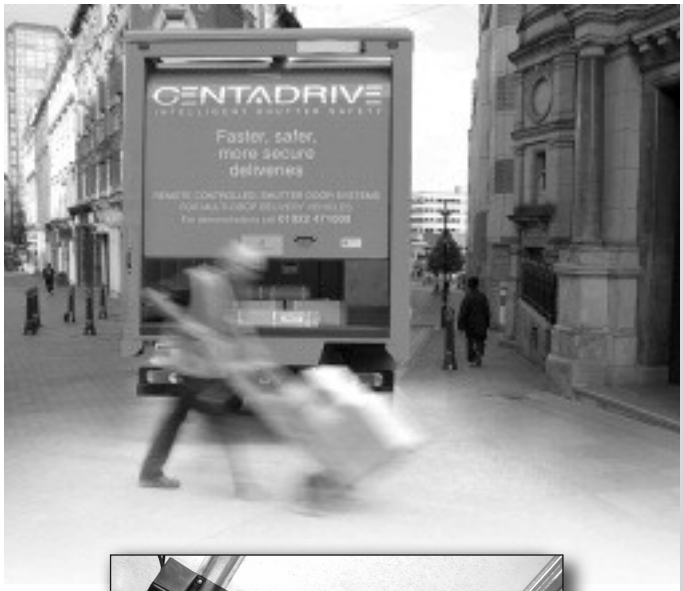
CENTADRIVE

INTELLIGENT SHUTTER SAFETY

Remote-controlled shutter door systems
for multi-drop delivery vehicles

INSTALLATION INSTRUCTIONS

Contents



An Introduction

Albert Jagger Limited have over 100 years' experience in the manufacture and supply of commercial vehicle components, covering both the OEM and aftermarket sectors. Today Albert Jagger Limited primarily service the commercial vehicle body-building industry with fittings, accessories and spares.

Centadrive

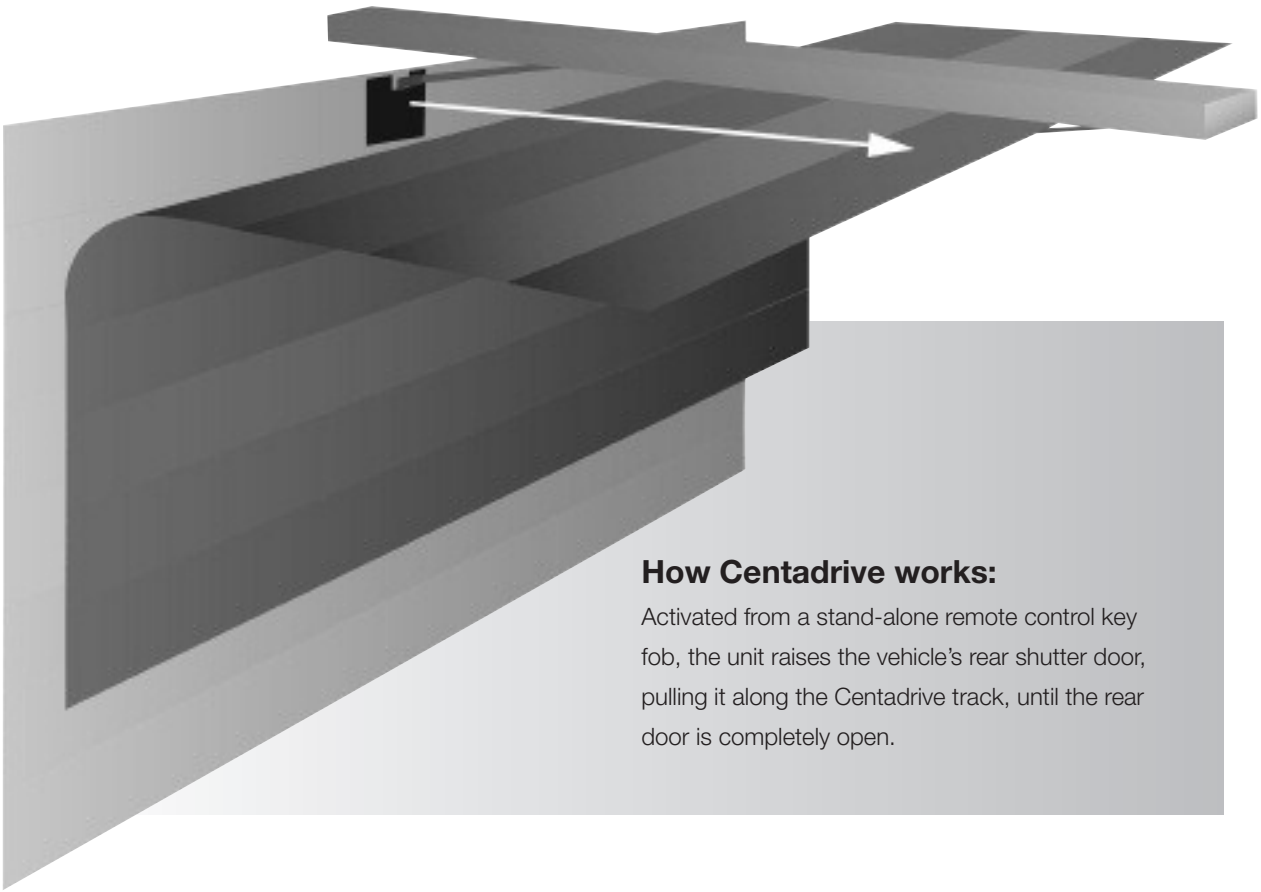
Through a combination of experience and expertise, Albert Jagger Limited have been developing a new concept in remote control door systems, specifically for multi-drop delivery vehicles. Developed and tested over several years, the Centadrive remote controlled unit solves many of the problems inherent in the delivery door of most, if not all, multi-drop commercial vehicles.

Fast, easy to fit, remote control unit, designed specifically for multi-drop delivery vehicles

The Centadrive Unit

The Centadrive Unit (CDU) electrically operates the up/down movement of a dry freight shutter door, typically found on multi-drop delivery vehicles. Powered directly from the vehicle's 24v battery, it is activated by a stand-alone, remote control key fob.

The unit has been designed for fast, simple installation, needing only 3 electrical connections: 2 to the battery and 1 to the cab.



How Centadrive works:

Activated from a stand-alone remote control key fob, the unit raises the vehicle's rear shutter door, pulling it along the Centadrive track, until the rear door is completely open.

