

# "C", "D" & "E" TYPE AC SOLENOIDS

31.75mm MAX., STROKE - 2.72Kg, 4.52Kg AND 5.9Kg MAX., PULL - FOR VOLTAGES TO 600, 25-60Hz.

## Special Features

1. Solidly riveted lamination pack and plunger.
2. All rivets are set on magnetic centre line and thus need no insulation.
3. Guided, vertical action operates without friction.
4. Long stroke with strong pull.

## Applications

The OHMIC Controls Solenoids are ideal for operations where a comparatively strong force needs to be applied through a relatively short distance. Valves, clutches and brakes are typical units to which these solenoids are particularly suited, automatic operation being simple to arrange if required.

## Constructions

The "C", "D" and "E" types are all of similar construction and identical in length and height, the width of the magnet pack being the only variation.

Essential components are the square laminated magnet pack, the coil and the laminated plunger which operates through a guide in the centre of the coil, thus forming the middle leg.

Attachment to the plunger is made by means of a hardened steel pin which passes through hardened bushes in the extended side plates of the plunger. In types "C" and "D" the coil is wound on a two-section bakelite bobbin; a taped coil is used in type "E". In all three types, the coil is fixed by means of the plunge guides and spring clips, this method enables easy removal and ensures positive positioning.

Coils can be supplied for all standard voltages up to 600, at frequencies from 25 to 60Hz. All coils will give positive operation at 85% normal voltage, and will withstand 110% indefinitely with out overheating.

A robust sheet cover, with conduit entries, is supplied for protection of coil terminals.



## Installation

The solenoids are designed to be mounted vertically over the operating point and to apply a vertical lift when energised. Operation with a vertical downward pull is also practicable, provided adjustable spring return can be arranged.

The load must be applied in line with the plunger movement, otherwise the plunger will bear against guides causing excessive wear, loss of force and possible jamming.

If the load is considerably less than the maximum pull of the solenoid, it is advisable to reduce the pull by use of a series resistor, thus preventing hammering of the magnet faces. See full details and table overleaf.

## Operation

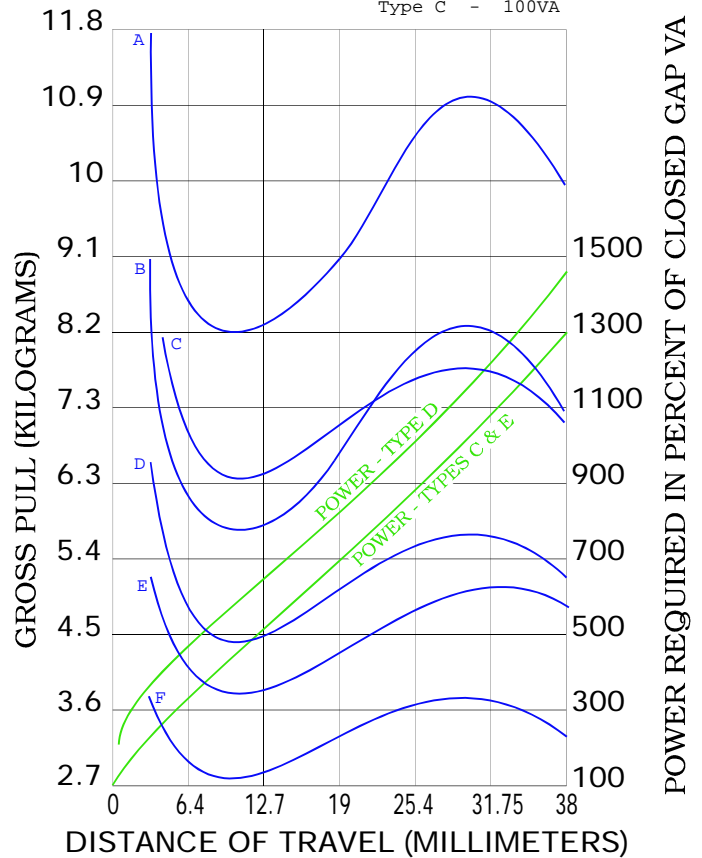
The action of OHMIC Controls "Security" A.C. Solenoids is initiated by solenoidal effect and completed by magnetic attraction. This is clearly expressed in the pull-travel characteristic curves shown on graph at right.

