Hydraulically actuated clutches and spring-applied brakes
clutch/brake combined units
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Thanks to the large force available for actuation and the use of the steel/sinter combination, which has very low wear characteristics, hydraulically actuated Ortlinghaus Sinus® multi-plate clutches, brakes and clutch/brake combined units are suitable for a range of applications in mechanical engineering, motor vehicles and transmission systems.

The cooling oil, which is led through the plates in a precise manner, allows the heat, which varies depending on the particular application, to be dissipated efficiently.

To a very large extent these clutches and brakes are wear free and require no maintenance!

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**Clutch/brake combined units for wet-running**

**1/2 Series 0023 and 0123**

Clutch/brake combined units are recognised as being safe and reliable for driving presses, metal-forming and machine tools, shears and similar machines. They conform with the well known safety requirements as laid down in the relevant EC directives.

The torque transmitting capability and the switching capacity can be influenced over a wide range, by the correct selection of the number of friction surfaces.

The heat generated from a particular application can be dissipated efficiently with the aid of a carefully designed cooling oil system.

The shaft hub connection is with a double keyway in the case of series 0023; in the case of series 0123, either a double keyway or a locking assemble can be selected.

Friction combinations: Steel/sinter linings
Operating pressure: 60 bar.
Pressure and cooling oil intake: Via rotary inlet through the shaft.
Application: In stamping, embossing and drawing presses, in automobile body presses, shears and similar machines.

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**Sinus® multi-plate clutches for wet-running, standard version**

**3 Series 0021-007**

This version can be put to use universally as a compact machine transmission clutch.

Friction combination: Steel/sinter lining
Operation pressure: 18 to 20 bar
Pressure and cooling oil intake: Via rotary inlet through the shaft.
Examples of application: In transmissions for machines and vehicles, stationary and mobile cranes, other lifting devices.
**Sinus® multi-plate clutches for wet-running; version for high torques**

4 **Series 0021-3.3**

A clutch for heavy-duty drives; normal version with shoulder housing and without "emergency engagement facility". A version with "emergency engagement facility" is also available. Large hub bores are possible. These clutches can be manufactured to conform to the acceptance conditions of the classification institutions for marine engineering. Friction combination: Steel/sinter lining. Pressure and cooling oil intake: Via rotary inlet through the shaft. Operating pressure: 25 bar. Areas of application: Used in marine engineering for reversing gears, variable pitch propeller drives, multi-motor drives and power take off drives.

**Sinus® multi-plate clutches for wet-running; version for high thermal loading**

5 **Series 0-002**

A clutch for heavy duty drives of all types in which a high level of engaging/disengaging work has to be performed; normally supplied with a flange or shoulder housing and without "emergency engagement facility". A version with "emergency engagement facility" is also available. These clutches can be manufactured to conform to the acceptance conditions of the classification institutions for marine engineering. Friction combination: Steel/sinter lining. Pressure and cooling oil intake: Via rotary inlet through the shaft. Operating pressure: 24 bar. Areas of application: Used in marine engineering for reversing gears, variable pitch propeller drives, multi-motor drives and power take off drives.

**Spring-applied, hydraulically released multi-plate brakes for wet- or dry-running, non centering**

6 **Series 0022-. . 0/- . . 9**

Spring-applied fail safe brakes with a housing which does not have a centering function; for this reason these brakes are primarily used on shaft ends and outside gearboxes. Variations include a closed end flange and an open end flange, which would allow a shaft to pass through. The "wet-running plates" are lubricated initially by soaking in oil or by means of oil stored in the...
plate chamber, depending upon the particular application. The brakes can be released mechanically in the case of a hydraulic system failure (emergency release facility). Friction combination: Steel/sinter lining for wet or dry-running Pressure oil intake: On outside of diameter of stationary cylinder. Operating pressure: max. 320 bar Application: Extensively used throughout the field of mechanical engineering especially as brakes for hydraulic motors used in cranes and winches.

Spring-applied, hydraulically released multi-plate brakes for wet- and dry-running with internal and external centering facility

Spring-applied fail safe brake in which the housing has both a centering and a load carrying function. The “wet-running plates” are lubricated initially by soaking in oil or by means of oil in the chamber, depending upon the particular application.

The brakes can be released mechanically in the case of a hydraulic system failure (emergency release facility). Friction combination: Steel/sinter lining for wet or dry-running Pressure oil intake: On outside diameter of stationary cylinder. Operating pressure: max. 320 bar Application: Generally within a transmission between motor (hydraulic motor) and driven device.

Spring-applied, hydraulically released multi-plate brakes for wet- and dry-running with dual internal centering facility

This is a short brake for use in designs where space is limited. The housing has both a centering and a load carrying function. Friction combination: Steel/sinter lining for wet or dry-running Pressure oil intake: On outside diameter of stationary cylinder Operating pressure: max 320 bar Application: In gearboxes of every type, cranes and other lifting devices.
Ortlinghaus has available a comprehensive range of accessories for operating hydraulically actuated clutches and brakes and to permit these to be correctly integrated into the particular machine design.

We can supply!
- Single and multi-channel rotary inlets (see also special catalogue)
- Press safety valves,
- Complete clutch-brake controls in modular design
- Complete hydraulic power packs for supplying clutch/brake combined units with pressure and cooling oil
- Cooling systems in the form of oil/air or oil/water heat exchangers
- Sealed housing covers for enclosing clutch/brake combined units.

### Application examples

Spring-applied, hydraulically released multi-plate brake, series 0022-304 fitted in the drive of a winch.

Spring-applied, hydraulically released multi-plate brake, series 0022-601 fitted in the travel gearbox of a caterpillar-type excavator.