Centadrive
Intelligent Shutter Safety

A revolutionary system to electronically operate commercial vehicle shutter doors. Designed specifically for multi-drop delivery vehicles, Centadrive gives you greater control, easier access and increased safety for your driver, your vehicle and your payload.

Health & Safety

Twisted limbs, back strain, head injuries or even expensive insurance claims are all results of the usual 'parachute jump' to close shutter doors. This leaves fleet managers to pick up the bill for sick pay, the cost of hired drivers and elevated insurance premiums.

Driver injuries are dramatically reduced through the combined use of push-button, remote-controlled operation of the shutter door and an automatic retraction system which 'senses' door obstructions and immediately stops any door movement and then retracts.

If the driver becomes trapped inside the cargo area, each door is fitted with an integral internal 'panic' release lever, which disconnects the Centadrive Unit, allowing free movement of the shutter door.

Added Security

With the click of a button on a remote control, the door closes automatically, allowing faster kerb-side deliveries and ensuring it's never left open for that 'quick' delivery.

Ease of use and convenience means no tempting short cuts to leave the load unattended are considered, which would otherwise compromise load security from opportunist thieves.

An audible, in-cab alarm warns drivers if the vehicle is driven off with an open shutter door.

Easy Installation

Specified as original equipment on new builds or as a retro-fit upgrade on existing vehicles, Centadrive is easily installed - taking 2 experienced fitters as little as 2 hours (including a new lightweight composite door) with minimum wiring required.

Minimum Maintenance

In order to survive the demanding daily rigours of multidrop commercial vehicles, Centadrive has undergone extensive in-house testing and is still showing reliable performance on long-term road tests with a market leading, nationwide, parcel delivery company.

Potentially dangerous, heavy slamming of the shutter door is completely eliminated as Centadrive offers smooth, controlled movement, and intelligent self-diagnostic software with an LED display reduces time-consuming fault finding in the rare event of a breakdown.

The result is a system which has proven to significantly reduce routine maintenance costs.

27% Reduction in noise levels

The move to 'quiet', out-of-hours deliveries is a growing trend and it makes sound operational sense to remove HGV's from congested locations at peak times. When coupled with the new lightweight door, the Centadrive® system allows vehicles to 'drop and run', as an almost silent operation avoids the usual door noise and slamming which can have a negative impact on local residents and communities.

Environment

When fitted in conjunction with the New Generation Lightweight Composite Door, Centadrive offers a significant weight advantage over traditional wooden doors. The results include increased fuel efficiency, increased payload, and increased profitability.

Safety First

Safety Features

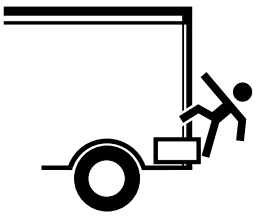
The Centadrive's unique innovative design includes several integral safety features, in order to protect the driver, the payload and the vehicle.

An audible, in-cab alarm is fitted during the installation process, so that if the driver attempts to drive off with the rear shutter door in the open position, the alarm sounds whilst the shutter door automatically closes. Likewise, the door will not operate at all if the vehicle's engine is left running.

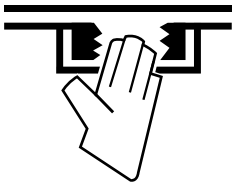
To protect both the driver and the payload, Centadrive's Electronic Control System (ECS) is programmed with an automatic retraction feature which 'senses' door obstructions (feet, hands, head, parcels, etc.) and immediately stops any door movement. The door then retracts to allow removal of any obstructions.

In the unlikely event of a CDU failure, the system has two options to 'return to manual': an internal release mechanism, in the form of a red release lever fitted to the shuttle mechanism, should the driver become trapped inside the cargo area (with the door closed) and an external mechanism in the form of a lockable pop-up tee handle. Once activated, both features allow the door to be used manually until sufficient repairs are carried out.

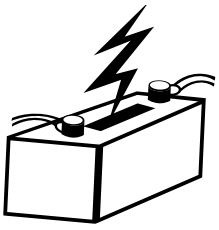
Safety Warnings



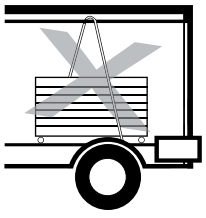
DANGER INJURY RISK
If slipping, tripping, or falling from commercial vehicles



DANGER ENTRAPMENT RISK
Do not insert fingers into track extrusion

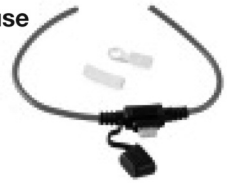


DANGER SHOCK RISK
Disconnect battery prior to maintenance or repair



DANGER DAMAGE RISK
Centadrive is NOT to be used as an anchor point for load restraint

Box Contents

Component Part	Extended Description
1. Centadrive Unit (assembled) 	Assembly includes: • 1 x 3.1m aluminium track • 2 x toothed pulley wheels • 1 x toothed drive belt • 1 x shuttle assembly • 1 x stainless steel shuttle cowling • 1 x 24v motor with integral gearbox • 1 x black ABS motor cover • 1 x 6m motor power loom with heavy duty moulded plug, rated to IP65. • 1 x 6m reed sensor loom with heavy duty moulded plug, rated to IP65. 1 x M8 allen key
2. Electronic Control Unit (ECU)  **ECU Mounting Bracket** 	1 x ABS enclosure, rated to IP65: • LED display with touch button, membrane keypad • Power in loom with heavy duty connector, rated to IP65 • On/off rocker switch • 10 numbered sockets 7 x heavy duty, moulded plug blanks 1 x stainless steel mounting bracket complete with 4 x self tapping screws.
3. Power Loom 	1 x 7m power loom with heavy duty twist coupling, rated to IP65.
4. In-line Fuse 	1 x in-line fuse holder 1 x 15A fuse 1 x yellow, insulated, parallel crimp 1 x yellow, insulated, crimp ring terminal
5. Alarm Loom 	1 x 10m alarm/LED loom with ignition tag & heavy duty moulded plug, rated to IP65.
6. Remote Control 	2 x remote control, key-fobs
7. Door Linkage Assembly 	1 x linkage plate 1 x M10 x 130mm linkage arm 2 x M10 lock nuts 2 x clevice heads 2 x clevice spring clips 4 x M6 x 35mm coach bolts with lock nuts 1 x cable grip 1 x black ABS cover 2 x M5 domed head machine screws 1 x 500mm release cable
8. External Release Mechanism 	1 x pop-up tee handle complete with gasket 2 x keys 2 x M5 x 40mm countersunk machine screws complete with nyloc nuts 1 x cam with cable clamp

NB: Optional internal LED light & 6m wiring loom available on request.