The curves show that to provide positive operation at 85% of normal voltage (BS587 requirement). Maximum pulls at full stroke of 31.75mm must be limited to 2.71 Kg, 4.54 Kg and 5.9 Kg for Types "C", "D" and "E" respectively. It will also be noted that even at shorter strokes these limits apply.

However, should the maximum pull required by the load be considerably less than the normal pull exerted by the solenoid, a series resistor should be inserted in the circuit to reduce pull to required value and thus eliminate the possibility of harmful hammering of the magnet faces.

Selection of resistor of correct value for 50 cycles operation can be made from the table below. As this covers all types, the pull figures classified do not allow for the weight of the plunger (refer to Graph), and this must be subtracted or added respectively from or to the pull figures for upwards or downwards operation. Resistance values, for light operation at other voltages and frequencies, will be supplied on request.

- A - Type E Full Volts.
  - B - Type E 85% Volts.
  - C - Type D Full Volts.
  - D - Type D 85% Volts.
  - E - Type C Full Volts.
  - F - Type C 85% Volts.
- Plunger weights  
 Type E - 0.652 Kg  
 Type D - 0.576 Kg  
 Type C - 0.363 Kg
- Current Consumption  
Plunger Closed  
 Type E - 200VA  
 Type D - 130VA  
 Type C - 100VA

