# Chapter 16
# ROTARY SOLENOID, LEDEX, TYPE 312 BD

## LIST OF CONTENTS

| | Para. |
|---|---|
| *Introduction* | 1 |
| **Description** | 2 |

## LIST OF ILLUSTRATIONS

| | Fig. |
|---|---|
| *Rotary solenoid, Type 312 BD* | 1 |
| *Exploded view of rotary solenoid* | 2 |
| *Operation of rotary solenoid* | 3 |

## LEADING PARTICULARS

| | |
|---|---|
| **Rotary solenoid, Type 312 BD** | **Ref. No. 5CW/5366** |
| *Operating voltage* | 24 *d.c.* |
| *Direction of rotation* | *Right-hand* |
| *Angular stroke* | 35 *deg.* |
| *Coil resistance at 20 deg. C* | 7·72 *ohms* |
| *Current on nominal voltage* | 3·1 *amp.* |
| *Length of leads* | 10 *in.* |
| *Weight* | 9 *oz.* |

### Introduction

**1.** The rotary solenoid, Type 312 BD, is similar to those incorporated in Ledex circuit selectors and stepping relays, which are covered in A.P.4343C, Vol. 1, Book 2, Sect. 3.

## DESCRIPTION

**2.** The unit (fig. 1) is provided with a slotted extension shaft, for engagement with the equipment to be controlled. Various operating data are listed under Leading Particulars.

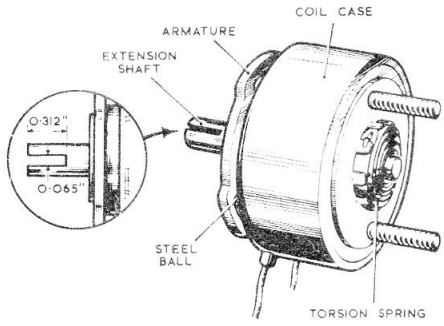


**Fig. 1. Rotary solenoid, Type 312 BD**

**3.** An exploded view of the unit is shown in fig. 2. The armature is supported by three steel balls which travel around and down in three inclined ball races as the winding is energized. The angle is steepest at the beginning of the stroke and gradually decreases as the balls approach the end of the races, so that the operating force of the solenoid is distributed evenly over the whole of the rotary stroke. In this manner the comparatively small axial stroke of the armature is translated into a relatively larger rotary stroke (fig. 3). A torque of 4·82 lb in. at 20 deg. C is developed at the beginning of the 35 deg. stroke, and 3·69 lb. in. at the end. A torsion spring returns the armature to its original position when the coil is de-energized.

**4.** Two leads, each 10 in. long, are provided for making the electrical connections to the unit.

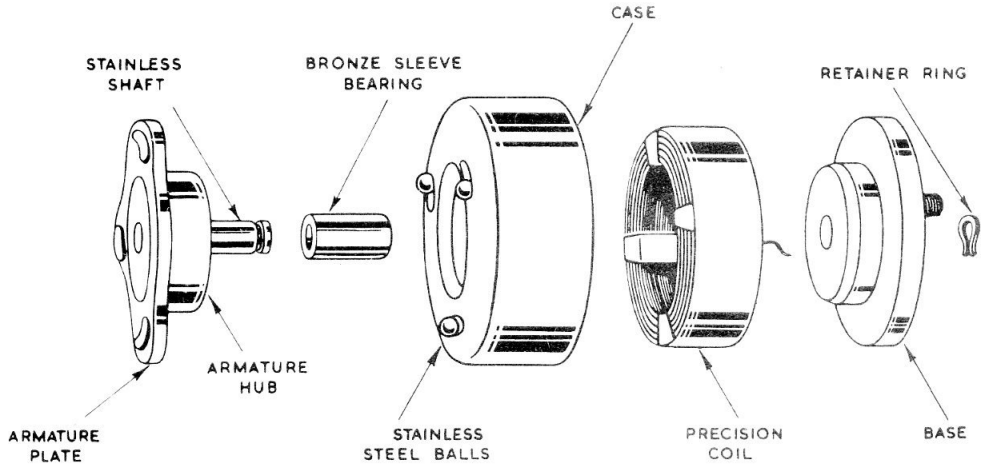


Fig. 2. Exploded view of rotary solenoid

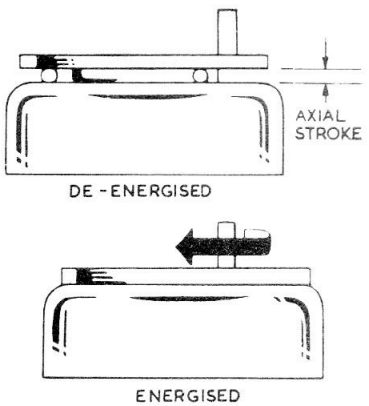


Fig. 3. Operation of rotary solenoid



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