

Hydraulically actuated clutches and spring-applied brakes

clutch/brake combined units



**Ortlinghaus – Plates.
Clutches. Brakes. Systems.**

Hydraulically actuated clutches and spring-applied brakes clutch/brake combined units



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!

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.

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

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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 and multi-motor 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

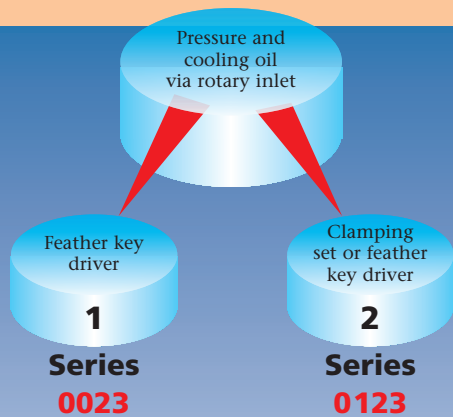
6 **Series 0022-. . 0/- . . 9**

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

Clutch/brake combined units for wet-running



Multi-plate clutches for wet-running

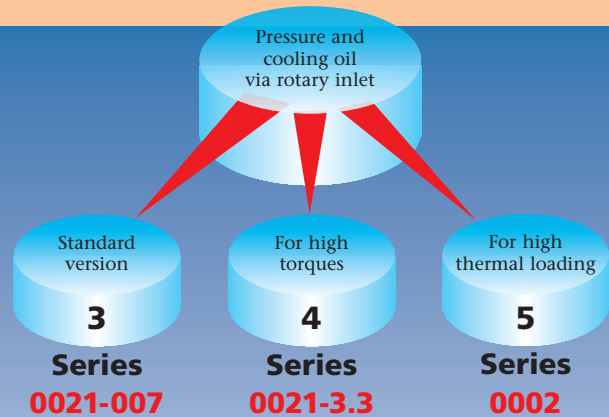


plate chamber, depending upon the particular application.

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

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Series 0022-. . 1

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

8

Series 0022-. 20

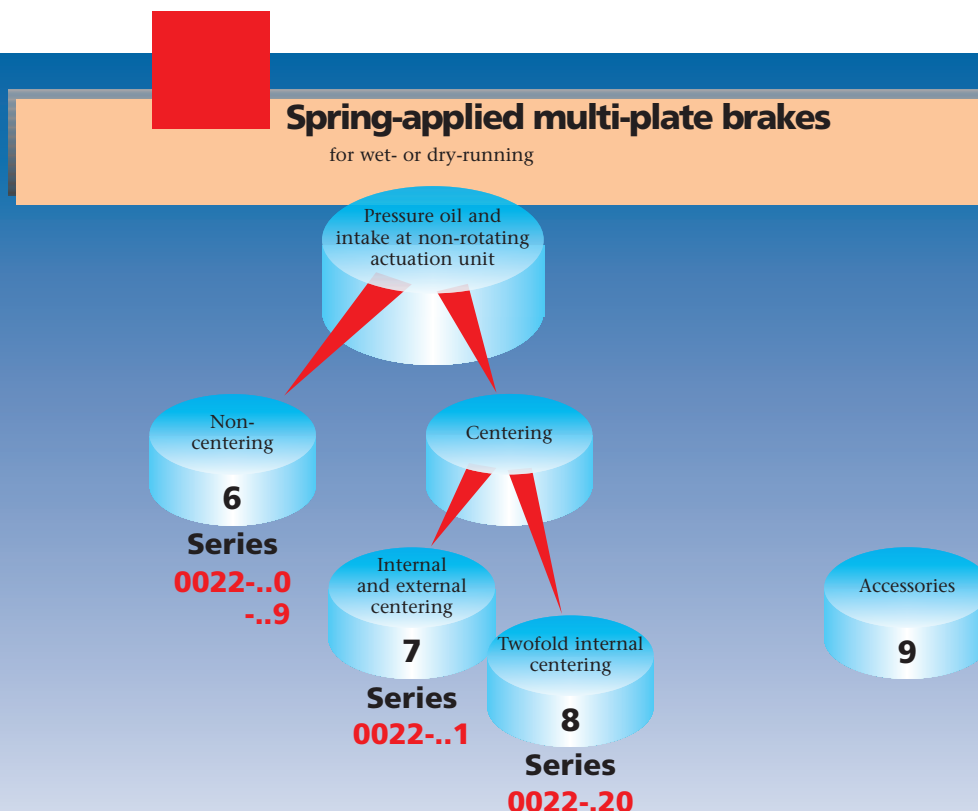
This is a short brake for use in designs where space is limited. The housing has both a centering and a load carrying function.

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.



9 Accessories

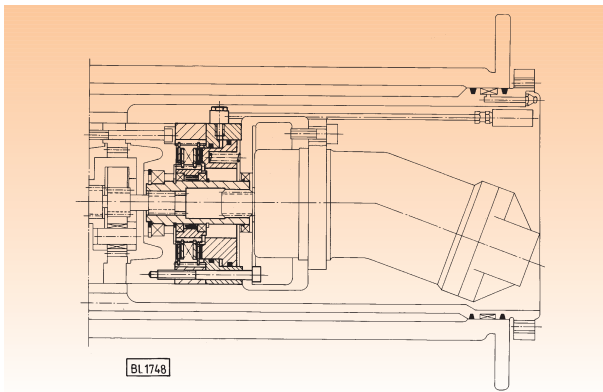
Ortlinghaus has available a comprehensive range of accessories for operating hydraulically actuated clutches and brakes and to permit these to be correctly intergrated into the particular machine design.