Fitting the Centadrive Unit (CDU)

Fig 1

Fig 2

Fig 3

Fig 4

Fig 6

1. Check the contents of the box supplied as seen on **page 7**.

2. If this is a retrofit then please check the smooth operation of the existing door and if necessary carry out maintenance or repairs as per the manufacturer's instructions.

3. Likewise, if a completely new shutter door is to be fitted (traditional dry freight or new lightweight composite), please do so in accordance with the door manufacturer's instructions.

   NOTE: FOR EASE OF INSTALLATION WHEN FITTING A NEW DOOR (DRY FREIGHT OR COMPOSITE), IT IS ADVISABLE TO FIT BOTH THE 'LINKAGE MECHANISM' AND THE 'EXTERNAL RETURN TO MANUAL' POP-UP TEE HANDLE BEFORE FITTING THE DOOR INTO PLACE WITHIN THE CHANNEL. PLEASE REFER TO 'FITTING THE DOOR LINKAGE ASSEMBLY' INSTRUCTIONS ON PAGE 12.

4. It is essential that the door has a smooth, free-running movement and the rollers encounter no 'snagging' during operation. Particular attention must be given to the welded track joints to ensure they are properly aligned, with all inside welds 'dressed-off' smoothly – *refer FIG 1.*

5. Working inside the vehicle's cargo area, measure and mark a centre line on each of the existing roof bars – *refer FIG 2.*

6. Utilising temporary props and ensuring the pulley end is nearest the header, position the CDU into the roof space along the marked centre line – *refer FIG 3, FIG 4 & FIG 5.*

7. It is recommended that the CDU is fixed directly to the rear frame, top channel. Due to the enormous variation in vehicle construction and build techniques it will be necessary to fabricate an angle bracket to suit – *refer FIG 6 & FIG 7.*

8. Once the position of the CDU has been established, drill and fix using suitable fixings such as M8 bolts with nyloc lock nuts or M8 nutserts (not supplied) – *refer FIG 8.*

   Caution: Care should be taken to avoid damage to the roof material during drilling process.

