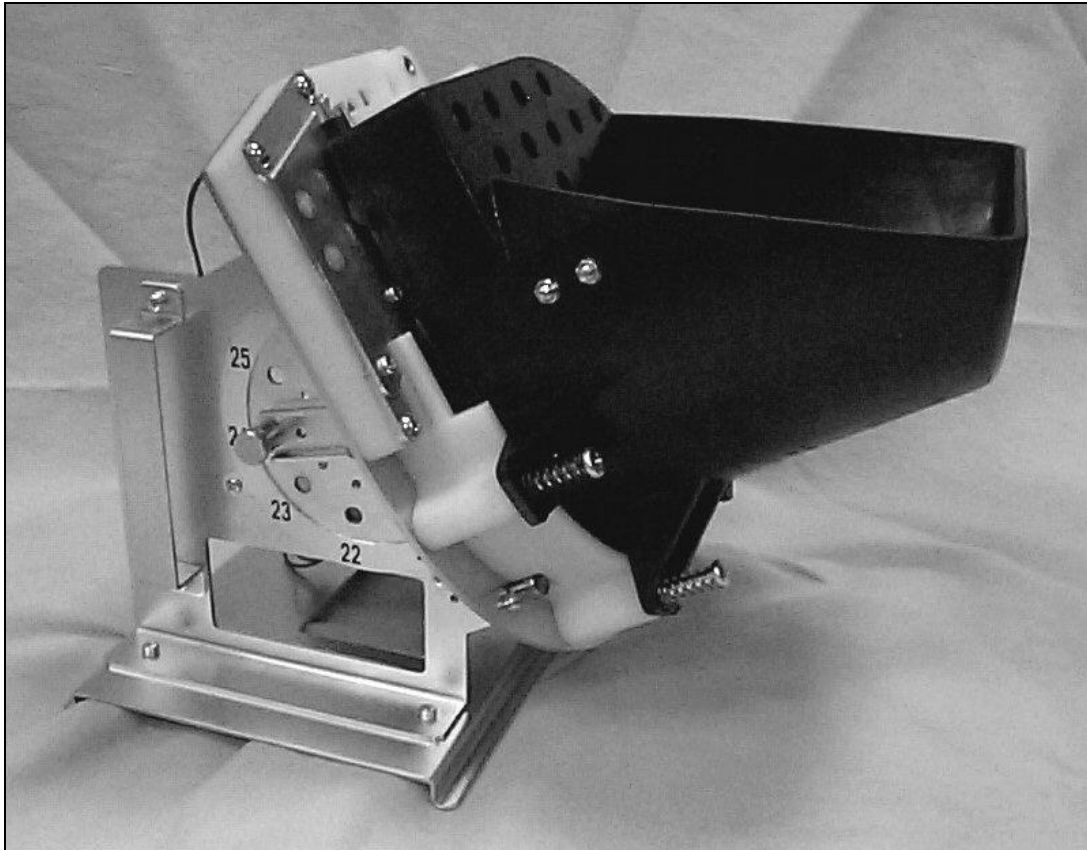


EH-750 Coin Hopper



Warning: This product contains unprotected moving parts and is intended for inclusion within a host machine. Manufacturers responsible for incorporating this Sub-assembly within a host machine must observe installation and safety instructions detailed in this document.

CONTENTS

SECTION	Page Number
1.0 INTRODUCTION.....	3
2.0 OPERATION	3
3.0 GENERAL SPECIFICATIONS	
3.1 Coin size range.....	4
3.2 Dispensing speed.....	4
3.3 Coin capacity.....	4
3.4 Counting method.....	4
3.5 Operating conditions	4
3.6 Weight and overall dimensions.....	4
4.0 ELECTRICAL SPECIFICATION	5
4.1 Motor voltage options	5
4.2 Current consumption	5
4.3 Motor power connections	5
4.4 Over current protection	5
4.5 Proximity sensor CS-A9	5-6
4.6 DC motor brake connections	7
5.0 SAFETY AND MAINTENANCE.....	8
6.0 CONVERSION AND CALIBRATION.....	9
6.1 Size ranges	9
6.2 Conversion procedure	10-11
7.0 DOCUMENT CONTROL	12

1.0 INTRODUCTION

The EH-750 hopper has been developed from the very successful DH-750 hopper incorporating innovative features to simplify calibration to suit a wide range of coin sizes.

