Condition Monitoring Custom Products

CMCP601 Demonstration Rotor Kit Series
Simulation of Vibration and Rotor Position Signals

Capabilities

- Critical Speed (First Critical Only)
- Frequency Based Signals
- Time-Based Signals
- Orbital Analysis
- Balancing
- Runout
- Rotor Bow
- Identify Rotor Critical Speeds
- Shaft Relative Signals
- Resonance
- Amplitude Factor
- Rotor Dynamic Studies
- Phase Signals

Typical Applications
In Classroom or Laboratory to demonstrate the phenomena found in large rotating equipment by altering parameters such as speed, weight and to induce malfunctions such as unbalance, shaft bow or rub and misalignment.

Description
The CMCP601 Rotor Kits were developed as a small working example of a real machine where vibration signals may be simulated under realistic circumstances. The CMCP601 comes in two versions; a 16" (406.4mm) short base kit and a 31" (787.4mm) long base kit. Both versions come with a precision speed controller and a rotor kit complete with a motor, sleeve bearing stands, shaft, coupling, mass and probe mounting brackets. The CMCP601-01 Short Base kit allows for single plane balancing while the CMCP601-02 Long Base kit allows for dual plane balancing.
Accessories such as ball bearing stands, thrust and eccentricity measurement rackets, travel cases, safety covers, and sensors kits are also available.
A variety of transducers can be installed to provide vibration signals. These signals can be used to train vibration analysts or maintenance personnel to troubleshoot actual vibration transducer systems or vibration signals. The Rotor Kit using sleeve-type bearings is primarily studied using time based analysis techniques such as time waveforms, orbits, and shaft position plotting, phase, and mode shape analysis. With the optional ball bearing, an FFT-type instrument is useful to study the frequencies generated by the bearing. The standard Rotor Kit is supplied with a detailed workbook with example experiments, a speed controller, pre-lubricated sleeve bearings, balance weights, and a rotor mass drilled and tapped with balance weight locations.

Technical Performance
CMCP601 Standard Motor/Controller Specifications

Power:	110-220VAC 50/60 Hz (Supplied with Standard USA Power Cable)
Current:	1.5A
Motor Type:	Brushed DC Motor
Speed:	0-11,500 RPM (Shown as 0-100%)
Adjustments:	Acceleration and Deceleration Rate, Minimum and Maximum RPM

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CMCP601-01 Short Base Rotor Kit Specifications

Overall Dimensions:	16” x 4” x 5” (406.4 x 101.6 x 127mm)
Weight:	28 Lbs. (12.7 kg)
Max. Distance Between Bearing Stands:	8.75” (222.25mm)
Parts Included:	16” Short Base Frame, 2x Sleeve Bearing Stands, 10.25” (260.35mm) Short Shaft, Mass (Balancing Wheel), Coupling with Keyway, Single Probe Bracket, Dual Probe Bracket, Motor, Controller and Balancing Weight Kit

CMCP601-02 Long Base Rotor Kit Specifications

Overall Dimensions:	31” x 4” x 5” (787.4 x 101.6 x 127mm)
Weight:	36 Lbs. (16.32kg)
Max. Distance Between Bearing Stands:	23.25” (590.55mm)
Parts Included:	31” Long Base Frame, 2x Sleeve Bearing Stands, 25.25” (641.25mm) Long Shaft, 2x Mass’ (Balancing Wheels), Coupling with Keyway, Single Probe Bracket, Double Probe Bracket, Motor, Controller and Balancing Weight Kit

Sleeve Bearing Stand Specifications

Overall Height:	3.0” (76.2mm)
Shaft Centerline:	2.0” (50.8mm)
Width:	1.0” (25.4mm)
Weight:	0.65 Lbs (0.295kg)
Shaft Clearance:	5 mils (0.127mm) ±0.001”
Bearing Material:	Oil Embedded Oilite® Flanged Sleeve Bearing
Lubrication Type:	SAE 30 Oil
Sensor Mounting Holes:	Three ¼”-28 UNF x 0.5” Deep, 45° Apart
Mounting:	Two 10-32x1.0” Allen Screws (Included with Kit)

