

Title (en)

METHOD AND DEVICE FOR THE REDUCTION OF CUTTING IMPACT IN A PRECISION BLANKING PRESS

Title (de)

VERFAHREN UND VORRICHTUNG ZUM REDUZIEREN DES SCHNITTSCHLAGS IN EINER FEINSCHNEIDPRESSE

Title (fr)

PROCÉDÉ ET DISPOSITIF DE RÉDUCTION DU CHOC DE COUPE DANS UNE PRESSE DE DÉCOUPAGE FIN

Publication

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Application

EP 15002037 A 20150706

Priority

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Abstract (en)

[origin: KR20170005767A] The present invention relates to a method and apparatus to reduce a cutting impact of a precise blanking press driven by hydraulics. The present invention is to generate power needed to reduce the cutting impact as direct resistance to a hydraulic chamber of a driving piston to directly apply resistance to a cutting punch such that a design of a press is simplified; costs are able to be reduced; an external hydraulic mechanical means is not additionally needed to reduce the cutting impact; and load on the press and die being able to be reduced. According to the present invention, the method of reducing the cutting impact of the precise blanking press comprises: (a) a step of detecting a position of a main piston during a stroke motion toward a stop part fixated greater before reaching a top dead center (OT), and achieving detection by a measuring unit to detect data on a position of the main piston to transmit the position to a processing central control system, and connected to the main piston; (b) a step of continuously detecting an operation pressure of pressure chambers of the main piston by pressure sensors which detect pressure values to transmit the same to the central control system; (c) a step of determining an increase in maximum pressure and operation pressure of a second pressure chamber; (d) a step of determining a maximum force of the second pressure chamber from multiplying the detected operation pressure by a working surface of the main piston, and measuring a reduction of the force; and (e) a step of delimiting pressure of a tank valve combined with the second pressure chamber based on the reduction force and the determined maximum force in accordance with step (d) such that the pressure of the second pressure chamber is controlled, working pressure of the first pressure chamber increased to generate resistant force against the cutting impact as soon as the maximum force is exceeded, and control is performed and maintained until a cutting process ends.

Abstract (de)

Die Erfindung betrifft ein Verfahren und eine Vorrichtung zum Reduzieren des Schnittschlags in einer hydraulisch angetriebenen Feinschneidpresse. Die Aufgabe der Erfindung besteht darin, die für die Schnittschlagreduzierung erforderliche Kraft als Gegenkraft direkt im Druckraum des Antriebskolbens zu erzeugen, so dass die Gegenkraft unmittelbar auf den Schneidstempel wirkt und der Aufbau der Presse vereinfacht, Kosten gespart, zusätzliche externe hydraulisch-mechanische Mittel für die Schnittschlagreduzierung entfallen und die Belastungen für die Presse und das Werkzeug verringert werden können.

IPC 8 full level

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Citation (applicant)

- DE 2248024 B2 19761209
- DE 2350378 B2 19770324
- DE 2621726 C2 19781207
- DE 2653714 C2 19781109
- DE 10252625 B4 20080904 - SCHULER PRESSEN GMBH & CO [DE]
- DE 10339004 B4 20060928 - WIEBER CHRISTIAN [MY]
- DE 102005053350 A1 20070510 - SCHULER PRESSEN GMBH & CO [DE]
- DE 2512822 A1 19760930 - SCHENK HORST
- DE 2824176 C2 19880414
- DE 4308344 A1 19940922 - MUELLER WEINGARTEN MASCHF [DE]
- DE 102007027603 A1 20081218 - VOITH PATENT GMBH [DE]
- DE 102006039463 A1 20080228 - MUELLER WEINGARTEN MASCHF [DE]
- R.-A. SCHMIDT: "Umformen und Feinschneiden", 2007, CARL HANSER-VERLAG, pages: 144 - 157

Citation (search report)

- [A] JP S60244500 A 19851204 - AIDA ENG LTD
- [A] JP S60162599 A 19850824 - AMADA CO LTD
- [A] JP S58110200 A 19830630 - SANESU SHIYOUKOU KK

Cited by

EP3666411A1; EP3666410A1; US11878335B2; EP3831590A1; US11642716B2; EP3736061A1; US11779988B2; EP3725502A1; US11331711B2

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