We can supply!

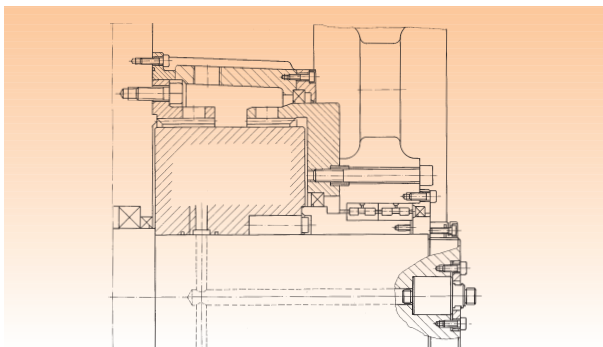
- Single and multi-channel rotary inlets (see also special catalogue)
- Press safety valves,

- 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.

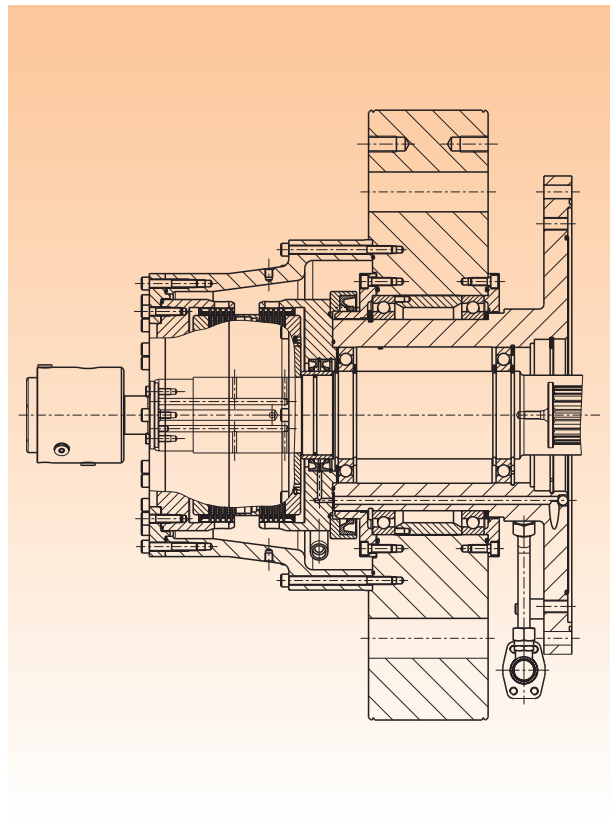
Application examples



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.

No.	Series	Torque range Nm	Hub bore mm	External diameter mm
1	0023 Clutch	2500 to 960000	45 to 375	230 to 1040
	Brake	500 to 240000		
2	0123 Clutch	12000 to 99000	70 to 200	380 to 560
	Brake	4800 to 28800		
3	0021-007	200 to 4000	18 to 82	95 to 252
4	0021-3.3	11200 to 630000	50 to 400	280 to 1000
5	0002	9000 to 300000	50 to 260	315 to 750
6	0022-..0/-..9	33 to 120000	18 to 350	83 to 910
7	0022-..1	70 to 5900	20 to 110	135 to 315
8	0022-.20	50 to 6100		120 to 345

Fax questionnaire for the designing of plates

Please complete in block capitals!

Ortlinghaus SINCE 1898

THE TECHNOLOGY OF CONTROLLED TORQUE

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

for the attention of (if known)

Fax-No. +49 2196 855-444

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 $d_1 =$ _____ mm
on drive output $d_2 =$ _____ mm

Motor data: Capacity $P =$ _____ kW
Speed $n =$ _____ min⁻¹

Torques on clutch or brake:

Switchable torque $M_s =$ _____ Nm
Transmittable torque $M_{ii} =$ _____ Nm
Load torque $M_L =$ _____ Nm
Course of M_L , when this changes: _____

Initial input drive speed: $n_{10} =$ _____ min⁻¹

Initial output drive speed: $n_{20} =$ _____ min⁻¹

Max. relative speed ratio: $^3_n =$ _____ min⁻¹

Conditions at switching:

Stationary Full load Without load
Switching frequency $S_n =$ _____ h⁻¹
Acceleration/deceleration time $t_3 =$ _____ s

Moment of inertia about clutch or brake shaft axis:

Input drive side $J_A =$ _____ kgm²
Output drive side $J_L =$ _____ kgm²
Course of J_A , J_L ,
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:

Feather keys 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 $M_L =$ _____ Nm

Course of M_L if this changes

Desired braking angle $\zeta =$ _____ deg.

Desired braking time $t_{Br} =$ _____ s

Envisaged solenoid valve

Flywheel external diameter $D_S =$ _____ mm