Anti-Friction Bearing Stand Specification

Overall Height:	3.0” (76.2mm)
Shaft Centerline:	2.0” (50.8mm)
Width:	1.0” (25.4mm)
Weight:	0.78 Lbs (0.354kg)
Shaft Clearance:	2 mils (0.051mm) ±0.001”
Bearing Material:	6002 Steel Single Row Double Shielded Ball Bearing
Maximum Speed:	24,000 RPM
Bearing Lubrication:	Mobil Polyrex EM Grease Filled
Sensor Mounting Holes:	Three ¼”-28 UNF Through Holes, 45° Apart
Mounting:	Two 10-32x1.0” Allen Screws (Incuded)

Thrust and Eccentricity Block Specification

Overall Height:	3.0” (76.2mm)
Shaft Centerline:	2.0” (50.8mm)
Width:	0.75” (19.0mm)
Thrust Mounting Hole:	¼”-28 UNF Through Hole

Intended Thrust Position Target: Balancing Wheel (Perpendicular to Wheel)
Eccentricity Mounting Hole ¼”-28 UNF Through Hole
Intended Eccentricity Target: Shaft (Perpendicular to Shaft)

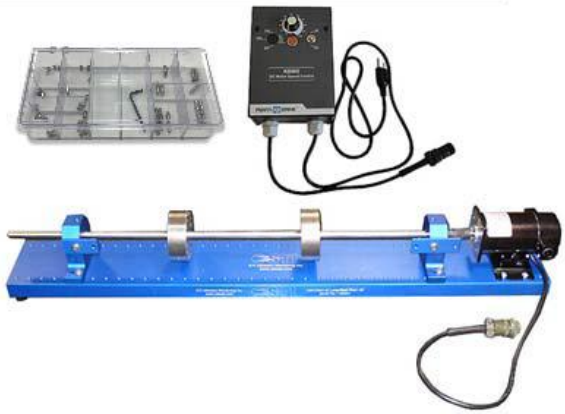
Weight:	0.5 Lbs. (0.227kg)

Shown above: CMCP601-01 Short Base Rotor Kit in CMCP601-CC-S Hard Travel Case

Ordering Information

CMCP601	-XX	Description
	-01	Complete Short Base Rotor Kit
	-02	Complete Long Base Rotor Kit

CMCP601-01 Short Base Rotor Kit



CMCP601-02 Long Base Rotor Kit

Accessories

CMCP601-REB
Rolling Element (Ball) Bearing Stand

CMCP601-TEB
Thrust/Eccentricity Measurement Bracket

CMCP601-CC-S
Hard Travel Case for Short Base Kit

CMCP601-CC-L
Hard Travel Case for Long Base Kit

CMCP601-C-SB Plexiglass Safety Cover for Short Base Kit

CMCP601-C-LB Plexiglass Safety Cover for Long Base Kit

CMCP601-SB Spare Short Probe Bracket

CMCP601-LB Spare Long Probe Bracket

CMCP601-EP-1 Eddy Probe Set, 200mV/mil, 5mm,
Includes Proximitor and Eddy Probe with 1 Meter Cable

CMCP780A Compact Accelerometer,
Side Exit, 100mV/g, 2 Pin MS 5015 Connector

CMCP601-WKF Weight Kit Refill

CMCP602LST-05 Accelerometer Extension Cable,
1 Meter Long, Blunt Cut
(See CMCP602 Datasheet for more Options)

CMCP300P 4 Channel Sensor Power and Interface Module, for +24V, -24V or IEPE Driven Sensors,
DIN Rail mountable

CMCP300P-PLATE-L Mounting Plate
Large, 5x15”, with Din Rail
(For up to 2 CMCP300P’s and 7 Proximitors)

CMCP515-0625 Power Supply
Universal 24 VDC, 625mA (0.625A) Capability