

TURNSTAR



RELIABLE ★ DURABLE ★ GUARANTEED

Technical Sales Training Manual



TRIBUNE Single Reader Turnstile

CONTENTS

1. COPYRIGHT & LIABILITY.....3

2. INTRODUCTION.....4

 3.1. Operating Cycle.....5

 3.2. Two key advantages of the TRIBUNE over the TRIUMPH/TITAN6

 3.3. Key Design Features.....7

 3.4. Reader Integration9

 3.5. Why is the TRIBUNE not made in double configuration?10

 3.6. Restrictor Tube10

 3.7. Additional Key Selling Features10

 3.8. Turnstile flow rate11

 3.9. Power Failure Operation11

 3.10. Wiring Entry Points.....11

 3.11. Customisation Depending on the Customer's Requirements12

 3.12. Weight.....14

 3.13. Dimensions14

4. ROTALOK® TURNSTILE MECHANISM.....15

5. TURNSTILE CONTROL PANEL16

6. PACKING AND FREIGHT19

7. NOTES ON OPPOSITION TURNSTILES.....19

1. COPYRIGHT & LIABILITY

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2. INTRODUCTION

The TRIBUNE is a high security turnstile. It is available in only single and 4-arm configuration.

Applications: Factories, warehouses, stadiums, universities, prisons, cash & carries, factories/warehouses toilets and any application requiring a high level of security and strict controls for time & attendance.



Figure a: Tribune Turnstile in mild steel powder coated finish – Charcoal blue hammertone



Figure b: Tribune Turnstile in Hot-dip galvanized finish

The TRIBUNE turnstile is a bi-directional single reader turnstile. It can also be referred to by some customers as a **man-trap turnstile**.

The TRIBUNE is designed specifically to be integrated with a biometric/fingerprint access control system and is more expensive than the TRIUMPH/TITAN turnstiles.

3. TRIBUNE SPECIFICATIONS

3.1. Operating Cycle

STEP 1

Pushbutton is pressed to allow entrance into the locked turnstile.
Turnstile rotates 90° and locks.

STEP 2

Reader is accessed and recognition takes place.

STEP 3

Reader confirmation - Access allowed.
Turnstile rotates a further 90° and relocks.

STEP 4

Reader confirmation - Access denied (if ID Fail is connected on the printed circuit board).
Turnstile rotates 90° in reverse and relocks.

Alternative:

Timeout – If no signal from the access control reader has been received.
Turnstile rotates 90° in reverse and relocks.