Fig 5

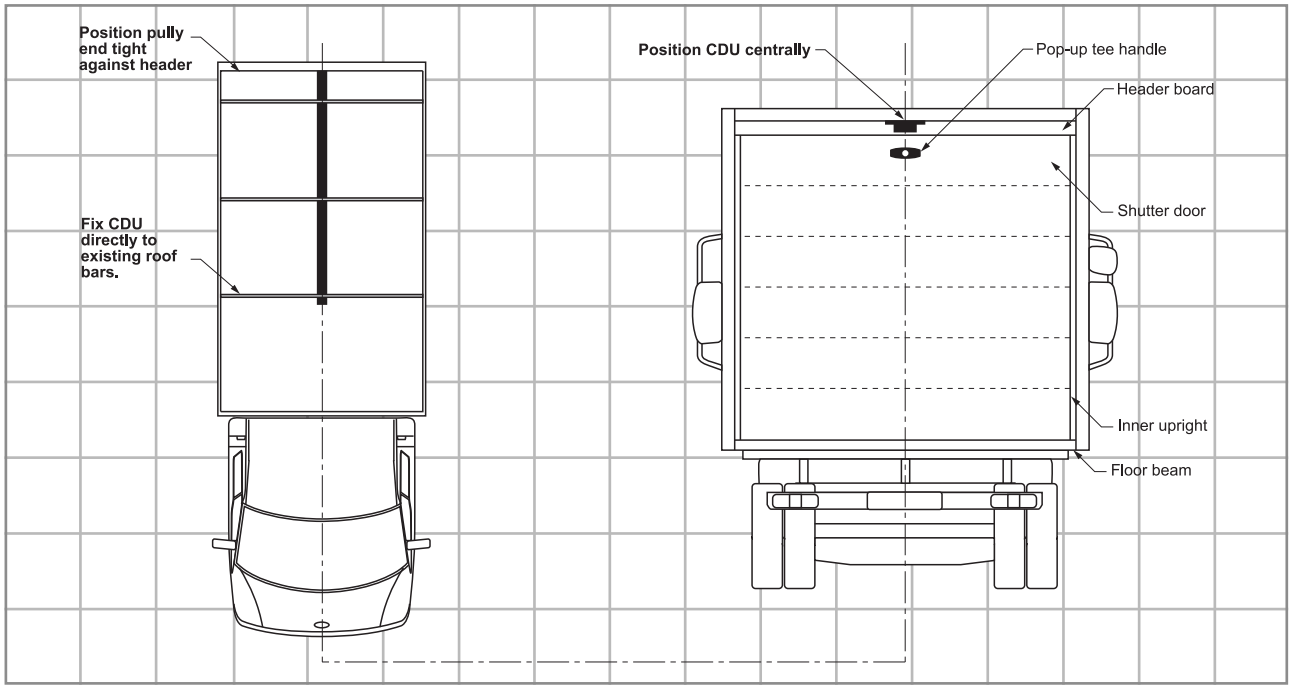


Fig 7

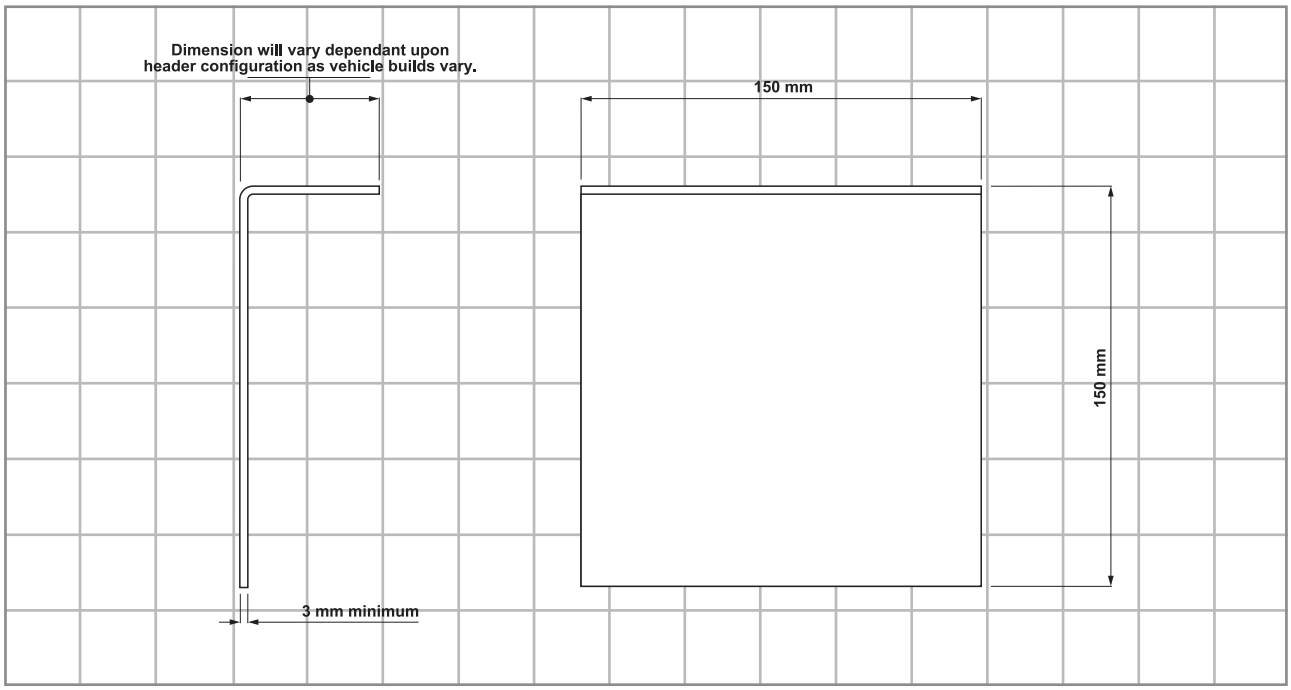


Fig 8

Wiring the Centadrive Unit (CDU)

IT IS RECOMMENDED THAT ALL ELECTRICAL WORK BE CARRIED OUT BY A COMPETENT AUTO ELECTRICIAN

9. Site and fix the Electronic Control Unit (ECU), complete with mounting bracket. Mounting sites include the side walls of the cargo area or the front bulkhead of the vehicle. For ease of operation and maintenence it is advisable to site and fix at approximately eye level – refer FIG 9 & FIG 10.

   NOTE: ENSURE THE ECU POWER SWITCH IS IN THE 'OFF' POSITION – REFER FIG 11

10. All wiring loom plugs and ECU sockets are numbered to ensure fast easy fitting. Use cable ties or similar (not supplied) and utilising the roof space as much as possible, route the motor power loom (1) and the reed sensor loom (2) from the rear of the CDU to the ECU – refer FIG 12. Checking that the numbers correspond, plug in both loom connectors to the ECU – refer FIG 13.

    NOTE: ENSURE NO WIRES ARE LEFT HANGING LOOSE & AVOID ANY MOVING PARTS.

11. Taking the 10m alarm loom (3), site and fix alarm box in suitable position within the cab area and connect blue wire to the vehicle's ignition switch (at second stage).

    Then route cable through to the rear of vehicle and back to the ECU. Once routed, fix cable into place (with cable ties or similar – not supplied) and checking that numbers correspond (3), plug loom connector into ECU – refer FIG 14.

    NOTE: ONE POSSIBLE ROUTE IS FROM CAB TO ENGINE BAY THEN TO REAR OF VEHICLE FOLLOWING MAIN POWER LOOM, AVOIDING ANY HOT OR MOVING ENGINE PARTS.

12. Taking the 7m power loom, route from battery to ECU, ensuring the 15A in-line fuse (supplied) is easily accessible near the battery. Connect the **RED** cable of the power loom (with 15A in-line fuse) to the **+ POSITIVE** terminal of the battery and the **BLACK** cable to the **- NEGATIVE** terminal – refer FIG 15. On completion connect to the ECU utilising the heavy duty twist coupling.

13. To ensure the IP65 integrity of the ECU, insert heavy duty, moulded plug blanks (supplied) into all unused ports.

14. Switch on the ECU – refer FIG 16. A beep will sound as the ECU boots and runs a self diagnostic system check. After a few seconds "Centadrive" will appear in the user display.

15. At this stage it is advisable to test the system without the door connected. Using the buttons on the ECU or the remote key fob provided activate the UP button to allow the system to perform a complete cycle with the shuttle travelling the full length of the CDU. To return the shuttle to its original position (nearest the door), press the DOWN button – refer FIG 17.

    NOTE: NO ADJUSTMENT OF THE CENTADRIVE ELECTRONICS ARE REQUIRED!

