

# HDCM



## Hard Bearing Models : Dynamic Balancing Machines with Micro Processor based measuring panel



Belt Driven



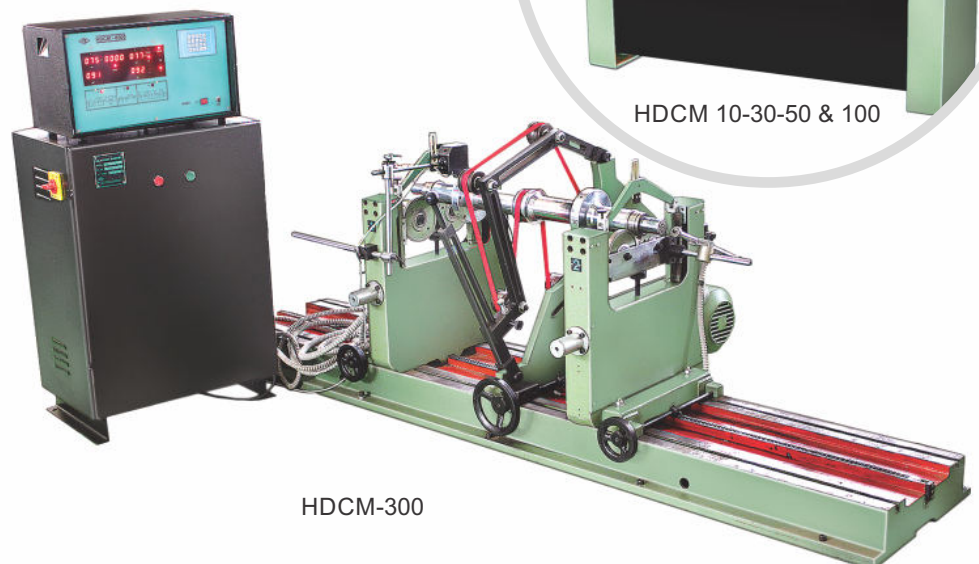
Digital Display &  
Tolerance Indicators



Auto Stop



HDCM 10-30-50 & 100



HDCM-300

Machines Model HDCM are belt driven horizontal type photo scanning Universal Hard Bearing Balancing Machine, provided with microprocessor based measuring panel HDCM-8500 suitable for balancing different shapes of rotors, of electrical machines, Cylinders, fly wheel, rotor of centrifugal pumps and other type of rotating machines.

These machines are very simple in design, No drive coupling/adaptor etc. required to connect to the rotor to be balanced.

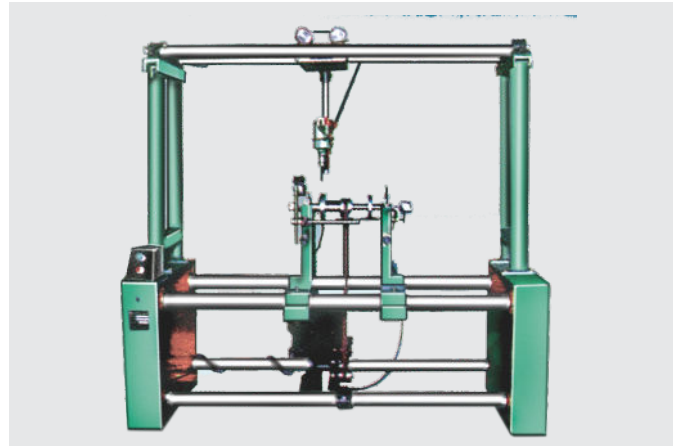
### It has following advantages -

1. Cost saving on manufacturing of precision adaptor to connect drive coupling to rotor.
2. Any rotor can be balanced without losing time in manufacturing of adaptor.
3. The balancing accuracy of rotor not disturbed due to unbalance in drive coupling/adaptor.
4. Belt drive machine are more accurate (about 5 times) as compared to end drive machine.

The machines features a very simple operation. The working cycle is fully automatic. From safety point of view a double press push button starts machine, measures and stores the unbalance values on DPMs for two plane simultaneously and stops machine.

Key board facility provided in measuring panel for correct data feeding of rotor with 1 digit accuracy for its dimensions like A, B, C, R1 & R2. Tolerance limits of both correction planes i.e. +11 & +12 can be feed so that when rotor is balanced within the limits respective LEDs glow up, indicating no further correction necessary.