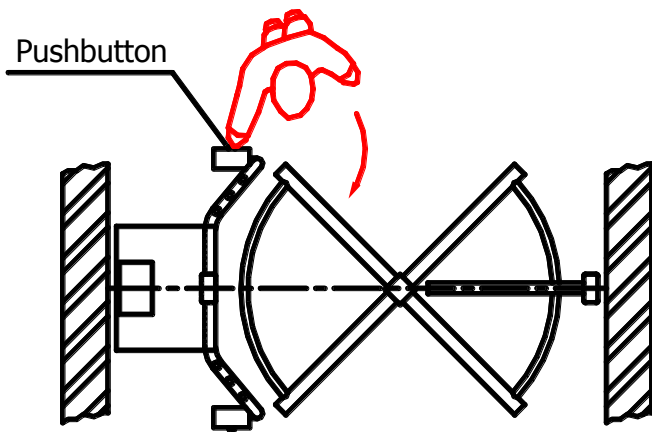


Figure c: STEP 1
Pushbutton is pressed

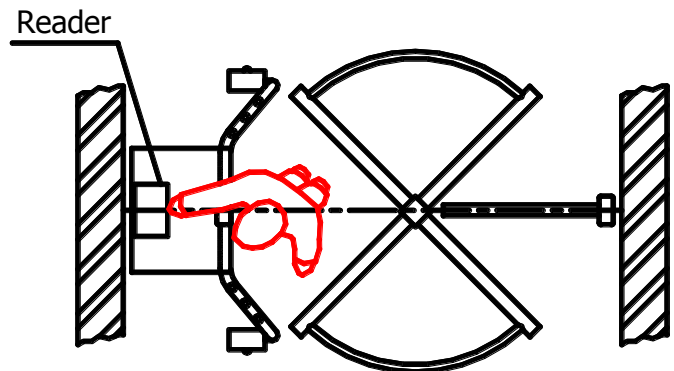


Figure d: STEP 2:
Reader is accessed

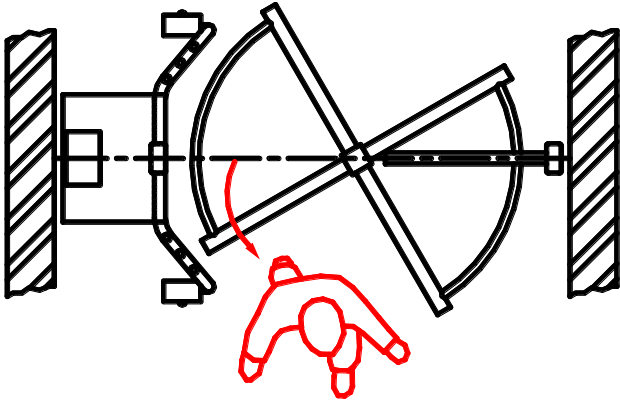


Figure e: STEP 3
Access is granted

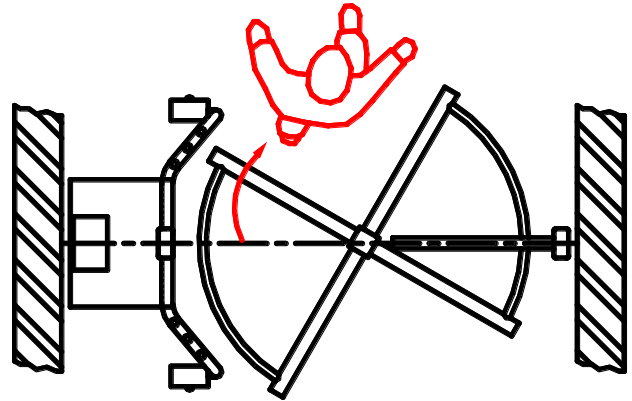


Figure f: STEP 4:
Access is denied

3.2. TRIBUNE vs. TRIUMPH/TITAN

1. Single reader for both entry and exit. This can result in an overall cost saving for the customer as biometric/fingerprint readers can be quite expensive.
2. 100% validated access - meaning that if the biometric/fingerprint access control system says that the person is in the premises, then the person is in the premises.

A disadvantage of the TRIUMPH/TITAN range which requires two readers, one for entry and one for exit, is that the turnstile does not force the person to walk through it. A person can activate the access control reader for entry and then simulate rotation (in other words, turn the turnstile by hand). The person can be at home resting whilst still getting paid. The TRIBUNE forces the person to walk through the turnstile and enter the premises.

Most sites still use the TRIUMPH/TITAN because of the following reasons:

- A TRIUMPH/TITAN turnstile is often a cheaper solution.
- If a person is not at his workstation, a foreman will usually notice.
- At the end of the day, the person must somehow enter the premises through an entrance other than the turnstile (if a second entrance through the turnstile is recorded, the access control system will flag the transaction) and then exit through the turnstile – otherwise his

fraud may be detected by the access control system. At most sites, this will be very difficult unless some level of collusion between employees and the security exists.

3.3. Key Design Features

- The biometric/fingerprint reader cannot be accessed from outside the turnstile. This feature eliminates the possibility of simulation, whereby the reader is activated while the person is outside the turnstile.

This is achieved by the following design features:

- The arms of the turnstile are manufactured with 50mm diameter round tubes. The arm spacing of the rotor near the reader height is 50mm thereby preventing even the skinniest of arms reaching through the rotor to the reader (Figure g).