There are only three coin specific parts and changing to a different coin size range is simply achieved with a single screwdriver. The coin diameter range from 20mm to 38mm is achieved with only 3 sets of coin specific parts making this a unique product in the casino hopper market.

Dispensing is by side exit and a proximity sensor is fitted as standard to ensure accurate coin counting. The position of the coin sensor to suit different diameter coins is readily achieved with an elliptical cam and lock pin.

2.0 OPERATION

A rotating disc fitted with protruding pins and mounted at 30° to the vertical picks up coins from the base of the hopper bowl.

As the disc rotates in an anti-clockwise direction (as viewed from the front), coins are raised to the top of the disc where they are guided to the exit chute by the raised central plate which replaces the knife used in the DH range.

The count sensor is positioned in the exit chute ensuring all dispensed coins are counted. This proximity sensor has an additional check feature which allows the host machine to simulate a coin pulse prior to dispensing to ensure circuit integrity.

3.0 GENERAL SPECIFICATIONS

3.1 Coin Size Range

Diameter	20.0 – 38.0mm
Thickness	1.5 - 3.2mm (Note 1)

Note1: Additional testing required to confirm suitability outside these limits.

3.2 Dispensing Speed

The dispensing speed of the DH-750 is 200 - 400 coins/minute. The number of disc pins varies from small to large coins significantly affecting the dispense speed

3.3 Coin Capacity (approximate)

COIN SIZES	Capacity
21.2mm Diameter	1,300
24.3mm Diameter	1,000
38.0mm Diameter	300

3.4 Counting Method

Proximity Sensor CS-A9(see Section 3.0 for specifications)

3.5 Operating Conditions

Temperature: -10°C to +60°C

Humidity: 85% RH (without condensation)

Location: Indoors within cabinet

Coin entry: Coin entry chutes should be positioned adjacent to the edge of the bowl furthest from the disc face to minimise the possibility of coin jams.

Coin Exit: Coin exit chutes of the host machine should be designed and positioned to avoid any possible interruption of coins exiting the hopper. Any obstruction may cause jamming or damage to the mechanism.

3.6 Weight and Overall Dimensions

Weight: 4.7 Kg. (empty)

Height: 234mm

Depth: 318mm

Width: 243mm

4.0 ELECTRICAL SPECIFICATION

4.1 Motor Voltage Options

24V DC \pm 10% only

4.2 Current Consumption

Normal dispensing: 1.0A

Peak current: 5.0A

4.3 Motor Power Connections

To ensure correct directional rotation of the disc the red wire must be connected to DC 24V+ve supply and the blue wire to 0V.

4.4 Over current protection

Customers control circuitry must be designed to ensure disconnection of the motor power supply within 5 seconds if a jam or stall situation occurs to prevent motor damage.

In addition to a software timeout it is advisable to fit a suitable value re-settable fuse (polyswitch) or conventional fuse in line with the power supply.