Remote

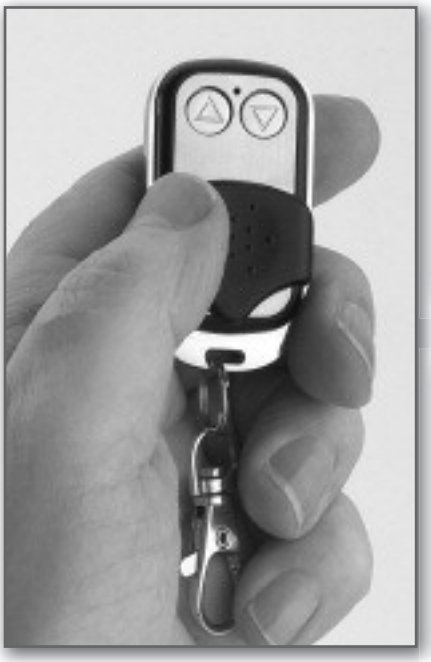


Fig 9

Fig 11

Fig 13

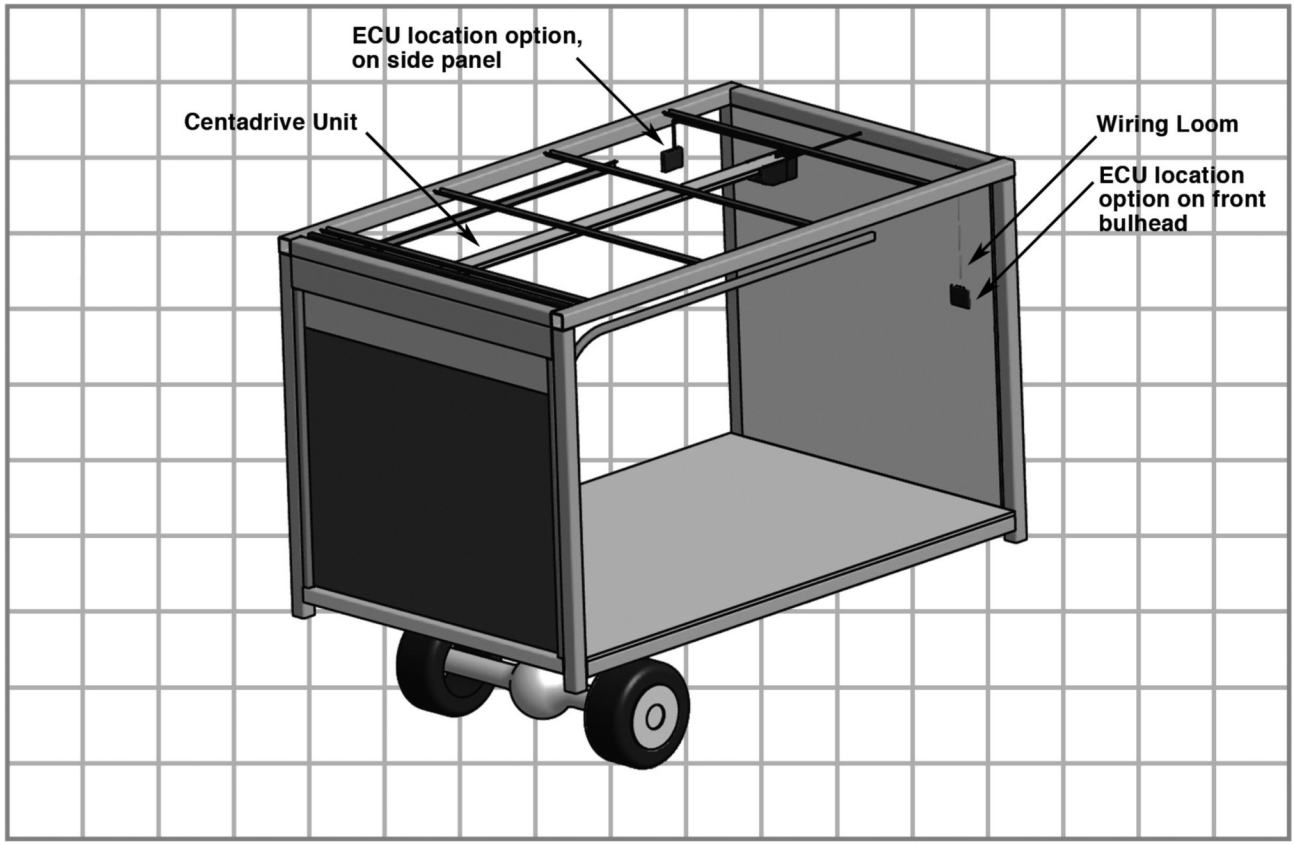


Fig 12

Fig 14

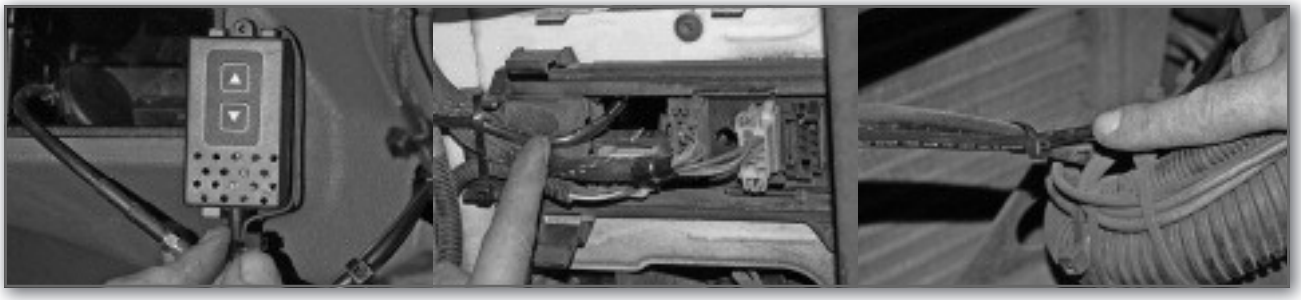


Fig 15

Fig 16

Fig 17

Fitting the Door Linkage Assembly and Emergency Release

NOTE: FOR CONVENIENCE IT IS ADVISABLE TO FIT THE DOOR LINKAGE ASSEMBLY WITH THE DOOR ON A LARGE FLAT SURFACE (EG. VEHICLE FLOOR OR WORK BENCH). PARTICULARLY FOR NEW BUILDS OR DOOR REPLACEMENTS. BUT IN THE EVENT OF A RETROFIT, THIS PROCEDURE CAN BE CARRIED OUT WITH THE EXISTING DOOR IN PLACE WITHIN THE TRACKS

16. On the inside face, measure and mark the centre of the door along the top edge of the top panel – *refer FIG 18.*

17. Position the door linkage plate centrally on the inside face of the door and ensure the top edge of the linkage plate is level with the top edge of the door panel – *refer FIG 19.*

18. Using the linkage plate as a template, mark and drill all holes required for fixing – *refer FIG 20*:
    - 4 x Ø6.4mm (clearance for M6 coach bolts)
    - 2 x Ø5.3mm (clearance for M5 countersunk machine screws)
    - 1 x Ø28mm (clearance for pop-up tee handle)

19. Reposition the linkage plate and using the 4 x M6 coach bolts provided, fix into place with nyloc nuts, ensuring the cable grip supplied is fitted to the top left bolt – *refer FIG 21.*

20. From the outside of the door, slide the pop-up tee handle through the Ø28mm hole. Fix into place using the 2 x M5 countersunk machine screws and nyloc nuts, ensuring supplied gasket is in place – *refer FIG 22*.

21. Tighten integral grub screw to fix cam, complete with cable clamp, into place onto square drive of pop-up tee handle – *refer FIG 23.*

22. Slide the door into tracks, as per manufacturers instructions, if instructions 16 - 21 have been carried out with the door on a large flat surface – *refer FIG 24.*

23. If it has not already been checked, it is advisable to manually operate the door to ensure free running and that no fouling occurs.