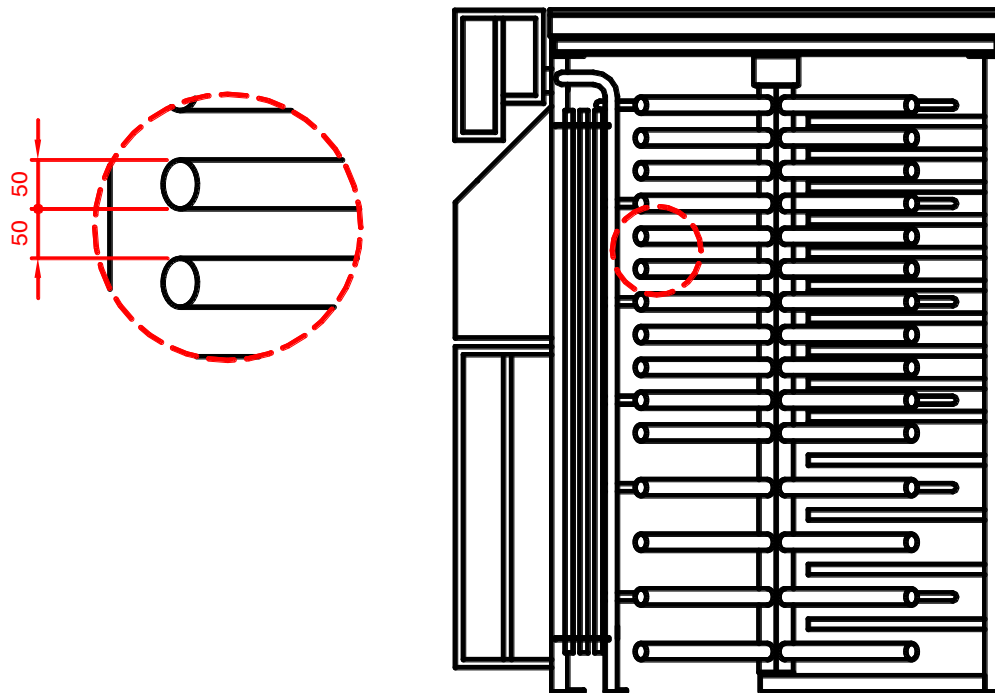


Figure g: Front elevation showing rotor arm spacing

- The verticals in the screen are spaced very close preventing access to the reader from the screen side.
- The reader is housed in a box which is 300mm deep.

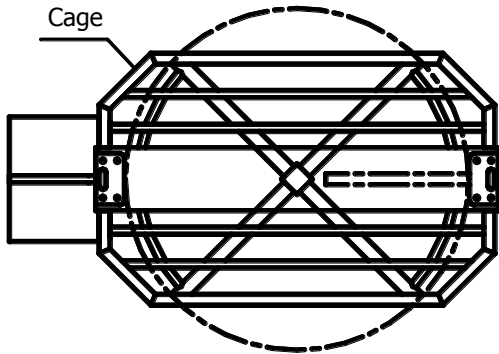


Figure h: TRIBUNE with cage

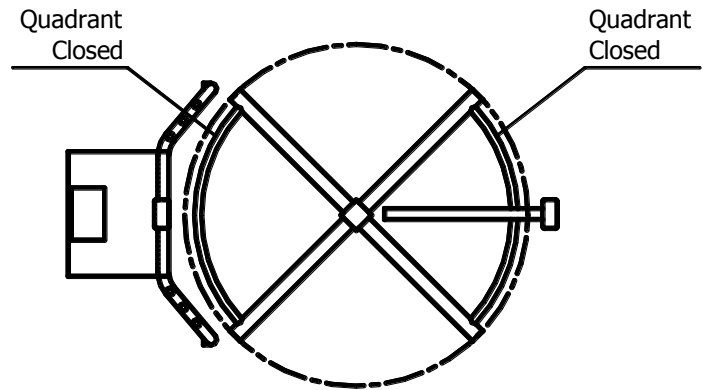


Figure i: Section over rotor showing Closed quadrants

- The reader box partially protects the reader from the elements such as rain. However, we still recommend that a roof be installed over the turnstile if the reader is not designed for outdoor use. The reader box also removes the reader from full view, thereby decreasing the chances that the reader may be damaged by vandals.
- Once inside the turnstile it impossible to activate the reader and then climb out of the turnstile as a cage (See figure h) is welded to the top channel of the turnstile. The cage can also be replaced with a flat roof canopy – this must be specified prior to manufacture.
- Two of the four quadrants are blocked and cannot be used for transactions (See Figure i).

