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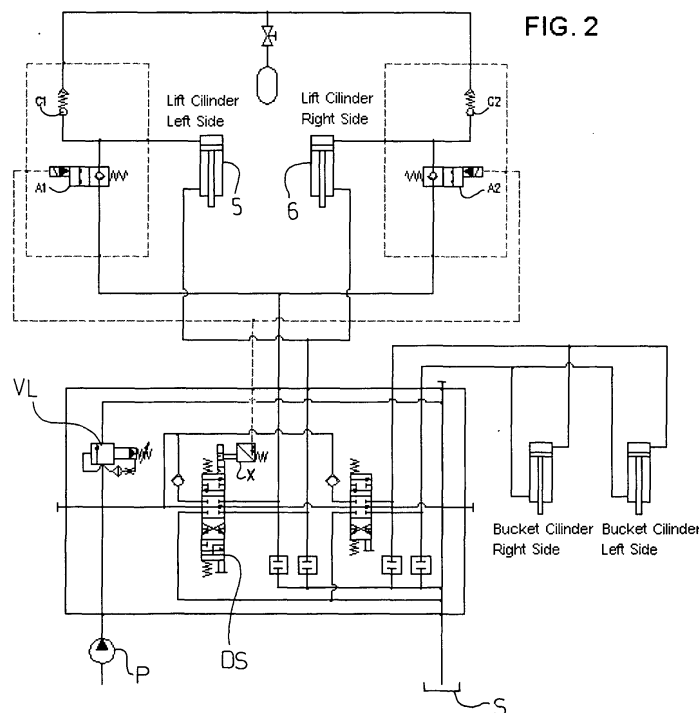
(30) Priority: **06.02.2004 IT PR20040007**

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(54) **Safety system in a hydraulic apparatus for controlling a front loader of a work machine for use in load lifting and holding operations**

(57) The invention relates to the field of control equipment for hydraulic front load raising systems in work machines. Particularly, the invention provides an electrically operated shutoff valve (A1,A2) in the supply circuit for each of the hydraulic lift cylinders (5,6), which

valve is actuated by an electric signal from a slide valve (DS) to protect the system during load lifting and holding operations; particularly, the electromechanical system allows the valve to be opened during lowering operations and as the working machine swings to follow the road profile (floating condition of the Front Loader).





European Patent  
Office

EUROPEAN SEARCH REPORT

Application Number  
EP 05 00 2110

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 522 109 A (MARCHI ET AL) 11 June 1985 (1985-06-11)	1,2	E02F9/22 E02F3/627
Y	* column 5, line 2; figures * * column 6, line 41 - line 58 *	3	
X	EP 0 404 271 A (NIJHUIS, JOHANNES) 27 December 1990 (1990-12-27) * the whole document *	1-3	
X	US 2004/006980 A1 (BERTHOD EMMANUEL ET AL) 15 January 2004 (2004-01-15) * paragraph [0020]; figures *	1	
X	PATENT ABSTRACTS OF JAPAN vol. 009, no. 194 (M-403), 10 August 1985 (1985-08-10) -& JP 60 059236 A (KUBOTA TEKKO KK), 5 April 1985 (1985-04-05)	1	
Y	* abstract; figures *	3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E02F F15B
-The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		11 May 2005	Laurer, M
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)



**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-3



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-3

directed to a safety system in a hydraulic apparatus for controlling a front loader comprising a slide valve for supplying fluid to lift cylinders and being characterised in that shutoff valves are located in the supply lines to the lift cylinders which are actuated electrically by a signal generated by the displacement of the slide valve for solving the objective technical problem: Increasing security in the fluid supply line against hose breakage;

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2. claim: 4

directed to a safety system for a front hydraulic apparatus of a work machine comprising a slide valve for supplying fluid to lift cylinders and an accumulator and being characterised in that hose burst valves are located in the connection between the lift cylinders and the accumulator for solving the objective technical problem: Increasing security in the connection line between an accumulator and hydraulic cylinders against hose breakage;

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ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 05 00 2110

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on the European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-05-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4522109	A	11-06-1985	NONE	
-----				
EP 0404271	A	27-12-1990	NL 8901572 A	16-01-1991
			AT 97972 T	15-12-1993
			DE 69004866 D1	13-01-1994
			DE 69004866 T2	21-04-1994
			EP 0404271 A1	27-12-1990
-----				
US 2004006980	A1	15-01-2004	DE 10227966 A1	08-01-2004
			CA 2433120 A1	22-12-2003
			EP 1375926 A1	02-01-2004
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JP 60059236	A	05-04-1985	JP 1661127 C	19-05-1992
			JP 3022486 B	27-03-1991
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