Enhanced Vibrex 2000 Plus (EV2K+)

The cost-effective balancer/analyzer with superior performance

Honeywell

Enhanced Vibrex 2000 Plus (EV2K+) Digital Dynamic Balancer/Analyzer System

The cost-effective balancer/analyzer for fixed-wing propeller balancing or helicopter rotor track and balance with superior performance. The EV2K+ is a vibration analysis and balancing tool that rapidly and accurately acquires and analyzes aircraft and engine vibration data. It uses that data to calculate balance solutions and to analyze aircraft vibration levels across a broad frequency range.

This balancer/analyzer acquires accurate fixed-wing and helicopter vibration readings and allows you to balance the propellers or blades using the integrated display – without the use of paper charts, or you can use any of the 150 available Honeywell or factory paper charts. Beyond that, the unit is also capable of balancing shafts and blowers, making the EV2K+ a complete balancing tool.

The spectrum analyzer provides the operator with an overview of rotor and drive train and engines with component frequencies of 600,000 rpm or less, and balance speeds below 30,000 rpm.

EV2K+ Features:
- Fixed-wing propeller balance
- Helicopter rotor track & balance (RT&B)
- Vibration and spectrum analysis
- Four channel input for multiple balance jobs (with optional cables)
- Two tachometer channels (mag pickup and photocell)
- Built-in configurations for popular helicopter models – can be modified and saved to meet user requirements or to support other helicopters
- Automatic weight sensitivity correction
- Uses common rechargeable or disposable D-cell batteries
- Strobex or FasTrak for helicopter blade track
- Usable with all legacy Polar Charts
- ASCII output (non proprietary)
- Auto shutoff
- Auto tuning
- Display, review and print measurements and solutions
- Built-in-test (BIT) check and self calibration on power up
- Battery power indicator
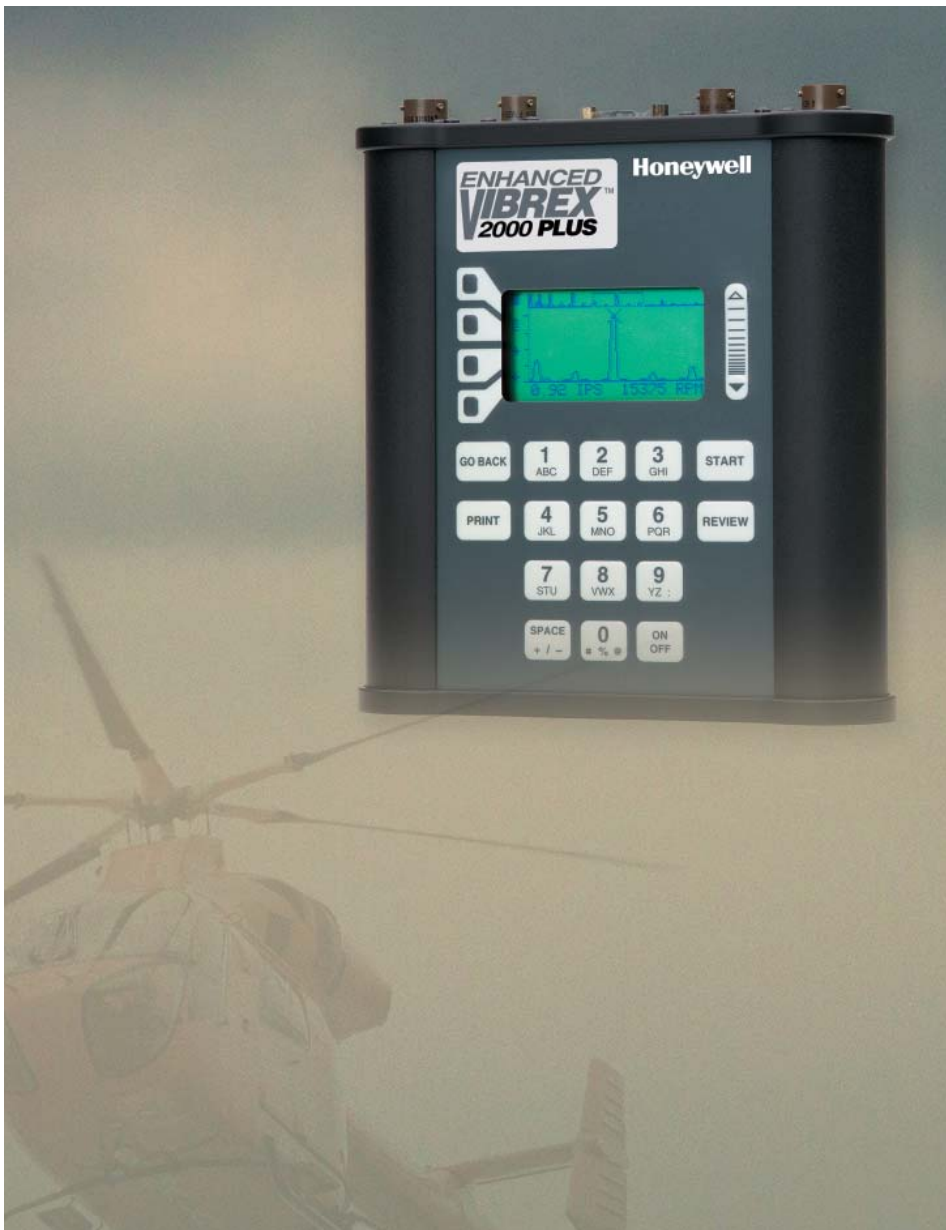
Easy to understand menus allow the user to initiate and complete up to four different balancing jobs at one time. The EV2K+ will automatically correct for the propeller/rotor response to weight changes and this correction can be saved for future balancing exercises. A "first round hit" solution means less vibration, even on the first adjustment. Two azimuth channels have the capability to support magnetic pickup, photocell and FasTrak® optical tracker.