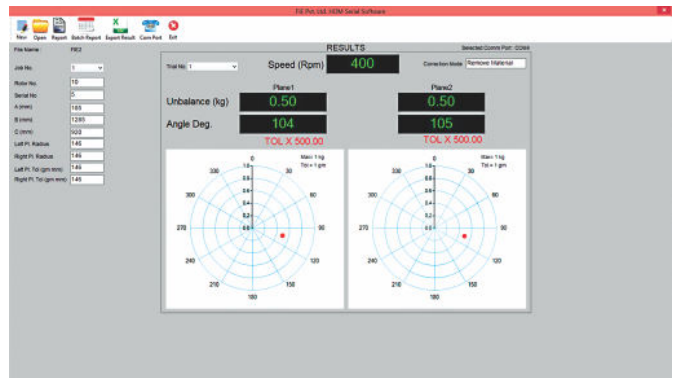
For other details please refer "features of measuring panel HDCM-8500".



Machine provided with Optional Vertical Drilling Attachment.

### Additional Features on Demand

FIE Optional PC Software Package Screens :



| FIE Pvt. Ltd.<br>Yadav-Ichalkaranji                                    |                                   | Test Certificate                  |            |            |            |               |            |            |        |
|--|-----------------------------------|-----------------------------------|------------|------------|------------|---------------|------------|------------|--------|
| File Name : FIE2   | Date : 24-10-2019                 |                                   |            |            |            |               |            |            |        |
| Tested For : Fuel Instruments & Engineers Pvt. Ltd.<br>Address : Yadav |                                   |                                   |            |            |            |               |            |            |        |
| Rotor Id. : Std. Rotor<br>Rotor Spec. : None                           |                                   |                                   |            |            |            |               |            |            |        |
| Rotor Details  |                                   |                                   |            |            |            |               |            |            |        |
| Rotor No. : 10   | A : 185 mm                        | B : 1285 mm                       | C : 920 mm |            |            |               |            |            |        |
|  | Plane1 Radius(R1) : 146 mm        | Plane2 Radius(R2) : 146 mm        |            |            |            |               |            |            |        |
|  | Plane1 Tolerance(TL1) : 146 gm mm | Plane2 Tolerance(TL2) : 146 gm mm |            |            |            |               |            |            |        |
|  | Correction Mode: Remove (-)       |                                   |            |            |            |               |            |            |        |
| Initial Unbalance  |                                   | Final Unbalance                   |            |            |            |               |            |            |        |
| No.  | Sr. No.                           | Date                              | Speed RPM  | Plane 1 gm | Plane 2 gm | Trial Run No. | Plane 1 gm | Plane 2 gm | Remark |
| 1  | 5                                 | 24-10-2019                        | 400        | 500.00     | 500.00     | 3             | 1          | 1          | Ok     |
| Balanced by _____ Witness by _____ Approved by _____                   |                                   |                                   |            |            |            |               |            |            |        |
| Machine Model: HDM-7000<br>Sr. No.: 2019/08/4154                       |                                   |                                   |            |            |            |               |            |            |        |

Test Report

| FIE Pvt. Ltd.<br>Yadav-Ichalkaranji                                       |                                   | Test Certificate                  |            |
|---|-----------------------------------|-----------------------------------|------------|
| File Name : FIE2  | Date : 24-10-2019                 |                                   |            |
| Customer Name : Fuel Instruments & Engineers Pvt. Ltd.<br>Address : Yadav |                                   |                                   |            |
| Rotor Id. : Std. Rotor<br>Rotor Spec. : None                              |                                   |                                   |            |
| Rotor Details   |                                   |                                   |            |
| Rotor No. : 10  | A : 185 mm                        | B : 1285 mm                       | C : 920 mm |
|   | Plane1 Radius(R1) : 146 mm        | Plane2 Radius(R2) : 146 mm        |            |
|   | Plane1 Tolerance(TL1) : 146 gm mm | Plane2 Tolerance(TL2) : 146 gm mm |            |
| Balancing Speed: 400 Rpm  |                                   | Correction Mode: Remove (-)       |            |
| Trial No.: 1  |                                   |                                   |            |
| Unbalance Amt:  | Plane 1<br>0.50 kg                | Plane 2<br>0.50 kg                |            |
| Angle:  | 104 Deg.-<br>TOL X 500.00         | 105 Deg.-<br>TOL X 500.00         |            |
| Trial No.: 3 (Final)  |                                   |                                   |            |
| Unbalance Amt:  | Plane 1<br>1 gm                   | Plane 2<br>1 gm                   |            |
| Angle:  | 25 Deg.-<br>IN TOL                | 354 Deg.-<br>IN TOL               |            |
| Remark: JOB Tested as per BS Standard                                     |                                   |                                   |            |
| Balanced by _____ Witness by _____ Approved by _____                      |                                   |                                   |            |
| Machine Model: HDM-7000<br>Sl. No. : 2019/08/4154                         |                                   |                                   |            |

Test Report

## Standard Features :

### 1) Digital display for unbalance indication

Amount and angle for unbalance for both planes displayed on separate DPMS. Hence linear accuracy is very good as compared to analog meter  $\pm$  digit for amount and  $\pm$  Degree for angle.

### 2) Digital display for RPM indication

A DPM is provided to indicate balancing speed continuously as a standard feature.

