

Title (en)
BENT AXIS TYPE HYDRAULIC ROTATING MACHINE

Title (de)
HYDRAULISCHE SCHRÄGACHSENROTATIONSMASCHINE

Title (fr)
MACHINE TOURNANTE HYDRAULIQUE DU TYPE À AXE COUDÉ

Publication
EP 2587058 A1 20130501 (EN)

Application
EP 11798014 A 20110614

Priority
• JP 2010142347 A 20100623
• JP 2011063586 W 20110614

Abstract (en)
A surface treatment layer (15) is formed to cover a surface side of a cylinder block (6) including a center hole (7) and a plurality of cylinder holes (8) wholly. The surface treatment layer (15) is constituted by a nitriding layer (17) formed by executing nitride-based heat treatment to a base material (16) of the cylinder block (6) formed using an iron-based material such as cast iron or cast steel and a chemical conversion film (18) of manganese phosphate. The chemical conversion film (18) forms a chemical conversion film of manganese phosphate on a surface side of the nitriding layer (17). The chemical conversion film (18) is excellent in initial fitting properties to a sliding material such as a tapered piston (10). Therefore, wear in a contact section between each of cylinder holes (8) of the cylinder block (6) and the tapered piston (10) can be suppressed.

IPC 8 full level
F04B 1/24 (2006.01); **F03C 1/24** (2006.01); **F04B 53/00** (2006.01); **F04B 53/14** (2006.01); **F04B 53/16** (2006.01)

CPC (source: EP)
F04B 1/2021 (2013.01); **F04B 1/24** (2013.01); **F04B 27/0813** (2013.01); **F04B 27/0826** (2013.01); **F04B 53/162** (2013.01); **F05C 2203/083** (2013.01); **F05C 2253/12** (2013.01); **F05C 2253/24** (2013.01)

Cited by
US11396872B2; EP3495657A4

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)
EP 2587058 A1 20130501; **EP 2587058 A4 20180103**; **EP 2587058 B1 20200325**; CN 102812245 A 20121205; CN 102812245 B 20151007; JP 2012007509 A 20120112; JP 5425722 B2 20140226; WO 2011162128 A1 20111229; WO 2011162128 A9 20120308

DOCDB simple family (application)
EP 11798014 A 20110614; CN 201180014548 A 20110614; JP 2010142347 A 20100623; JP 2011063586 W 20110614