

### Experiment no 09.

**AIM:** To conduct experiment of trifilar suspension.

**APPARATUS REQUIRED:** Main frame, Trifilar suspension, Weights, Stopwatch, Thread.

#### INTRODUCTION:

**Trifilar Suspension (Torsional Pendulum) :-** It is also used to find the moment of inertia of a body experimentally. The body (say a disc or flywheel) whose moment of inertia is to be determined is suspended by three long flexible wires A, B and C, as shown in fig.-b. When the body is twisted about its axis through a small angle  $\theta$  and then released, it will oscillate with simple harmonic motion. Trifilar suspension is a disc of mass  $m$  (weight  $w$ ) suspended by three vertical cords, each of length  $l$ , from a fixed support. Each cord is symmetrically attached to the disc at the same distance  $r$  from the mass of the disc.

#### THEORY:

The disc is now turned through a small angle its vertical axis, the cords become inclined. On being released the disc will perform oscillations about the vertical axis. At any instant

Let:  $\theta$  = angular displacement of the disc

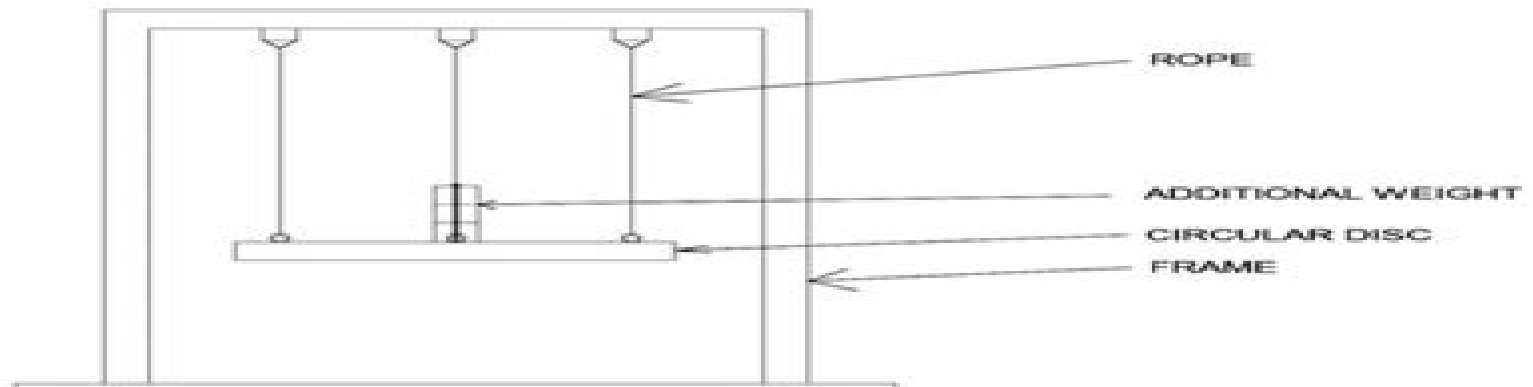
$F$  = tension in each cord  $= w/3$

Inertia torque  $= I \times \alpha$

Restoring torque  $= 3 \times \text{horizontal component forces of each string} \times r$

Inertia torque = restoring torque

### TRIFILAR



# Mechanical Vibration Lab Manual

**Didier Musso**



## **Mechanical Vibration Lab Manual:**

This book delves into Mechanical Vibration Lab Manual. Mechanical Vibration Lab Manual is an essential topic that needs to be grasped by everyone, from students and scholars to the general public. The book will furnish comprehensive and in-depth insights into Mechanical Vibration Lab Manual, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:
    - Chapter 1: Introduction to Mechanical Vibration Lab Manual
    - Chapter 2: Essential Elements of Mechanical Vibration Lab Manual
    - Chapter 3: Mechanical Vibration Lab Manual in Everyday Life
    - Chapter 4: Mechanical Vibration Lab Manual in Specific Contexts
    - Chapter 5: Conclusion
  2. In chapter 1, this book will provide an overview of Mechanical Vibration Lab Manual. This chapter will explore what Mechanical Vibration Lab Manual is, why Mechanical Vibration Lab Manual is vital, and how to effectively learn about Mechanical Vibration Lab Manual.
  3. In chapter 2, this book will delve into the foundational concepts of Mechanical Vibration Lab Manual. This chapter will elucidate the essential principles that need to be understood to grasp Mechanical Vibration Lab Manual in its entirety.
  4. In chapter 3, the author will examine the practical applications of Mechanical Vibration Lab Manual in daily life. The third chapter will showcase real-world examples of how Mechanical Vibration Lab Manual can be effectively utilized in everyday scenarios.
  5. In chapter 4, the author will scrutinize the relevance of Mechanical Vibration Lab Manual in specific contexts. This chapter will explore how Mechanical Vibration Lab Manual is applied in specialized fields, such as education, business, and technology.
  6. In chapter 5, this book will draw a conclusion about Mechanical Vibration Lab Manual. This chapter will summarize the key points that have been discussed throughout the book.
- The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. It is highly recommended for anyone seeking to gain a comprehensive understanding of Mechanical Vibration Lab Manual.

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