Fig 18

Fig 19

Fig 20

Fig 21

Fig 22

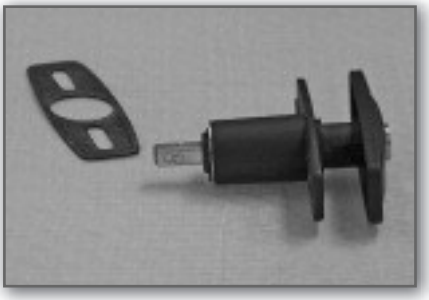


Fig 23

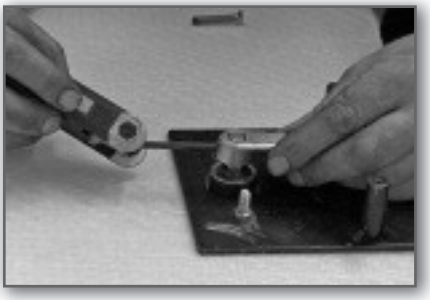


Fig 24

Fig 25

Fig 26a

24. With the shuttle positioned nearest the closed door, remove the shuttle cover – *refer FIG 25.*

25. Take the loose end of the release cable and thread it through, first the body of the shuttle – *refer FIG 26a & b*, then through the clamp – *refer FIG 27.*

26. Fix into place utilising the integral grub screw – *refer FIG 28.*

    NOTE: ENSURE SUFFICIENT TENSION TO ACTIVATE RELEASE MECHANISM. THIS DISENGAGES THE SHUTTLE FROM THE DRIVE BELT WHEN OPERATING THE EXTERNAL POP-UP TEE HANDLE – REFER FIG 29 AND/OR THE INTERNAL SLIDING RELEASE LEVER (RED CAP) FOUND ON THE UNDERSIDE OF THE SHUTTLE MECHANISM – REFER FIG 30.

    This allows manual operation of the shutter door in the event of a CDU breakdown.

27. To re-engage, align shuttle drive wheel teeth with drive belt teeth utilising the viewing slot 'A' - *refer FIG 31*, found on the underside of the shuttle mechanism and using the M8 allen key (supplied) inserted into hole 'B' – *refer FIG 31*, rotate anti-clockwise until a 'CLICK' is heard.

28. Once sufficient tension is achieved to activate emergency release mechanism, replace shuttle cover – *refer FIG 32.*

29. Utilising the screws supplied, position and fix linkage mechanism ABS cover into place – *refer FIG 33.*

30. Still with the door in the closed position and the shuttle positioned nearest the door, attach the linkage arm from the top panel to the attachment point found on the shuttle. The linkage arm, lock-nuts, clevis heads and clips are supplied assembled, therefore remove the clevis clip from the free end of the linkage arm and align clevis head with attachment point on the CDU shuttle – *refer FIG 34.* Rotate clevis head and/or threaded linkage arm to adjust. Reinsert clevis clip to attach linkage arm to the shuttle, utilising lock-nuts to eliminate movement during use.

    NOTE: ADJUST THE LINKAGE ARM SO THE BOTTOM SEALS JUST TOUCH THE FLOOR AS TOO MUCH PRESSURE HERE WILL ACTIVATE THE DOOR RETRACTION SAFETY FEATURE OR CAUSE UNNECESSARY STRESS TO THE MECHANISM.

Fig 26b

Fig 27

Fig 28

Fig 29

Fig 30

Fig 31

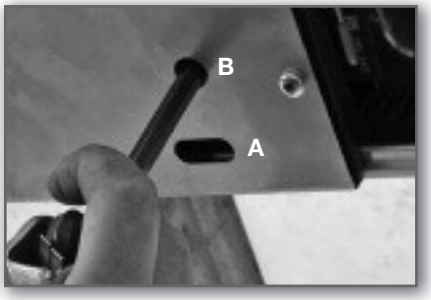


Fig 32

Fig 33

Fig 34

Operating the Centadrive Unit

Powered directly from the vehicle's 24 volt battery, the Centadrive Unit controls the operation of the rear shutter door typically found on multi-drop commercial vehicles.

When activated by the driver, a simple click on a remote control key fob is all that is required to activate the Centadrive Unit. The door is opened in a quiet, controlled manner. A second click is sufficient to then close the door, once the delivery is complete.

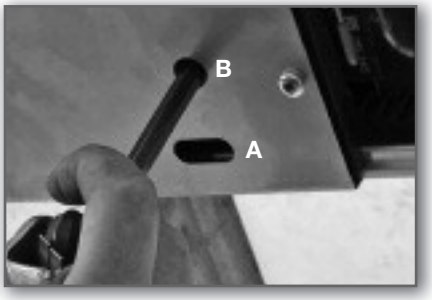
Return To Manual - External Emergency Release Mechanism.

31. In the event of a Centadrive Unit (CDU) failure whilst the operator is outside the vehicle, unlock the external pop-up tee handle (two keys supplied) found high up on the exterior of the rear shutter door. Press the central button to allow the handle to 'pop' free and rotate – *refer FIG 35*. This will disengage the shuttle from the toothed drive belt, indicated by a slight 'drop back' of the top panel. This allows the manual operation of the door until suitable repairs are carried out.

Fig 35

Fig 36

Fig 37



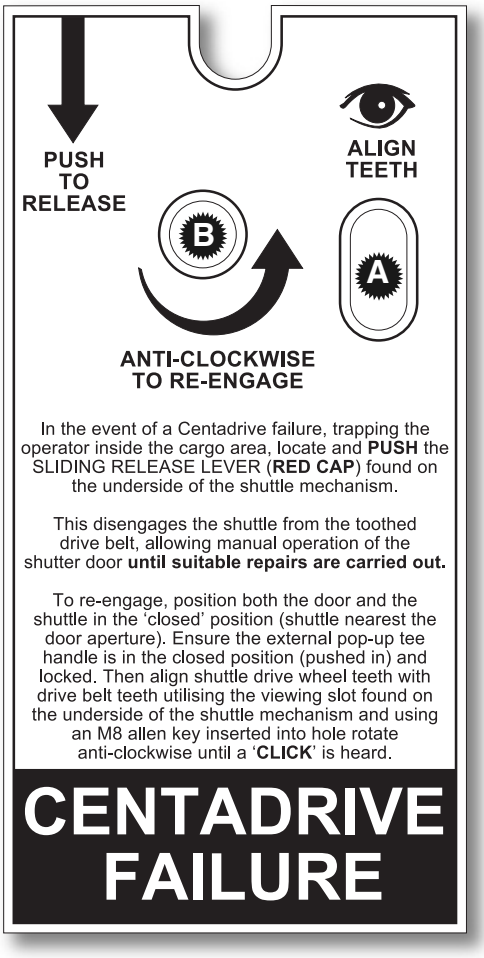
Return To Manual – Internal Emergency Release Mechanism

32. In the event of a Centadrive Unit (CDU) failure whilst the operator is inside the vehicle, locate and push the internal sliding release lever (red cap) found on the underside of the shuttle mechanism – *refer FIG 36.* This will disengage the shuttle from the toothed drive belt, indicated by a slight 'drop back' of the top panel. This allows the manual operation of the door until suitable repairs are carried out.

