

Title (en)

Vacuum pump stage with special surface roughness yielding a lower gas friction

Title (de)

Vakuumpumpstufe mit besonderer Oberflächenrauigkeit zur Reduzierung der Gasreibung

Title (fr)

Étage de pompe à vide avec rugosité de surface particulière engendrant une réduction du frottement gazeux

Publication

EP 2835536 A3 20150506 (DE)

Application

EP 14176840 A 20140714

Priority

DE 102013108482 A 20130806

IPC 8 full level

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CPC (source: EP)

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Citation (search report)

- [A] EP 1724469 A2 20061122 - VARIAN INC [US]
- [XY] FR 2619867 A1 19890303 - PFEIFFER VAKUUMTECHNIK [DE]
- [XAY] EP 0568069 A2 19931103 - VARIAN ASSOCIATES [US]
- [X] DE 202004010821 U1 20041223 - BOC GROUP PLC [GB]
- [X] DE 3317868 A1 19841122 - LEYBOLD HERAEUS GMBH & CO KG [DE]
- [XA] JP 2009062812 A 20090326 - OSAKA VACUUM LTD
- [XI] GB 2298457 A 19960904 - HITACHI LTD [JP]
- [X] DE 102005008388 A1 20060831 - BECKER GMBH & CO KG GEB [DE]
- [XY] JP H01267390 A 19891025 - DAIKIN IND LTD
- [XI] JP S63147990 A 19880620 - DAIKIN IND LTD
- [X] EP 0805275 A2 19971105 - BOC GROUP PLC [GB]
- [A] EP 2253851 A2 20101124 - PFEIFFER VACUUM GMBH [DE]
- [X] DE 3932228 A1 19900405 - HITACHI LTD [JP]
- [X] US 2005118013 A1 20050602 - DOWNHAM STEPHEN E [GB]
- [I] US 5709528 A 19980120 - HABLANIAN MARSBED [US]
- [Y] MARYLAND METRICS: "SURFACE ROUGHNESS TABLES", 1 January 1998 (1998-01-01), XP055155944, Retrieved from the Internet <URL:http://mdmetric.com/pdf/surfruff.pdf> [retrieved on 20141201]

Cited by

US11542935B2; EP3594498B1

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

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 2835536 A2 20150211; **EP 2835536 A3 20150506**; **EP 2835536 B1 20181128**; DE 102013108482 A1 20150212; EP 3088743 A1 20161102; EP 3088743 B1 20191225; EP 3104014 A1 20161214; EP 3104014 B1 20210929

DOCDB simple family (application)

EP 14176840 A 20140714; DE 102013108482 A 20130806; EP 16171240 A 20140714; EP 16171251 A 20140714