4.5 Proximity Sensor Type CS-A9

JST Connector	Description
Pin 5	Check – drive low
Pin 6	Supply +ve 4.5v ~ 28v
Pin 7	Signal
Pin 8	Supply 0v

Table 4.5.1 Pin functions

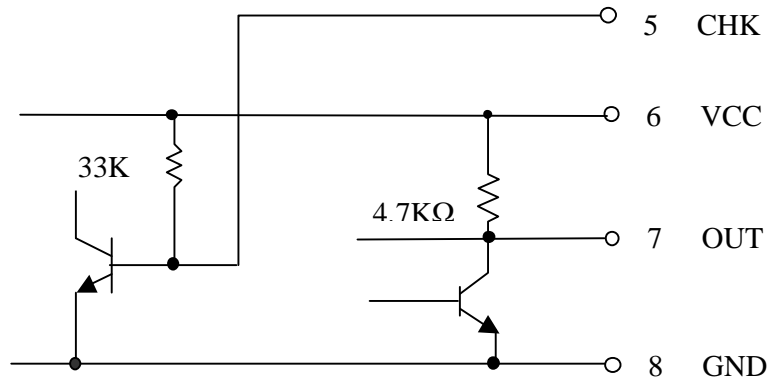


Figure 4.5.2 -output Circuit

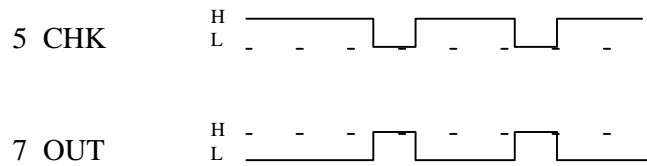


Figure 4.5.3 – Check Function

Proximity Sensor Characteristics	
Supply Voltage	4.5v DC – 28v DC
Current Consumption	13mA (vcc =28v)
Output Voltage	vcc less 1 Volt
Rise Time	10μS
Decay Time	10μS
Output Impedance	4.7KΩ
Signal Sense (when field disturbed)	High
Operating Temperature	-10°C to +60°C
Storage Temperature	-20°C to +85°C

Table 4.5.4 Sensor specifications

4.6 DC Motor Brake (DCMB) Specification

The DCMB-9101A is a brake circuit board which stops DC motors quickly by applying a short circuit to the windings. Electrical connection is by two AMP E1 series connectors.

Connector	Pin	Signal Name	Signal Type	Detail
J1	1	Motor On -ve	Input	Connect to 0V
J1	2	Motor On +ve	Input	Pull up 5V - 12V
J1	3	0V	Supply	Connect to 0V
J1	4	24V DC	Supply	Connect to 24V DC*
J2	1	Motor -	Output	Connect to motor
J2	2	Motor +	Output	Connect to motor**

Table 3.7 (Wiring details)

* The unit draws 1mA(max) when idle and 25mA(max) when driving the motor.

** Drive capability: 4A (max).

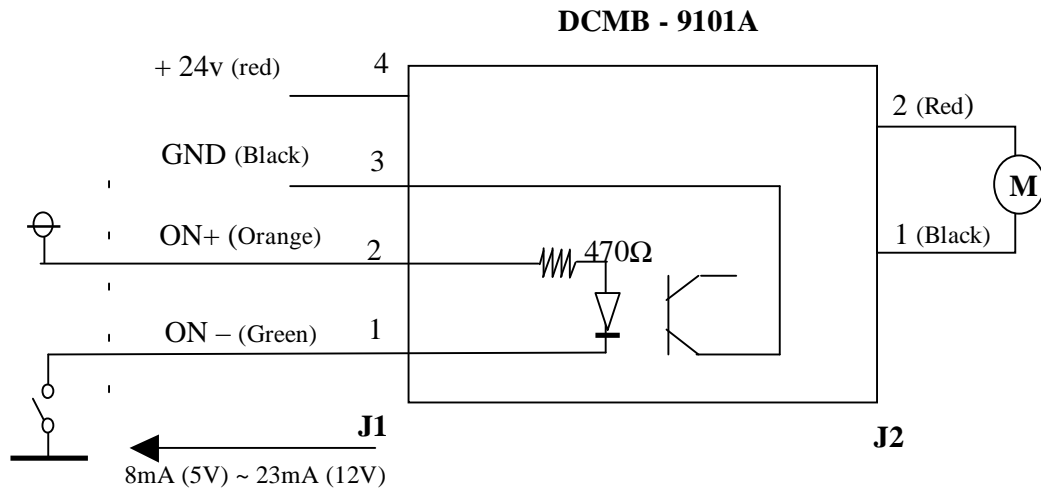


Figure 3.7.1 (Motor brake circuit)