33. To re-engage, position both the door and the shuttle in the 'closed' position (shuttle nearest the door aperture). Ensure the external pop-up tee handle is in the closed position (pushed in) and locked. Then align shuttle drive wheel teeth with drive belt teeth utilising the viewing slot 'A' – *refer FIG 37 & 38*, found on the underside of the shuttle mechanism and using an M8 allen key inserted into hole 'B' – *refer FIG 37 & 38*, rotate anti-clockwise until a 'CLICK' is heard.

NOTE: THIS OPERATION CAN BE DONE WITH THE DOOR FULLY OPEN BUT ENSURE THE SHUTTLE IS IN THE 'OPEN' POSITION (FURTHEST AWAY FROM THE DOOR APERTURE).

Fig 38



Inspection and Maintenance

34. For trouble-free service, we recommend the door is maintained in accordance with the manufacturer's schedule – *refer FIG 39.*

35. We recommend the Centadrive system is thoroughly inspected once a year, giving particular attention to the following:

    • Ensure all CDU fixings are still mounted securely – *refer FIG 40.*

    • Remove motor cover and ensure motor wiring connections are still secure – *refer FIG 41.*

    • Ensure all wiring looms are still secure and inspect for heat or friction damage – *refer FIG 42.*

    • Ensure all plug-in points are still secure – *refer FIG 43.*

    • Remove linkage mechanism ABS cover and inspect linkage mechanism. Ensure locknuts are still secure and check for any signs of corrosion. Apply a light coating of silicon grease at clevice linkage points if required – *refer FIG 44.*

Fig 39

Fig 40

Fig 41

Fig 42

Fig 43

Fig 44

Adjusting Drive Belt Tension

36. Remove the motor cover - *refer FIG 45.*

37. Locate the drive belt adjustment bolt - *refer FIG 46,* and utilising a 13mm spanner release locknut.

38. Set at 2 N.M (1.5 lb.ft), tighten and check drive belt tension with a 13mm torque wrench.

39. Once setting is achieved, tighen locknut.

40. Replace the motor cover - *refer FIG 47.*

Fig 45

Fig 46

Fig 47

Electronic Control Unit (ECU) Operation

Due to the enormous variation in vehicle construction, two key features of the ECU are password protected to allow user adjustment: **DOOR TRAVEL** and **CURRENT** (power required to operate the shutter door).

Password Entry

- Press the *'MENU'* button twice in quick succession. **"PASSWORD XXXX"** will appear in the display panel.
- Utilising buttons *'A'* and *'B'* on the keypad, enter the factory preset password **"AABAAABA"**.

Door Travel Adjustment

- Enter password then press the *'MENU'* button again. **"DISTANCE"** will appear in the display panel.
- Press button *'A'* to increase door travel (set in increments of 1mm) or button 'B' to decrease until the desired setting is reached (NB: press and hold for larger increments).
- Once the correct setting is reached press the *'MENU'* button again and the desired reading will be saved.

Current Adjustment - Door Up

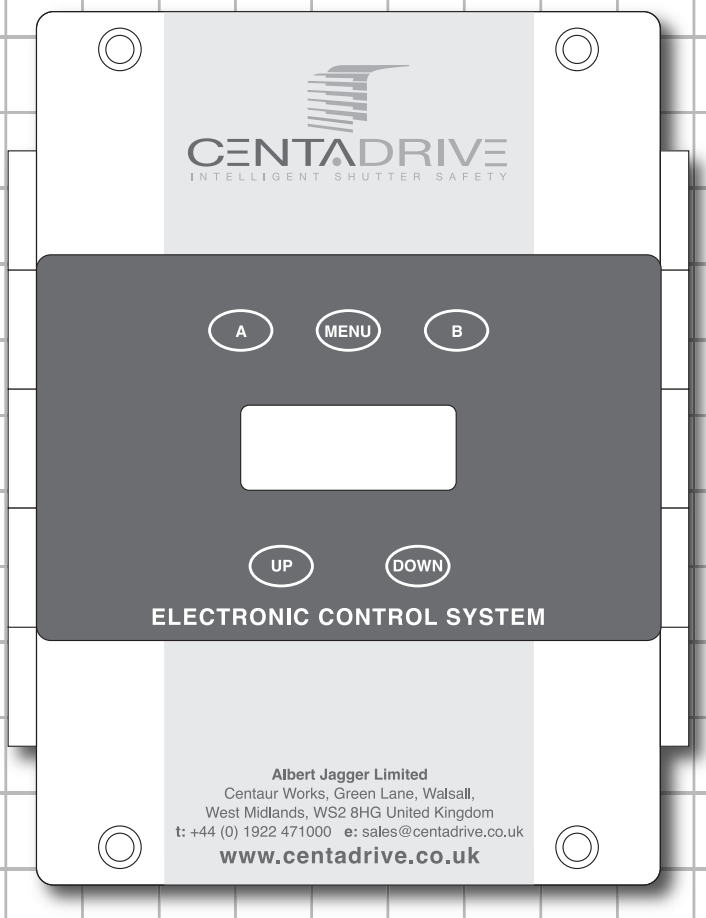
- Enter password then press the *'MENU'* button twice. **"OCP UP"** will appear in the display panel.
- Press button *'A'* to increase current (set in Amps) or button 'B' to decrease until the desired setting is reached.
- Once the correct setting is reached press the *'MENU'* button again and the desired reading will be saved.

