Title (en)

Method and hydraulic switching assembly for operating a metal pressure casting assembly

Title (de)

Verfahren und hydraulische Schaltungsanordnung zum Betreiben einer Metalldruckgussanlage

Title (fr)

Procédé et agencement de commutation hydraulique pour le fonctionnement d'une installation de moulage sous pression métallique

Publication

EP 2295171 B1 20121024 (DE)

Application

EP 10009266 A 20100907

Priority

DE 102009041302 A 20090915

Abstract (en)

[origin: EP2295171A1] The method for operating a metal pressure casting plant, comprises filling a shot sleeve (12) arranged downstream to cavity (11) of the casting plant in a first phase by a filling cylinder (13) forming as a work cylinder with a piston (14) having a piston rod (15), with low feed motion of the piston, where the piston rod of the filling cylinder presses the fluid metal in the shot sleeve, and subjecting the fluid metal in a second phase through a further movement of the piston rod in the shot sleeve by quick feed motion of the piston in the mold cavity. The method for operating a metal pressure casting plant, comprises filling a shot sleeve (12) arranged downstream to cavity (11) of the casting plant in a first phase by a filling cylinder (13) forming as a work cylinder with a piston (14) having a piston rod (15), with low feed motion of the piston, where the piston rod of the filling cylinder presses the fluid metal in the shot sleeve, and subjecting the fluid metal in a second phase through a further movement of the piston rod in the shot sleeve by quick feed motion of the piston in the mold cavity. The quick feed motion is produced for the supply of the filling cylinder with a fluid suitable for hydraulic use by the fluid stored in an accumulator plugging in a hydraulic control circuit. The fluid displaced in the first phase in slow feed motion of the piston in the filling cylinder from its poles areas is fed back over a control valve with associated line connection under retention of the pressure standing in the pole area into the accumulator. The fluid displaced through the quick feed motion of the piston from the pole area of the filling cylinder is subjected during the second phase for connecting the fluid metal from the shot sleeve in the cavity over the control valve with high pressure prevailing in a pressure amplifier on the accumulator and subsequently introduced by the pressure amplifier over the line connection in the accumulator or is fed back over the control valve with line connection with the piston area of the filling cylinder. The flow of the fluid to the piston area of the filling cylinder from the accumulator is throttled for braking the piston of the filling cylinder in the termination of the quick feed motion controlled during the second phase and is returned back during throttling the fluid displaced from the pole area of the filling cylinder over the control valve with line connection. A multiplication of the pressure acting on the piston of the filling cylinder after termination of the braking process during a cooling phase of the fluid metal in the mold cavity is carried out through subjecting the multiplicator forming the work cylinder. The piston area of the multiplicator is subjected based on a hydraulic parallel control with the filling cylinder with fluid. The pressure in the rod area of the multiplicator is adjusted by a valve during the first and second phase of the feed of the piston in filling cylinder in such a way that no movement of the piston of the multiplicator is given. The pole area of the filling cylinder is adjusted in pressure-less manner over the control valve with the line connection to the tank during the cooling phase and the multiplication of the pressure. The connection between the accumulator and the filling cylinder and/or the multiplicator is subjected at the end of the cooling phase and the fluid standing under high pressure in the piston area of the filling cylinder is recirculated by a ventilation arrangement to the accumulator. An independent claim is included for a hydraulic circuit arrangement for operating a metal pressure casting plant.

IPC 8 full level

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CPC (source: EP)

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