VORTEX HDB

120/140mm CF-V12H/CF-V14H

Best cooling efficiency & super silent performance

Features

HIGH-VORTEX-AIRFLOW WITH TURBINE BLADE & FRAME PATENTED DESIGN
Optimum airflow, air pressure & extremely silent performance

DIVERSION GROOVE BLADE DESIGN
Innovative blade design focus air flow & optimum cooling efficiency (Patent)

ANTI-VIBRATION PAD DESIGN
Reduce the vibrations efficiently & silent operation

AERO-DYNAMICAL DESIGN
Air-inlet with optimal aero-dynamical design reducing noisy air turbulences

HYDRO-DYNAMIC-BEARING TECHNOLOGY
HDB runs more smoothly with no friction, make it quietly & durability(MTBF300,000hrs)

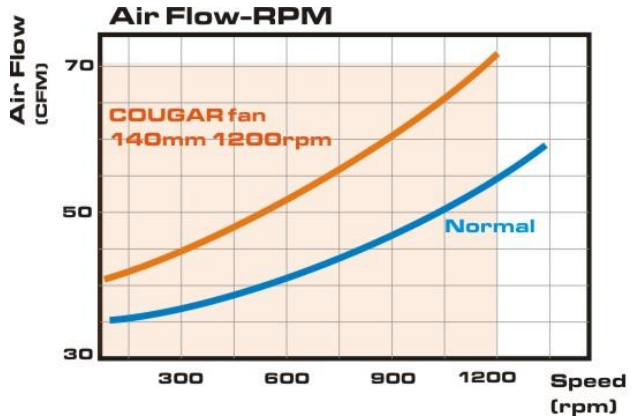
TOOL-LESS FIXED PINS
Rubber fixed pins also reduces vibrations (fan run more quietly) and Tool-less makes it easy to mount, with no tools required

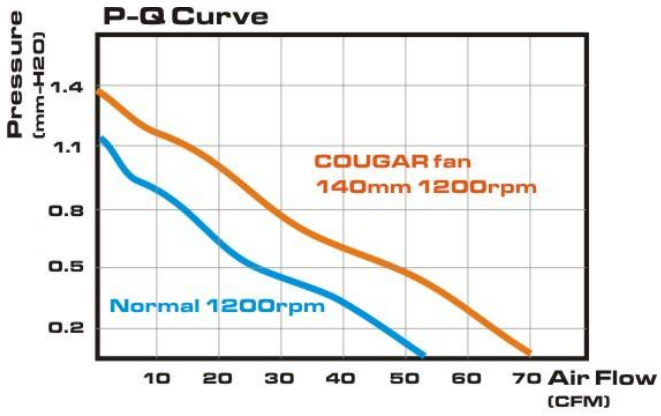
Spec.

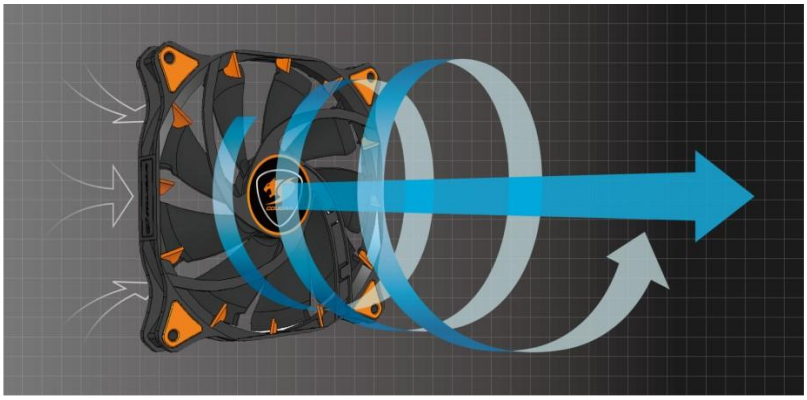
Model	CF-V14H		CF-V12H
Marketing name	VORTEX HDB 140		VORTEX HDB 120
Dimensions	140 x 140 x 25		120 x 120 x 25
Voltage	12VDC		12VDC
Speed	1200rpm	700rpm (w/ adapter)	1200
Air flow @ 12V (CFM, m3/h)	70.5 / 119.8	55.5 / 94.3	60.4 / 102.6
Air pressure @ 12V (mm H2O)	1.38	0.74	1.73
Noise	19.2dB	16.4dB	17.7dB
Bearing type	HDB (Hydro-Dynamic Bearing)		
Connector	3pin		
Cable length	450		
Accessories	3 to 4pin adapter		3 to 4pin adapter
	Fan speed adjustable cable		Tool-less fixed pins
	Tool-less fixed pins		Screws
	Screws		
Lifetime L10 (hours / 25°C)	300000		