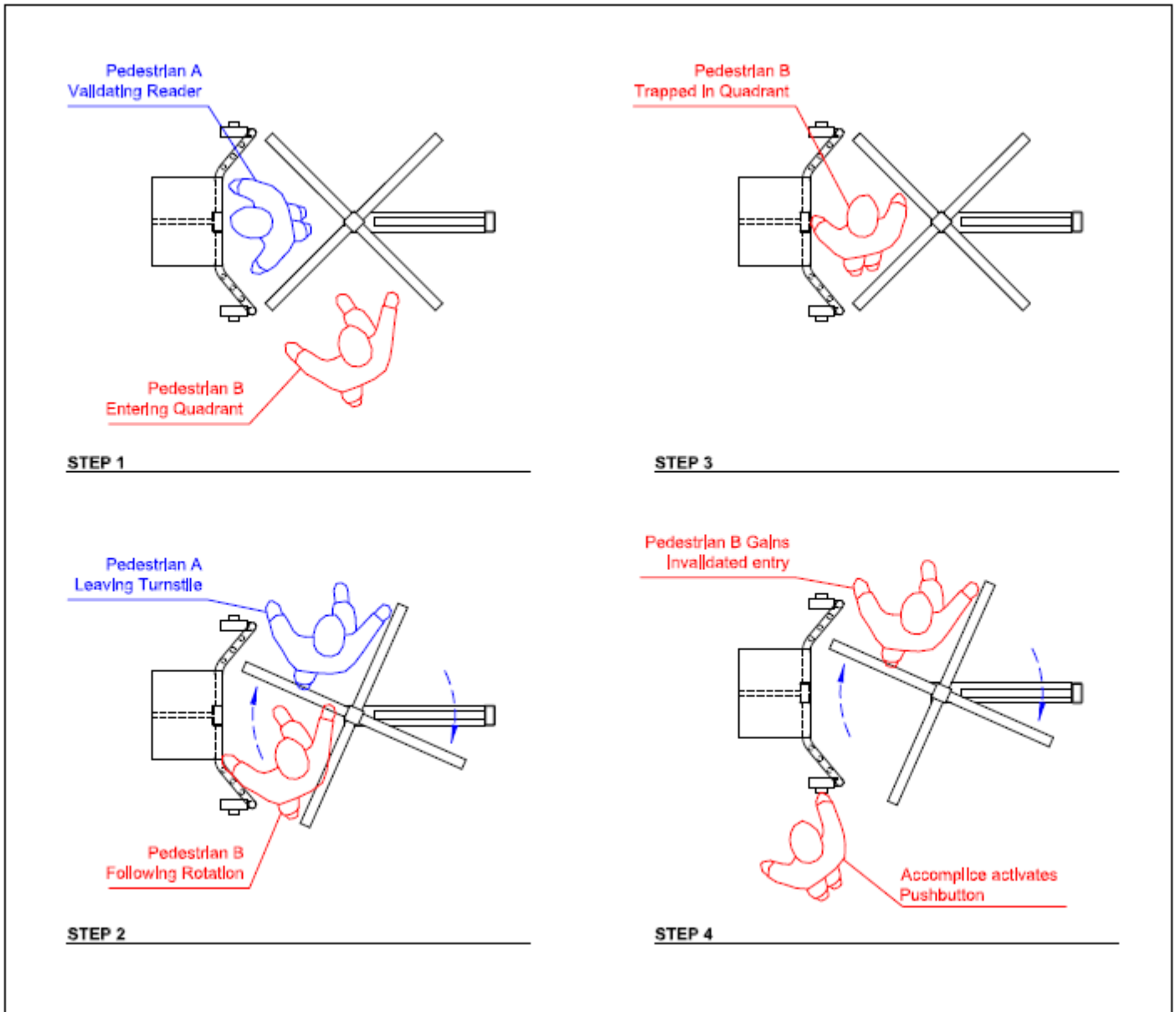
If all four quadrants were open for use, then the following scenario could occur.

STEP 1

When person A is in mid-cycle and reader confirmation has occurred, another person B can enter the open quadrant at the entrance to the turnstile.