5.0 Safety and Maintenance

- 5.1** Control circuitry must be arranged to disconnect power to the mechanism when the host machine is opened for servicing.
- 5.2** Servicing and maintenance staff must be adequately trained and aware of the hazards presented by moving parts. Particular attention should be paid to the disc. Fingers, long hair and loose clothing must be kept clear at all times when the mechanism is powered up.
- 5.3** Handle the mechanism with a firm grip on the frame as it is heavy. Particularly avoid moving the mechanism when the bowl is full as injury or damage could result. Do not lift by the top of the bowl/disc area
- 5.4** Avoid the inclusion of damaged coins and foreign objects such as matches, elastic bands, paper clips and screws during operation as these could cause jams.
- 5.5** Wiring errors or incorrect supply voltages can seriously damage the motor or sensors (See Section 3.0 for wiring details).
- 5.6** Routine maintenance should undertaken every 2 months or after 50,000 coins have been dispensed whichever is the sooner:
- Examine the wiring and sensors for damage.
 - Tighten any loose fixings.
 - Clean the bowl with a damp cloth and detergent ensuring that it is fully dried.

6.0 CONVERSION AND CALIBRATION

6.1 Size ranges

The coin diameter range 19.75mm to 38mm is covered with 3 sets of coin specific parts each comprising three parts and a calibration label. See figure 6.1.1.

The diameter ranges covered by each set of parts are as follows:

- >20mm – 26mm (Parts stamped 21-26)
- >26mm – 32mm (Parts stamped 26-32)
- >32mm – 38mm (Parts stamped 32-38)

Note: When calibrating for a specific coin, position the sensor adjuster lever to the nearest setting above the coin diameter i.e. when calibrating for a coin 25.2mm diameter set the adjuster to 26mm (see table 6.2.2)