HIGH-VORTEX-AIRFLOW WITH TURBINE BLADE & FRAME PATENTED DESIGN

Optimum airflow, air pressure & extremely silent performance

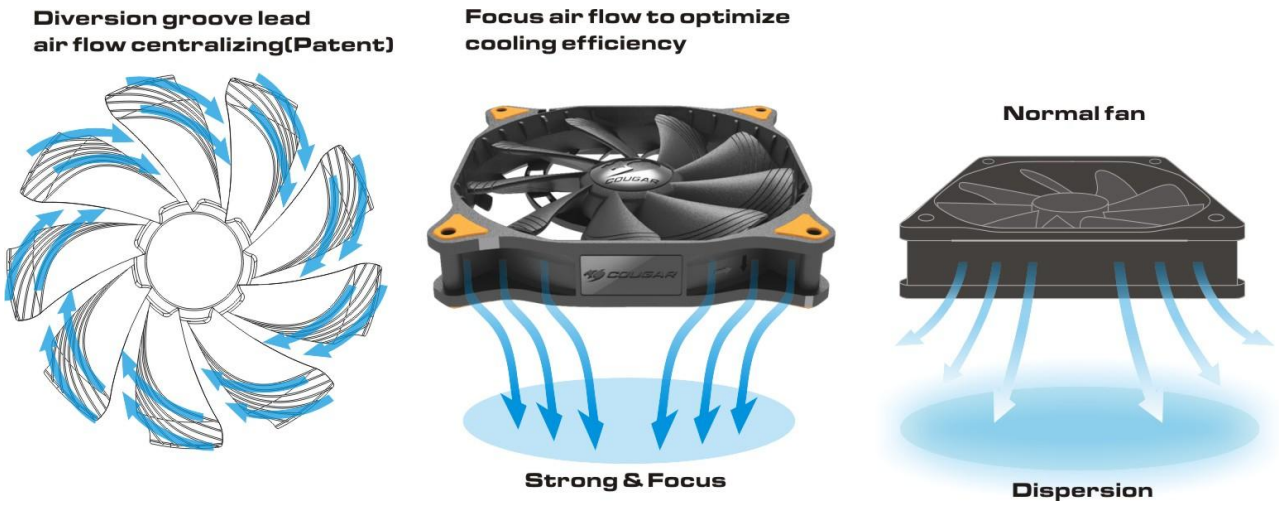






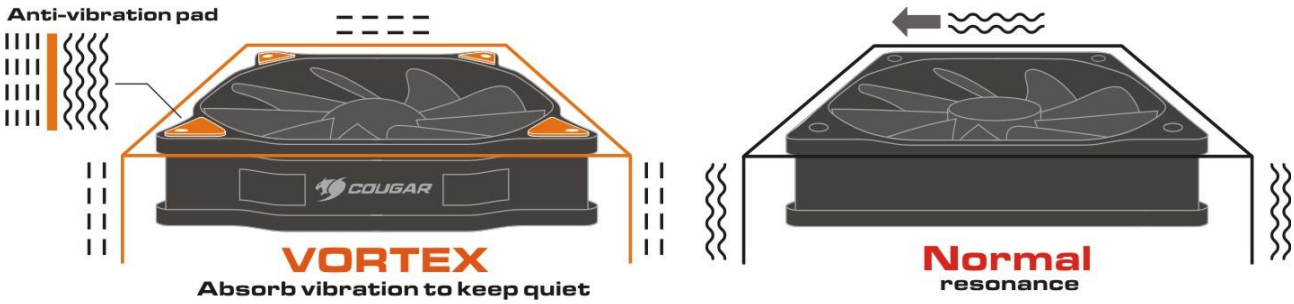
DIVERSION GROOVE BLADE DESIGN

Innovative blade design focus air flow & optimum cooling efficiency (Patent)