STEP 2

Person B can then follow person A during the 90° rotation and will become trapped inside the turnstile. Person B can then either reach through the turnstile and press the pushbutton (or an accomplice can press the pushbutton) and the turnstile will rotate a further 90° allowing unauthorised entry.



3.4. Reader Integration

In order to benefit from all the features of the TRIBUNE, the reader must be correctly integrated with the turnstile. The biometric/fingerprint reader is to be configured to remain inactive/off until the person is in the trapped position. If the reader is active during rotation, then a person can activate the reader and then simulate rotation, thereby removing the '100% validated access' feature.

When the turnstile is in the trapped position, a relay closes on the printed circuit board of the turnstile and the access control system can use that signal to activate the reader. Most biometric/fingerprint readers have a long start-up time and are not designed to be continuously

switched on and off. The access control installer is often required to come up with a creative solution, such as the deactivation of the fingerprint reader backlight.

When trouble shooting on the turnstile and you are unsure if the reader is at fault or the turnstile, the external pushbutton can be used to start a cycle. The turnstile can then be turned to the trapped position and the ID Test button on the printed circuit board (see below) can be used to simulate the trigger from the access control reader. If the ID Test button works, the fault lies with the reader.

In order to unlock the turnstile for free rotation in the event of a fire alarm, the terminals K and L must be bridged (K for direction 1, L for direction 2). See below for the wiring diagram.

3.5. Why is the TRIBUNE not made in double configuration?

The TRIBUNE cannot be manufactured in double configuration as the arms are spaced too close together (50mm apart). A double turnstile relies on the two rotors interweaving with each other in order to save space. As the arms of the TRIBUNE are spaced 50mm apart and each arm is manufactured from 50mm diameter round tube, it is impossible for the arms to interweave.

3.6. Restrictor Tube



Figure j: Restrictor tube

A restrictor tube can be welded to the rotor of a 4-arm turnstile in various positions to increase the level of security. The restrictor tubes can be welded at waist height, just above knee height and just below shoulder height. The purpose of the restrictor tube is to limit the amount of space inside the 90° quadrant, thereby making it more difficult for two people to enter the turnstile during a single transaction.

3.7. Additional Key Selling Features

- ROTALOK® turnstile mechanism is CE approved
- Suspended rotor technology

- 5 year guarantee on mechanism and base bearing
- 1 year guarantee on electronic control panel
- Bi-directional electrical locking using one biometric reader
- Integrates fully with any type of access control system
- 100% validated entry

3.8. Turnstile flow rate

Refer to 'Turnstile flow rate' in the TRIUMPH/TITAN technical sales training manual.

When asked by a customer, we generally work on an average flow rate of **1 person every 8 seconds**. This is slightly slower than the 1 person every 6 seconds for the TRIUMPH/TITAN range.

3.9. Power Failure Operation

The factory standard is for the TRIBUNE to be set for fail-secure operation. In the event of a power failure the turnstile will remain locked unless manually unlocked by means of the mechanical key override. If a power failure occurs during mid-cycle, the person will be trapped. Because of this problem, all TRIBUNE turnstiles are supplied complete with a battery backup which will allow operation during a power failure. As of August 2016, we are working on an updated chip which will allow for a dip switch to change the turnstile to fail-safe operation.

Notes on battery backup:

- The two 7aH batteries supplied with a battery backup should be replaced annually.
- The battery backup will provide up to 500 transactions of power failure operation in fail-secure mode. In fail-secure mode, the turnstile draws very little power when idle and only drains the battery when unlocking and during rotation. In fail-safe mode, the turnstile will provide up to 30 minutes of operation.

3.10. Wiring Entry Points

There are **two** wiring entry points into the TRIBUNE top channel. Either through the central upright of the comb or through the comb side of the turnstile top channel.