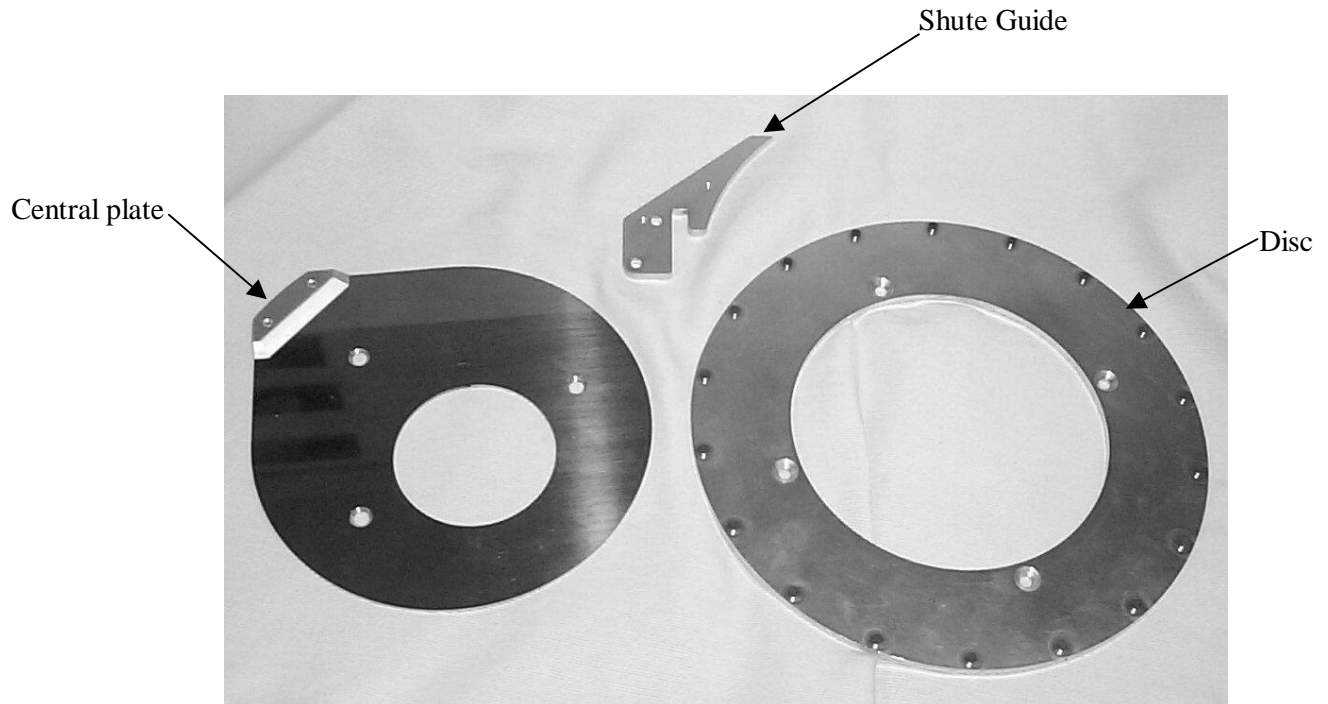


Figure 6.1.1 Conversion kit parts

6.2 Conversion procedure (refer to figure 6.2.1.)

1. Remove the bowl to gain access to the hopper mechanism. The bowl is retained by four special fixing screws and springs. It is important to note that the two gold springs are fitted to the lower screws and the black springs are fitted to the upper screws.
2. Remove the shute cover to gain access to the shute guide (3 x M4 screws)
3. Detach the shute guide from the shute cover (2 x M3 screws) and place to one side.
4. Remove the plastic stirrer from the centre plate (3 x M4 screws) and place ready for re-assembly.
5. Remove the central plate located over the disc (3 x M4 countersunk screws) and place to one side.
6. Remove the disc (4 x M4 countersunk screws) and place to one side.
7. Position the replacement disc on the drive gear and secure with the 4 x M4 countersunk screws.
8. Position the replacement central plate over the disc and secure with 3 x M4 countersunk screws.
9. Secure the replacement shute guide to the shute cover with 2 x M3 screws.
10. Replace the shute cover and secure with 3 x M4 screws with the longer screw at the bottom.
11. Replace the bowl using the 4 special screws and springs ensuring the gold springs are fitted to the lower screws and the black springs to the upper screws.
12. Change the sensor gauge on the chassis side plate to suit the coin diameter range.
13. Position the sensor adjusting arm to suit the coin/token diameter. For example: 21 is the correct setting for diameter 19.75mm – 21mm and 31 is the correct setting for diameter 30mm – 31mm. (See table 6.2.2)
14. Power the hopper and check for correct operation and counting.