### 3) Auto Stop

No necessary to stop machine once started. It stops automatically after stabilization of unbalance results.

### 4) Simultaneous Indication

Amount and Angle of unbalance in both planes displayed simultaneously and remains displayed (Stored) till next run. This totally eliminates operation of plane selector and reduces additional time for stabilization of readings in other plane.

### 5) Key-board

Data of rotor dimensions and balancing tolerance i.e. values of A,B,C, R1,R2,t11,t12 are fed by key operation. Hence accuracy of data feedings accurate upto 1 digit.

### 6) Tolerance Indicators

Separate LEDs are provided for both planes which glow when unbalance is reduced within balancing tolerance.

### 7) Auto-range

Depending upon whether unbalance amount is more or less a respective course or fine range gets automatically selected till rotor gets balanced within tolerance limits.

Multiplier operation is totally eliminated.

### 8) Data Store

Data is provided with 'Self check' mode which checks proper functioning of digital display. LEDs is cyclic operation. This helps immediate fault detection.

### 9) Self Check

Panel is provided with "Self-Check" mode which checks proper functioning of digital displays, LEDs is cyclic operation(optional). This helps immediate fault detection.

## B) Additional Features on demand

### 1) Printer :

A matrix printer can be connected through 'FIE' software. It shows runs till rotor is balanced within balancing tolerance.

### 2) Compensation Indication :

'FIE' software specially developed with 3-99 component indication, is suitable for balancing of rotor with fixed locations for balancing correction.

### 3) Unbalance Correction :

- i) Drill attachment 8mm capacity portable drill with supporting overhead railing.
- ii) Separate drilling attachment 19mm capacity with a vertical drilling head, manual.
- iii) Portable type riveting hammer (piston type) speed 1800 blows/minute, capacity 6mm in aluminum suspended from top with rail.
- iv) Tangential belt drive, in addition to standard (suitable for a particular type of rotor for production balancing).
- v) Longitudinal movement of right hand pedestal by chain & sprocket attachment.

## SPECIFICATIONS :

| MODELS   | UNIT             | HDCM-10            | HDCM-30            | HDCM-50            | HDCM-100           | HDCM-300          | HDCM-1000           |
|--|------------------|--------------------|--------------------|--------------------|--------------------|-------------------|---------------------|
| Weight of Rotors   | kg               | 0.2-10             | 0.3-30             | 0.5-50             | 1-100              | 3-300             | 10-1000             |
| Max. wt. of each pedestal                                    | kg               | 7.5                | 22.5               | 30                 | 75                 | 180               | 600                 |
| Max. diameter of rotor                                       | mm               | 250                | 500                | 500                | 500                | 350               | 800                 |
| Max. distance between bearings                               | mm               | 300                | 1200               | 1200               | 1200               | 2100              | 2400                |
| Min. distance between bearings (drive outside pedestal)      | mm               | 20                 | 50                 | 50                 | 50                 | 150               | 350                 |
| Shaft diameter   | mm               | 5-50               | 5-50               | 5-50               | 15-80              | 20-120            | 25-200              |
| *balancing speed range (n)                                   | RPM              | 750-3000           | 500-2000           | 500-2000           | 400-1600           | 300-1500          | 300-1500            |
| Power of drive motor   | HP               | 0.33               | 0.75               | 0.75               | 1.5                | 3                 | 7.5                 |
| Acceleration capability ( $gs^2 n^2$ )                       | $kgm^2 n^2$      | $0.29 \times 10^6$ | $0.37 \times 10^6$ | $0.37 \times 10^6$ | $0.88 \times 10^6$ | $3.9 \times 10^6$ | $14.12 \times 10^6$ |
| Min. unbalance mass measured                                 | g                | 0.01               | 0.1                | 0.1                | 0.1                | 0.1               | 0.1                 |
| Max. unbalance measured                                      | kg               | 0.4                | 4                  | 4                  | 4                  | 4                 | 4                   |
| Unbalance reduction ratio                                    | %                | 95                 | 95                 | 95                 | 95                 | 95                | 95                  |
| Min. achievable unbalance per rotor wt. (for max. rotor wt.) | gmm/kg of micron | 0.2                | 0.2                | 0.2                | 0.2                | 0.2               | 0.2                 |

- The balancing speed depends upon selection of the rotor diameter, where drive is to be given and the motor pulley diameter.
- All the machines above operate on mains supply of 400 to 440 V, 3phase, 50 Hz.
- Due to constant R&D, specifications and features are subject to change without notice. The dimensions given above are approximate.

**\* PC & Printer is not in our standard scope of supply.**





Hard Bearing Models  
Dynamic Balancing Machines with  
Micro Processor based measuring panel

**HDCM**



Manufactured By :

**Fuel Instruments & Engineers Pvt. Ltd.**

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