

Title (en)

Centrifuge, in particular sliding seal free continuous flow centrifuge for the centrifugation of biological fluids

Title (de)

Zentrifuge, insbesondere gleitdichtungsfreie Durchflusszentrifuge zum Zentrifugieren biologischer Fluide

Title (fr)

Centrifugeuse, en particulier centrifugeuse à l'écoulement contenu sans joint d'étanchéité glissant pour la centrifugation de fluides biologiques

Publication

EP 0930099 A2 19990721 (DE)

Application

EP 99101002 A 19990118

Priority

DE 19801767 A 19980119

Abstract (en)

One and/or the other transmission has couplings (17-20) to transmit the torque through magnetic forces. The centrifuge has a working transmission to transfer the torque to a separation unit (3) and a second working transmission to transfer the torque to the rotating frame (1). The couplings have magnets (15,16) located on a circular line. The poles of adjacent magnets of a coupling are arranged in opposition. The coupling (17-20) is a body with the shape of a circular disk. Or one and/or the other transmission has two rotating couplings on a common axis, with a magnetic lock through magnets arranged on a circular line at the upper and lower sides of the coupling. Or the couplings rotate on parallel axes, with a magnetic lock action. The couplings (17,19) can rotate on axes at right angles to each other, with the magnets (15,23) on a circular line at their peripheral surfaces, or the magnets are at the peripheral surface of one coupling and on the upper or lower side of the other coupling on a circular line. The magnets have a circular cross section, or a rectangular cross section where their longitudinal sides are aligned on a radial direction. The gaps between the magnets are equal in both matching couplings. The separation unit (3) is bonded to one coupling (19), which has a magnetic lock with another coupling (17) which has an axis across the axis of the rotating frame. The second coupling has a magnetic lock with a third coupling (20) at the frame (21), concentric to the first coupling. A fourth coupling (14), opposite the second coupling, rotates on an axis at right angles to the rotating frame (1) axis, with a magnetic lock at the first (19) and third (20) couplings. The rotating frame is rotated by a hollow shaft, with a coaxial drive shaft linked to the first coupling. A second coupling is bonded to the separation unit, with a magnetic lock at the first coupling. Or a second coupling is in the rotating frame on an axis parallel to the frame rotary axis, with a magnetic lock at the first coupling for the separation unit, and with a larger diameter than the first coupling. The rotating frame forms the third coupling, for a magnetic grip with the second coupling. The second coupling in the rotating frame can rotate round the rotating frame axis, with a magnet grip at the first coupling, and a third coupling rotates on an axis parallel to the rotating frame axis with a gearing link to the second coupling, while the rotating frame forms a fourth coupling with a magnetic lock at the third coupling. The separation unit (3) is within the rotating frame (1). In an alternative form, the first and/or second transmission has at least one stator with a first and/or second coil. The system has a magnetic coupling so that the torque forces are transmitted by a magnetic grip. The rotating frame has an upper and lower carrier plate, with the separation unit at the upper plate and the stator between the plates and linked to one and/or the other coil. Permanent magnets give the coupling grip action. The first coil generates a rotating field to transmit the torque to the separation unit. The permanent magnets are equidistant round the periphery at the under side of the separation unit, with the poles in opposition at adjacent magnets. The second coil generates a rotating field for the magnetic coupling of the rotating frame, with permanent magnets equidistant at the lower plate of the frame, with opposing polarity at neighboring magnets. The lower carrier plate of the rotating frame is at a support body extending in the rotating frame, as a mounting for the stator.

Abstract (de)

Eine Zentrifuge, insbesondere eine gleitdichtungsfreie Durchflußzentrifuge zum Zentrifugieren biologischer Fluide weist ein Gestell auf, an dem ein Rahmen (1) drehbar gelagert ist. An dem Drehrahmen (1) ist um dessen Achse eine Zentrifugenkammer (3) drehbar gelagert. Die Zentrifugenkammer (3) wird in der gleichen Drehrichtung wie der Rahmen (1) mit der doppelten Drehzahl angetrieben. Zur Übertragung des Drehmomentes auf die Zentrifugenkammer bzw. den Drehrahmen finden nach Art einer Kupplungsscheibe oder eines Zahnrades ausgebildete Kopplungselemente Verwendung, die mittels magnetischer Kräfte im Eingriff sind. Die Kraftübertragung erfolgt berührungslos und verschleißfrei. Eine Schmierung ist nicht erforderlich, wodurch auch die Ansammlung von Staub und Schmutz verringert wird. Darüber hinaus ist die Geräuscentwicklung gering. <IMAGE>

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CPC (source: EP US)

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Cited by

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