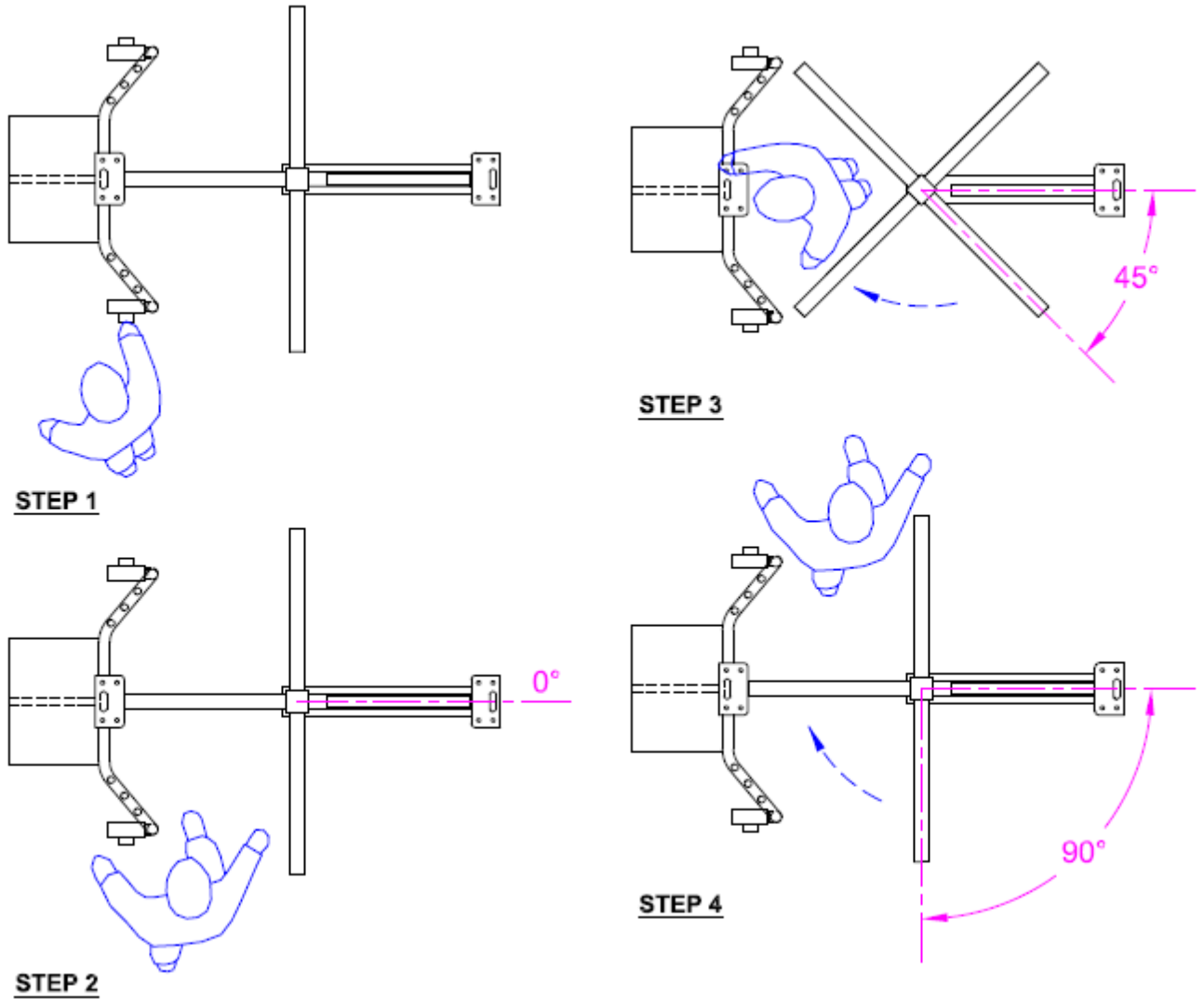
Figure k: Wiring entry points

3.11. Customisation Depending on the Customer's Requirements

1. 90° operation.

Depending on customer requirements (such as turnstile flow rate), the TRIBUNE can be set up for 90° full cycle rotation instead of 180° full cycle rotation. However, please note that this setting does not offer '100% validated entrance' unless the access control reader is deactivated until rotation to the trapped position occurs.

A 90° full cycle rotation offers a slightly higher flow rate than the 180° full cycle rotation option.



