

Title (en)
Duplex heat exchanger.

Title (de)
Duplex Wärmetauscher.

Title (fr)
Duplex échangeur de chaleur.

Publication
EP 0414433 A2 19910227 (EN)

Application
EP 90308921 A 19900814

Priority
JP 21795989 A 19890823

Abstract (en)
A duplex heat exchanger comprises unit heat exchangers (A, B) which have a plurality of tubes (1, 21) arranged parallel with each other and comprise fins (2, 22) each interposed between two adjacent ones of such tubes, opposite ends of each tube being connected to a pair of headers (3, 4 and 23, 24) in fluid connection therewith. The unit heat exchangers are closely juxtaposed to each other fore and aft in a direction of air flow. Coolant circuits of the unit heat exchangers are connected either in series or in parallel with each other.

IPC 1-7
F28D 1/04; F28D 1/053; F28F 9/00

IPC 8 full level
F25B 39/00 (2006.01); **F28D 1/04** (2006.01); **F28D 1/053** (2006.01); **F28F 9/02** (2006.01); **F28F 9/26** (2006.01)

CPC (source: EP)
F28D 1/0417 (2013.01); **F28D 1/05391** (2013.01); **F28F 9/0212** (2013.01); **F28F 9/262** (2013.01); **F28D 2021/0084** (2013.01);
F28D 2021/0085 (2013.01); **F28D 2021/0089** (2013.01); **F28F 2215/04** (2013.01); **F28F 2215/12** (2013.01)

Cited by
DE10241635A1; EP0563471A1; EP1568960A3; CN103471439A; DE9400687U1; CN107036465A; FR2681419A1; EP1331463A3;
DE19719252A1; DE19719252C2; EP1881288A1; FR2682160A1; EP0702200A3; US5622219A; US5685366A; US5901782A; CN112664323A;
EP0754579A3; EP0769665A3; US2017347526A1; US10477771B2; EP4092369A1; WO9850745A1; US7392837B2; WO2012041441A2;
US11274838B2; US7650934B2; EP3141859A1; EP3572743A4; DE102005040607A1; EP0657315A1; EP0516413A1; US5379834A;
DE1975886B4; WO2004053411A1; WO2005075913A1; WO03040640A1; WO0161263A1; WO2005066565A1; WO2005050115A1;
US11280551B2; US11624564B2; EP1070929A2; DE202010000951U1; US8091617B2; EP2430385B1; EP0677716B1

Designated contracting state (EPC)
AT DE FR GB IT SE

DOCDB simple family (publication)
EP 0414433 A2 19910227; EP 0414433 A3 19910508; EP 0414433 B1 19950524; AT E123138 T1 19950615; AT E155233 T1 19970715;
AU 6122990 A 19910228; AU 637807 B2 19930610; CA 2023499 A1 19910224; CA 2023499 C 20021029; DE 69019633 D1 19950629;
DE 69019633 T2 19951130; DE 69031047 D1 19970814; DE 69031047 T2 19980205; EP 0643278 A2 19950315; EP 0643278 A3 19950524;
EP 0643278 B1 19970709; JP 3030036 B2 20000410; JP H0384395 A 19910409

DOCDB simple family (application)
EP 90308921 A 19900814; AT 90308921 T 19900814; AT 94117701 T 19900814; AU 6122990 A 19900822; CA 2023499 A 19900817;
DE 69019633 T 19900814; DE 69031047 T 19900814; EP 94117701 A 19900814; JP 21795989 A 19890823