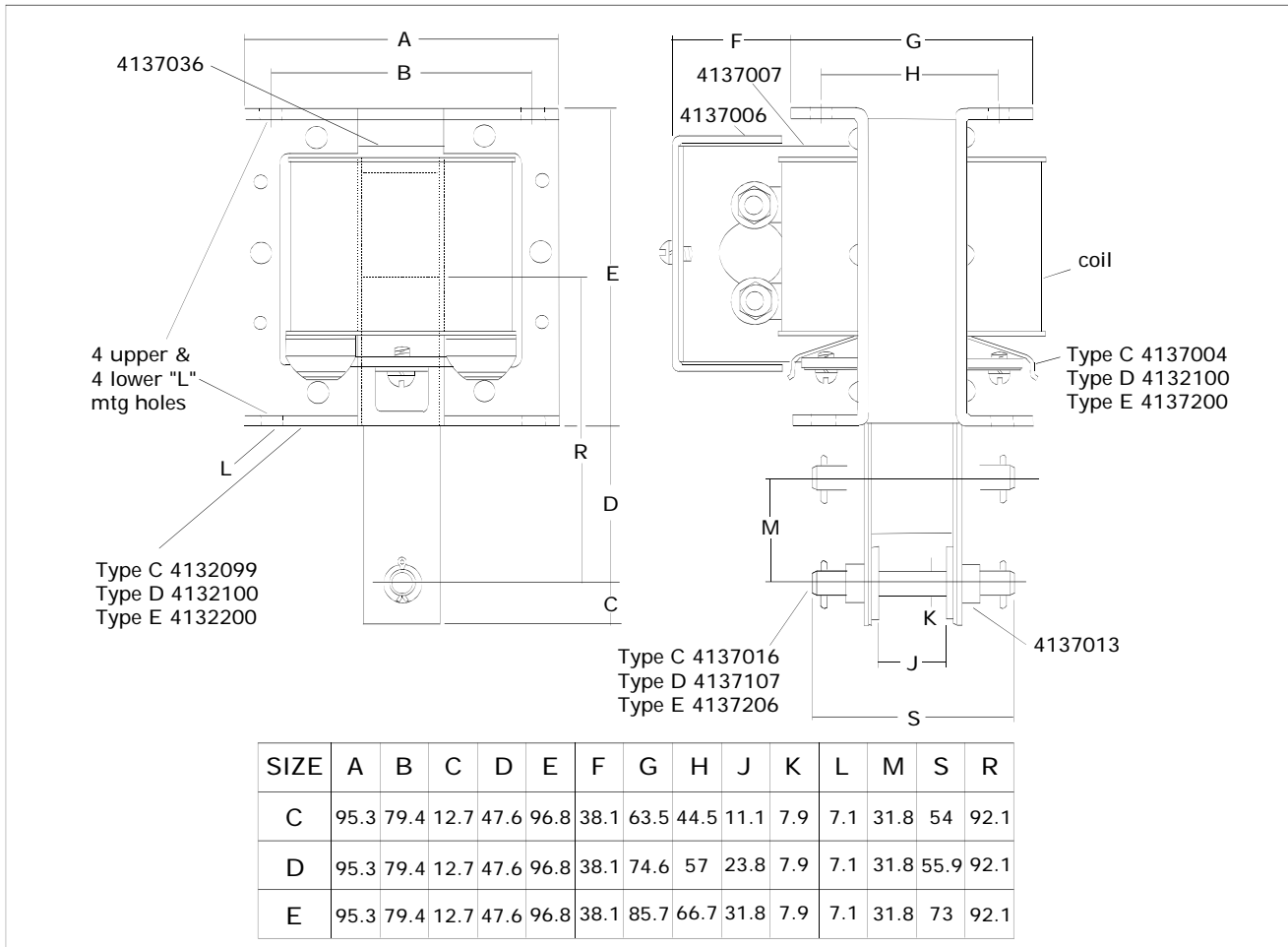


The approximate value of inrush current for any length of stroke can be determined from the VA power curve above. Current consumption in the closed position is also given for the 3 types

## Table of Series Resistors for Light Operation

SOLENOID	For 4.54 Kg pull		For 3.18 Kg pull		For 2.04 Kg pull		For 1.36 Kg pull		For 0.91 Kg pull			
	Type	Stroke	at 415V	at 240V	at 415V	at 240V	at 415V	at 240V	at 415V	at 240V		
C	32mm	12.7mm					50 ohms 10 watts	25 ohms 10 watts	130 ohms 20 watts	40 ohms 20 watts	170 ohms 20 watts	60 ohms 20 watts
		32mm					100 ohms 20 watts	40 ohms 20 watts	180 ohms 30 watts	70 ohms 20 watts	300 ohms 20 watts	90 ohms 30 watts
D	32mm	12.7mm			50 ohms 10 watts	20 ohms 20 watts	80 ohms 20 watts	30 ohms 20 watts	100 ohms 20 watts	40 ohms 30 watts		
		32mm			75 ohms 20 watts	30 ohms 20 watts	130 ohms 30 watts	50 ohms 30 watts	170 ohms 50 watts	70 ohms 50 watts		
E	32mm	12.7mm	45 ohms 20 watts	20 ohms 30 watts	60 ohms 20 watts	25 ohms 30 watts	90 ohms 30 watts	30 ohms 50 watts				
		32mm	60 ohms 20 watts	25 ohms 30 watts	100 ohms 30 watts	40 ohms 50 watts	160 ohms 50 watts	60 ohms 50 watts				

## Dimensions and Key to Parts List



## Maintenance

Provided the solenoids are properly installed and operating under normal conditions, an occasional check of nuts, screws and connections for tightness, and inspection of plunger movement for freedom of action, is the only maintenance required.

Should it be necessary to change the operating coil, proceed as follows:

1. Isolate from power supply and disconnect leads from coil

2. Disconnect and withdraw plunger,
3. Remove spring clips,
4. Remove two plunger guide screws and withdraw guides,
5. Remove coil sideways,
6. Replace coil in reverse order, taking care that coil clips are in place and that the plunger moves freely between guides.

**Note: Do Not Lubricate.**

### Type C

Part No.	Description	No.
4132099	Magnet Frame	1
4137004	Coil Retaining Spring	2
4137036	Plunger Guide	2
4137006	Half Cover	1
4137007	Terminal Cover	1
4137016	Plunger Pin	1
4137013	Plunger Bush	2
	Coil Assembly*	1
4133001	Plunger Assembly	1

### Type D

Part No.	Description	No.
4132100	Magnet Frame	1
4137104	Coil Retaining Spring	2
4137036	Plunger Guide	2
4137006	Half Cover	1
4137007	Terminal Cover	1
4137107	Plunger Pin	1
4137013	Plunger Bush	2
	Coil Assembly*	1
4133101	Plunger Assembly	1

### Type E

Part No.	Description	No.
4132200	Magnet Frame	1
4137200	Coil Retaining Spring	2
4137036	Plunger Guide	2
4137006	Half Cover	1
4137007	Terminal Cover	1
4137206	Plunger Pin	1
4137013	Plunger Bush	2
	Coil Assembly*	1
4133106	Plunger Assembly	1

**NOTE: In order to ensure prompt delivery of replacement parts,** it is necessary to quote the part number and description, together with the quantity and method of despatch.

**\*When ordering replacement coils,** voltage and frequency must also be clearly stated. **Do not use other than genuine replacement parts,** as the use of substitutes will result in unsatisfactory operation.