Current Adjustment - Door Down

- Enter password then press the *'MENU'* button three times. **"OCP DOWN"** will appear in the display panel.
- Press button *'A'* to increase current (set in Amps) or button 'B' to decrease until the desired setting is reached.
- Once the correct setting is reached press the *'MENU'* button again and the desired reading will be saved.

Synchronising Remote Control Key Fobs

- Press buttons *'A'* and *'B'* on the ECU keypad simultaneously for 3 seconds until **"REMLEARN"** appears in the display panel.
- Press the *'DOWN'* button on the key fob twice in quick succession (NB: the LED will flash both times).
- The remote control key fob is now synchronised to the ECU and should operate the shutter door normally.



EMC & CE Certification

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www.emtek.com.cn Tel:+86-755-2695 4280 Fax:+86-755-2695 4282

Shenzhen EMTEK Co., Ltd.

EMTEK
Access to the World

Certificate of Conformity

NO.: ES121120160E

The following product has been tested by us with the listed standards and found in conformity with the council EMC directive 2004/108/EC. It is possible to use CE marking to demonstrate the conformity with this EMC Directive.

Applicant	: ALBERT JAGGER LTD
Address	: Centaur Works, Green Lane, Walsall, WS2 8HG, UK
Manufacturer	: RAVEN ASIA LTD
Address	: 3rd Floor, B5 Building, Xinjianye Industry Park, Fengxin Road, Guangming New District, Shenzhen, China
Trade Mark	: Centadrive
EUT	: Centadrive Door Control Unit
M/N	: 666-1-RC
Test Standards	: EN55022:2010+AC:2011 EN 55024:2010

CE

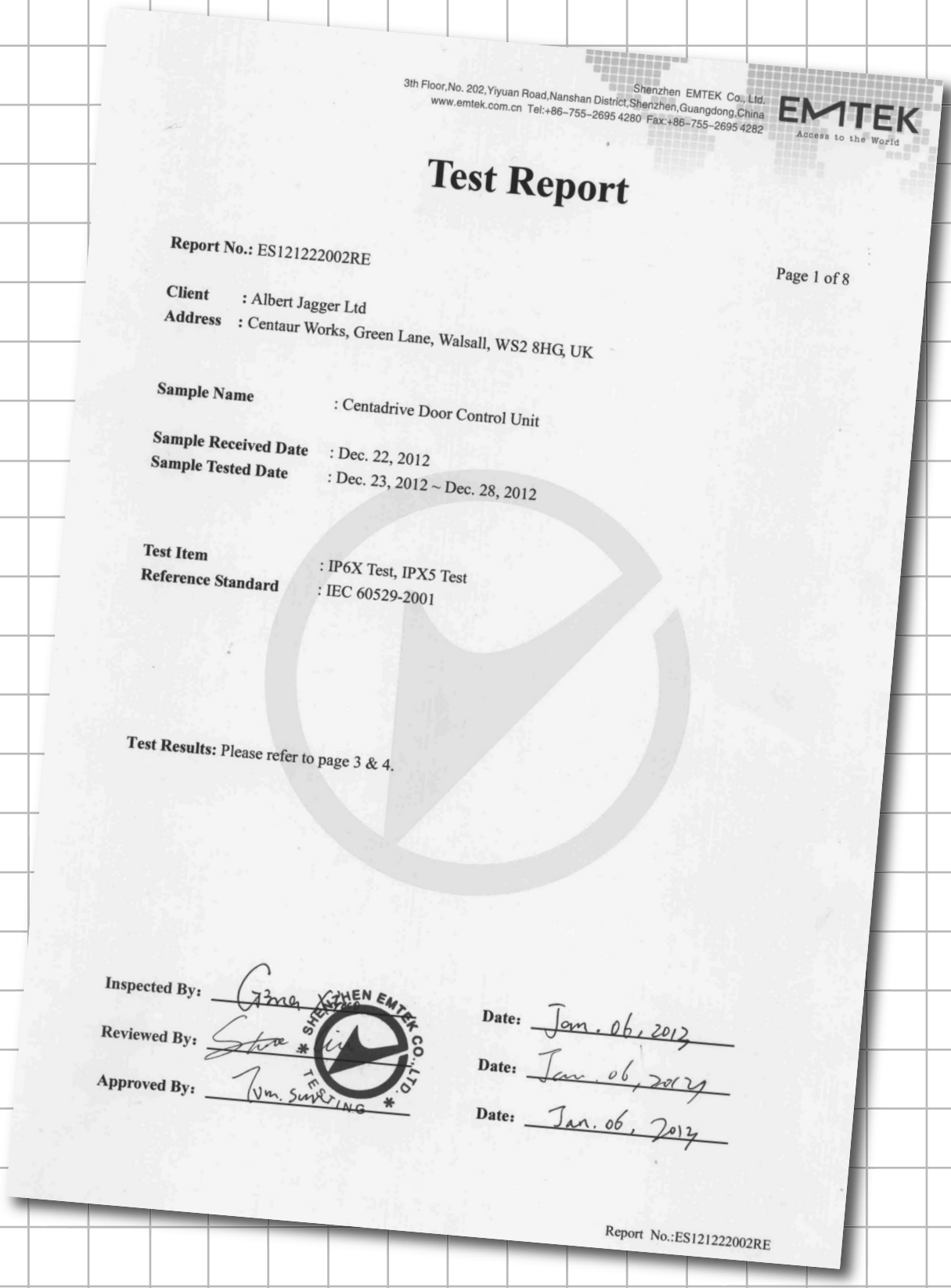
SHENZHEN EMTEK CO., LTD. CERTIFICATE

(Manager)

November 28, 2012

The certificate is based on a single evaluation of one sample of above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. logo.

IP65 Certification



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Shenzhen EMTEK Co., Ltd.

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Test Report

Report No.: ES121222002RE

Page 1 of 8

Client : Albert Jagger Ltd
Address : Centaur Works, Green Lane, Walsall, WS2 8HG, UK

Sample Name : Centadrive Door Control Unit

Sample Received Date : Dec. 22, 2012
Sample Tested Date : Dec. 23, 2012 ~ Dec. 28, 2012

Test Item : IP6X Test, IPX5 Test
Reference Standard : IEC 60529-2001

Test Results: Please refer to page 3 & 4.

Inspected By: Date: Jan. 06, 2013
Reviewed By: Date: Jan. 06, 2013
Approved By: Date: Jan. 06, 2013

SHENZHEN EMTEK CO., LTD. TESTING

Report No.:ES121222002RE

Notes

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