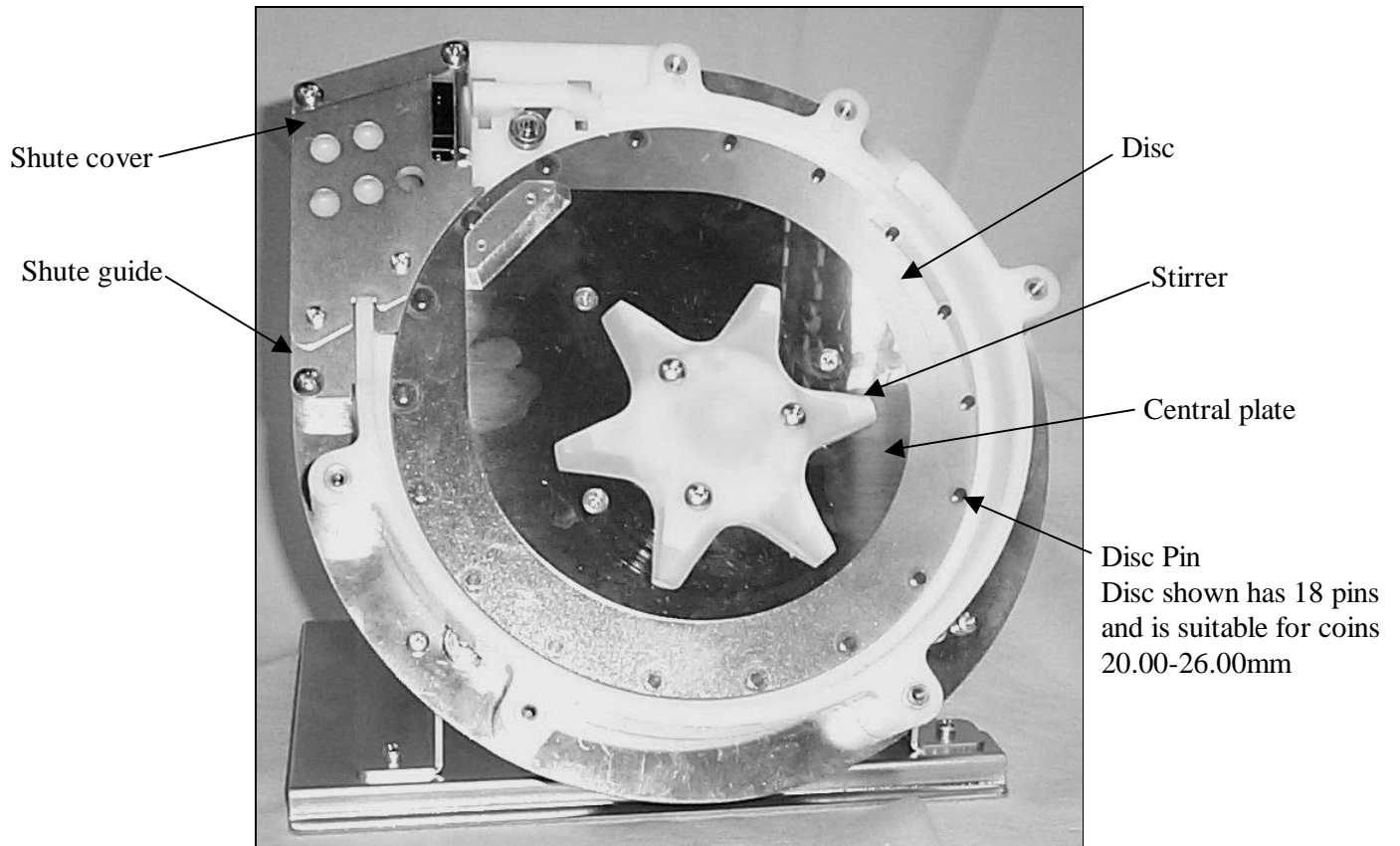


Figure 6.2.1 Hopper with bowl removed

Sensor Adjuster Position	Coin size (mm) (18 Pin Disc kit)	Coin size (mm) (15 Pin Disc kit)	Coin size (mm) (11 Pin Disc kit)
A	20.00-21.00	26.01-27.00	32.01-33.00
B	21.01-22.00	27.01-28.00	33.01-34.00
C	22.01-23.00	28.01-29.00	34.01-35.00
D	23.01-24.00	29.01-30.00	35.01-36.00
E	24.01-25.00	30.01-31.00	36.01-37.00
F	25.01-26.00	31.01-32.00	37.01-38.00

Table 6.2.2 Sensor adjuster position

7.0 DOCUMENT CONTROL

Date	Issue No.	Reason for Revision	Page No.
25/03/04	EH750-Draft	-	
01/03/06	EH750 Issue 1	Amended calibration detail	9
18/06/08	EH-750 Issue 2	Coin size amended	4,9,11.