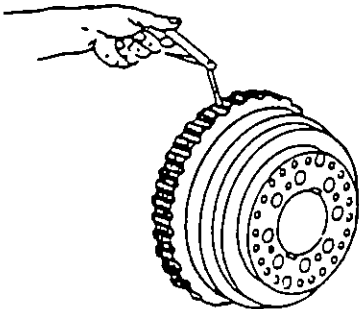


Fig. 9: Air gap of the clutch

- Measure the air gap between inner plate and friction lining of the outer plate.

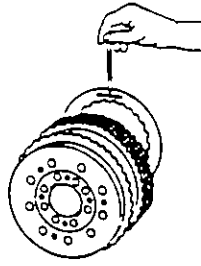


Fig. 10: Spacer plates

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

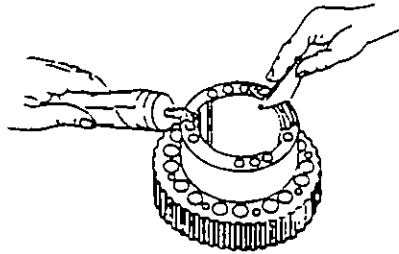


Fig. 11: Sealing

- For final assembly, 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.
- Insert an O-ring in the cylinder.
- Guide the cylinder with the set of plates on to the hub and secure with pins/bolts.

Size and tightening torques of the bolts

Size	Thread	Tightening torque [Nm]
80	M10	75
86	M12	130
90	M16	310

- Slacken the nuts uniformly and draw out the threaded rods.

Spare parts

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

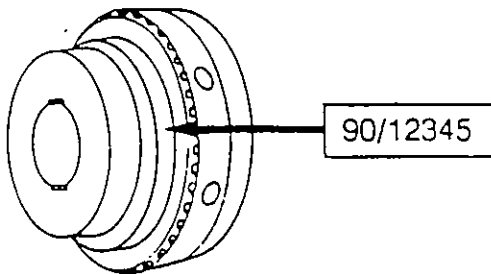


Fig. 12: Fabrication number

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	
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	
21	
22	O-ring

Clutch parts