Hydraulically actuated clutch/brake combined unit, series 0123, fitted in a press drive.

### Torque range and dimensions

<table>
<thead>
<tr>
<th>No.</th>
<th>Series</th>
<th>Torque range</th>
<th>Hub bore</th>
<th>External diameter</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Nm</td>
<td>mm</td>
<td>mm</td>
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<tr>
<td>1</td>
<td>0023 Clutch</td>
<td>2500 to 960000</td>
<td>45 to 375</td>
<td>230 to 1040</td>
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<tr>
<td></td>
<td></td>
<td>500 to 240000</td>
<td></td>
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<tr>
<td>2</td>
<td>0123 Clutch</td>
<td>12000 to 99000</td>
<td>70 to 200</td>
<td>380 to 560</td>
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<td></td>
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<td>4800 to 28800</td>
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<tr>
<td>3</td>
<td>0021-007 Clutch</td>
<td>200 to 4000</td>
<td>18 to 82</td>
<td>95 to 252</td>
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<td>11200 to 630000</td>
<td>50 to 400</td>
<td>280 to 1000</td>
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<td>9000 to 300000</td>
<td>50 to 260</td>
<td>315 to 750</td>
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<td>4</td>
<td>0021-3.3 Clutch</td>
<td>33 to 120000</td>
<td>18 to 350</td>
<td>83 to 910</td>
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<td>70 to 5900</td>
<td>20 to 110</td>
<td>135 to 315</td>
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<td>50 to 6100</td>
<td></td>
<td>120 to 345</td>
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<td>5</td>
<td>0022-..0/-..9</td>
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<td>0022-..20</td>
<td>50 to 6100</td>
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<td>120 to 345</td>
</tr>
</tbody>
</table>
Fax questionnaire for the designing of plates
Please complete in block capitals!

Sender: 
Name, first name 
Company 
Department 
Telephone (extension) 
Fax 

Recipient: 
Ortlinghaus-Werke GmbH 
Kenkhauser Straße 125 · Postbox 14 40 
42907 Wermelskirchen · Germany 
Tel. +49 2196 85-0 · Fax +49 2196 855-444 
info@ortlinghaus.com · www.ortlinghaus.com 

Fax-No. +49 2196 855-444 

for the attention of (if known) 

For clutches and brakes:
Actuation type: 
- hydraulic 
- pneumatic 
- spring-applied 

Drive machine: 
- Elektric motor 
- Combustion engine 
- Hydraulic motor 
- Other: 

Drive situation: 

Fitting situation: 
- Rotary axis horizontal 
- Vertical 
- Exposed 
- In closed housing 

Shaft diameter: 
- on drive input d1 =______ mm 
- on drive output d2 =______ mm 

Motor data: 
- Capacity P =______ kW 
- Speed n =______ min⁻¹ 

Torques on clutch or brake: 
- Switchable torque M_s =______ Nm 
- Transmittable torque M_t =______ Nm 
- Load torque M_L =______ Nm 
- Course of M_t, when this changes: 

Initial input drive speed: n_{10} =______ min⁻¹ 
Initial output drive speed: n_{20} =______ min⁻¹ 
Max. relative speed ratio: \( n_R =______ \) min⁻¹ 

Conditions at switching: 
- Stationary 
- Full load 
- Without load 
- Switching frequency \( f_s =______ \) h⁻¹ 
- Acceleration/deceleration time \( t_s =______ \) s 

Moment of inertia about clutch or brake shaft axis: 
- Input drive side \( J_A =______ \) kgm² 
- Output drive side \( J_B =______ \) kgm² 
- Course of \( J_A \), \( J_B \), when these change: 

Further details: 

For press clutches and brakes:
Actuation type: 
- pneumatic 
- hydraulic 

Arrangement: 
- Clutch and brake separated 
- Auxiliary brake 
- Clutch and brake combined 
- with auxiliary brake 

Fitting position: 
- Rotary axle horizontal 
- Vertical 

Shaft diameter: \( d =______ \) mm 

Bore diameter: \( A =______ \) mm 

Driver on the shaft: 
- Clamping set/contraction disk 

Actuation pressure: 
- air pressure \( P_B =______ \) bar 
- \( P_{max} =______ \) bar 

Oil pressure \( P_B =______ \) bar 
- \( P_{max} =______ \) bar 

Series no. 

Version characteristics (e.g. mode of securing plates) 

Machine type: 
- Working mode: single stroke 
- continuous run. 
- Motor capacity: \( P =______ \) kW, at \( n =______ \) rpm 
- Max. pressing/shearing force \( F =______ \) kN 
- Working angle at BDC \( \alpha =______ \) deg. 
- Working height at BDC \( h =______ \) mm 
- Eccentric radius \( r =______ \) mm 
- Length of the connecting rod \( l =______ \) mm 
- Eccentric speed \( n_e =______ \) min⁻¹ 
- Clutching speed \( n_k =______ \) min⁻¹ 
- (state switching speed without fail) 
- Individual strokes per minute \( z =______ \) min⁻¹ 
- Moment of inertia of all masses to be braked \( J =______ \) kgm² 
- (without clutch and flywheel) about the clutch shaft axis 
- Course of \( J \), if this changes: 
- Ram mass including tool \( m =______ \) kg 
- if not included in \( J \) 
- Load torque at braking \( M_t =______ \) Nm 
- Course of \( M_t \), if this changes: 
- Desired braking angle \( \zeta =______ \) deg. 
- Desired braking time \( t_{br} =______ \) s 
- Envisaged solenoid valve 
- Flywheel external diameter \( D_S =______ \) mm