ANTI-VIBRATION PAD DESIGN

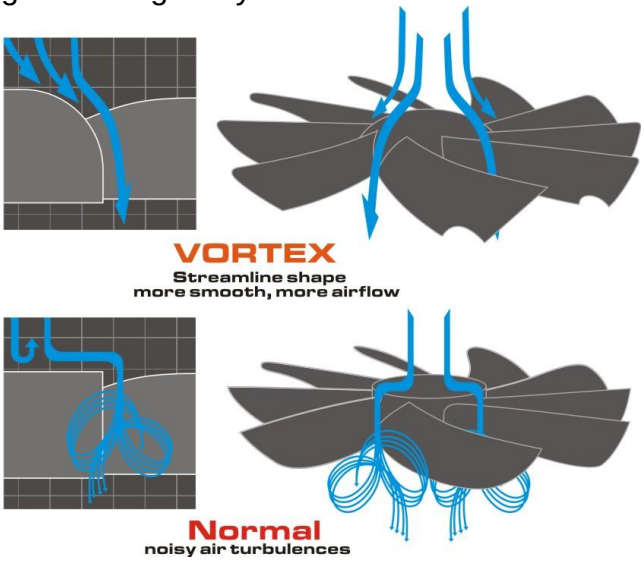
Reduce the vibrations efficiently & silent operation



AERO-DYNAMICAL DESIGN

Air-inlet with optimal aero-dynamical design reducing noisy air turbulences

Central Hub



HYDRO-DYNAMIC-BEARING TECHNOLOGY

We defined HDB to Hydro Dynamic Bearing. An oil seal design that has a higher reliability and advantage than conventional fan motor design.

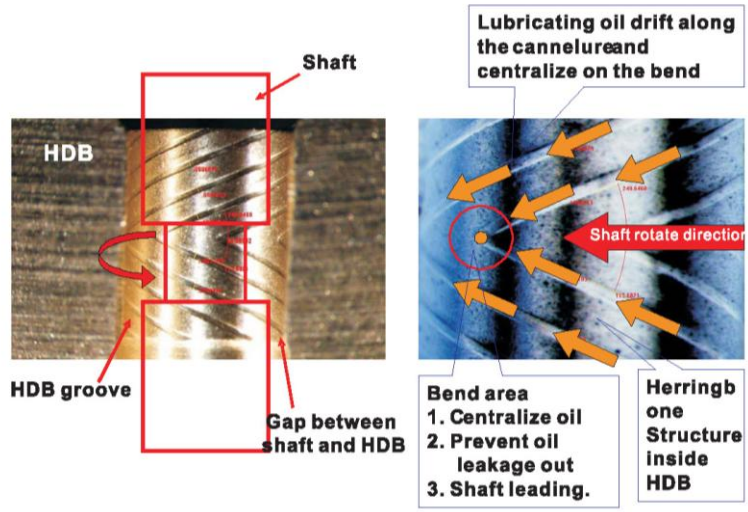
1. High revolution precision, low vibration noise
2. Fluid seal design provide extremely long life span
3. Surface tension effect, runs more smoothly with no friction, extremely quiet

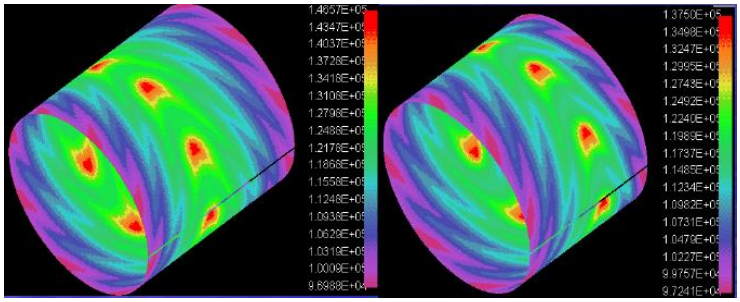
Fluid seal design is achieved through the use of oil surface tension and hydrodynamic pumping forces provided by grooves. Bend area is centralized oil and prevented oil leakage out of motor (oil leakage is main problem of sleeve bearing, short life time) . Friction between shaft and HDB will be down due to herringbone structure reaction(friction between the metal is disadvantage of ball bearing, noise & waste heat problem). So HDB conquer sleeve & ball bearing disadvantage to become more reliable & quiet technology for Top-notch fan. Such design concept is successful and applicative on HDD, and we can see a reliability application in it.

HDB, Ball, & Sleeve comparison

	Sleeve	Ball	Hydro-Dynamic
revolution precision	mediocre	good	best
vibration noise	mediocre	loud	quiet
life span (hrs)	30,000	50,000	300,000
waste heat	high	high	low
Cost	low	high	high

HDB Design Principles





Oil surface tension and hydrodynamic pumping forces provided by grooves, no friction, extremely quiet

SAFETY & EMI CERTIFIED