With the use of optional interface cables, the EV2K+ can support up to four vibration inputs.

```
 RUN 1 PROP MEAS
31JUL13 12:26:12 #1A
 [35%TQ]
         480 RPM
   0.94 IPS @ 5:39
     ID:N1234  -1
 REDO MEAS
 solution Push START
```

```
= ADD TRACK CONFIG =
 Select from Factory
    Configurations
    (Used: 1 of 25)
#PREVIOUS
<AS-350 Gnd Factory>
#NEXT
    to add, Push START
```

```
> PROPELLER BALANCE
> HELICOPTER BALANCE
> TRACK & BALANCE
> SPECTRUM ANALYSIS
next menu, Push START
```

```
# CHOOSE A/C MODEL
 <AS-350B1        >
> ADD AIRCRAFT MODEL
> EDIT AIRCRAFT MODEL
    if ok, Push START
```

```
 0.92 IPS   7680 RPM
```

All measurements, sensitivities, solutions, and annotations are stored in memory and can be reviewed on the instrument, printed on the optional portable thermal printer, or downloaded to a personal computer.

The EV2K+ comes with pre-programmed software for the following helicopter types:

- A-109E Power
- A-119
- AS-332
- AS-350B
- AS-350B1
- AS-355
- AS-365
- AW-139
- BK-117

- BL-206B
- BL-206L
- BL-212
- BL-222
- BL-407
- BL-427
- BO-105
- EC-120
- EC-130

- EC-135
- EC-145
- Enstrom x80
- MD-500
- MD-520N
- R-22/R-44
- S-61
- SW-300
- UH-1H

The EV2K+ comes with all the software, accessories and instructions for your particular application in a rugged, portable carrying case. Ground software includes Vibrex 2000 Download and Vibrex 2000 Plot. An aircraft kit will normally consist of the following:
• Main Kit – Main accessory kit.
• FasTrak Kit – For helicopter main rotor blade tracking.
• Application Kit – Consists of the custom brackets and cables

```
======= EVibrex 2000+ v4.1Ch =========
===== Printed on: ddMMMyy hh:mm:ss =====

HELICOPTER BALANCE PRINT

++++++++++++++ SESSION  1 ++++++++++++++

AIRCRAFT: AS-350B1
COMPONENT: Main Rotor

     ------ RUN: 1 [        ] ------

MEAS  CH  IPS  ANGLE  RPM      TIME
===== == ===== ===== ==== ===========
M/R V 2A  0.22  9:38    385 14Apr13 09:34

SOLUTION OPTIONS
===============
REGIME: 100% Ground
USED: Pitch Link
SOLVE TO MINIMUM VIB OF: 0.0 IPS
EXCLUDE: None
RESPECT MANUFACTURER'S LIMITS: N/A (n/a is optional if easy)
AUTO CORRECTION: OFF

ADJUSTMENTS
===========
      Pitch Link
      (in flats)
BLU     0.6
YEL    -----
RED    -----

PREDICTION: 0.0 IPS
Adjustments NOT MADE by user

     ------ RUN: 2 [        ] ------

MEAS  CH  IPS  ANGLE  RPM      TIME
===== == ===== ===== ==== ===========
M/R L 1A  0.98  9:38    385 14Apr13 09:34

SOLUTION OPTIONS
===============
REGIME: 100% Ground
USED: Weight
SOLVE TO MINIMUM VIB OF: 0.0 IPS
EXCLUDE: None
RESPECT MANUFACTURER'S LIMITS: Yes
AUTO CORRECTION: ON (1.00 @ 12:00)
```

EV2K + Specifications:

Physical	
• Dimensions:	7.38" H x 7.25" W x 1.81" D (18.75 cm x 18.42 cm x 4.6 cm)
• Weight:	3.5 lbs. (1.58 kg) (with batteries) nominal
• Power Requirements:	3.0 - 6.4 Vdc 250mA (internal batteries)
• Battery Life:	40 hrs (typical)

Interfaces	
• Vibration Sensor:	2 ea. Velocimeter (19 mV/ips sensitivity) (4 ea. with optional cables)
• Magnetic pickup / Tachometer:	2 ea. Pulse input, magnetic pickup or logic type
• Accessory Power:	4 ea. D-cell batteries. Reverse polarity circuit protected and fused
• Portable Computer or Printer:	1 RS-232 Serial, 9600 baud

Balance Measurements	
• Phase Accuracy:	± 15°
• Balance Frequency Range:	120 to 30,000 rpm
• Phase Resolution:	2 minutes or 1 degree

Performance	
• Accuracy:	± 0.5dB from 4 Hz to 500 Hz / ± 1dB from 501 Hz to 10 KHz
• Spurious Free Dynamic Range:	>50dB
• Velocimeter Input Ranges:	0 to 380mV peak (20 ips)
• Velocimeter Input Sensitivity:	19mV/ips peak
• High-pass Filter:	3-pole Chebyshev, -3.0 db @ 1.5 Hz
• Mag pickup, Input Freq. Range:	100 - 50,000 rpm
• Mag pickup, rpm Accuracy:	0.15%
• Mag pickup, Input Voltage Range:	0.5 to 12 Volts peak nominal

Spectrum Analysis	
• Analysis Ranges (Fmax, rpm):	1200-600,000
• FFT Resolution:	400 Lines
• Window Type:	Flat top

Environmental	
• Temperature:	0°C to 50°C
• EMI susceptibility and radiated emissions:	Equipment Class Standard EN50081-2
• Industrial Electronic Control CE certified:	Standard EN50082-2