2. The rotor of the TRIBUNE turnstile can fit through a standard doorway, however, it cannot fit through a doorway to a narrow passage (as the rotor must be passed through the doorway at an angle). In this case, the rotor can be manufactured for bolt-together assembly and set for 90° rotation where all four quadrants are available for use.
3. For additional security, the customer might choose to use both a card/tag and biometric/fingerprint reader system on the turnstile. The two cycle start pushbuttons can be replaced with card/tag readers and a biometric/fingerprint system can be installed in the reader box.
4. The TRIBUNE can be converted to two reader operation. Two cycle start pushbuttons can be replaced with the new access control system and a pushbutton can be installed in the reader box. The person will be trapped in the turnstile until the pushbutton is activated, at which point the turnstile will rotate to allow the completion of the entry cycle. This configuration may

be offered to a customer who needs the turnstile, but has not made a decision regarding the biometric/fingerprint access control system to be fitted to the turnstile.

3.12. Weight

TRIBUNE single turnstile - 220kg (without packing materials such as crating)

3.13. Dimensions

TRIBUNE single turnstile

1 700mm wide x 2 125mm high (recommended opening 1 730mm wide x 2 250mm high *)

(*) The additional width and height are in order for the turnstile top cover to be easily removed and replaced.

For installations where there is a height restriction, the turnstile can be supplied with a 'split' cover as opposed to the standard 'lift off' cover (not recommended for outdoor installations). In which case, the recommended height opening will be 2 150mm).

When installing a barrier above the turnstile, a gap of 125mm should be left so that the standard 'lift off' cover can be easily removed.

4. ROTALOK® TURNSTILE MECHANISM

The TRIBUNE turnstile is fitted with the same turnstile mechanism which is used for the TRIUMPH/TITAN range. However, the TRIBUNE mechanism is fitted with additional microswitches and cams.

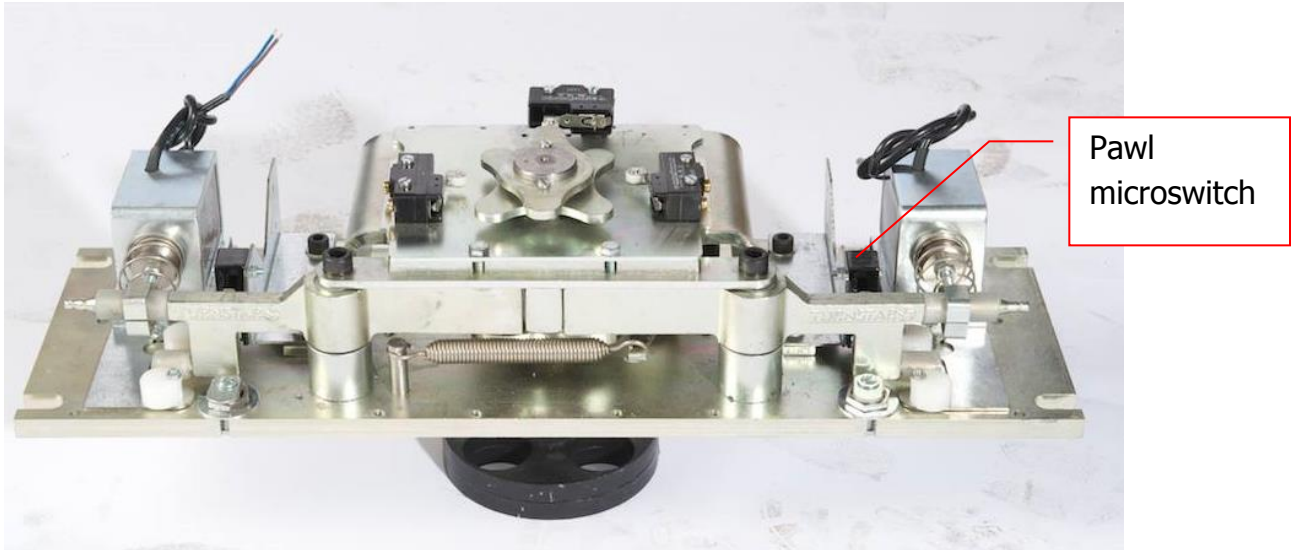
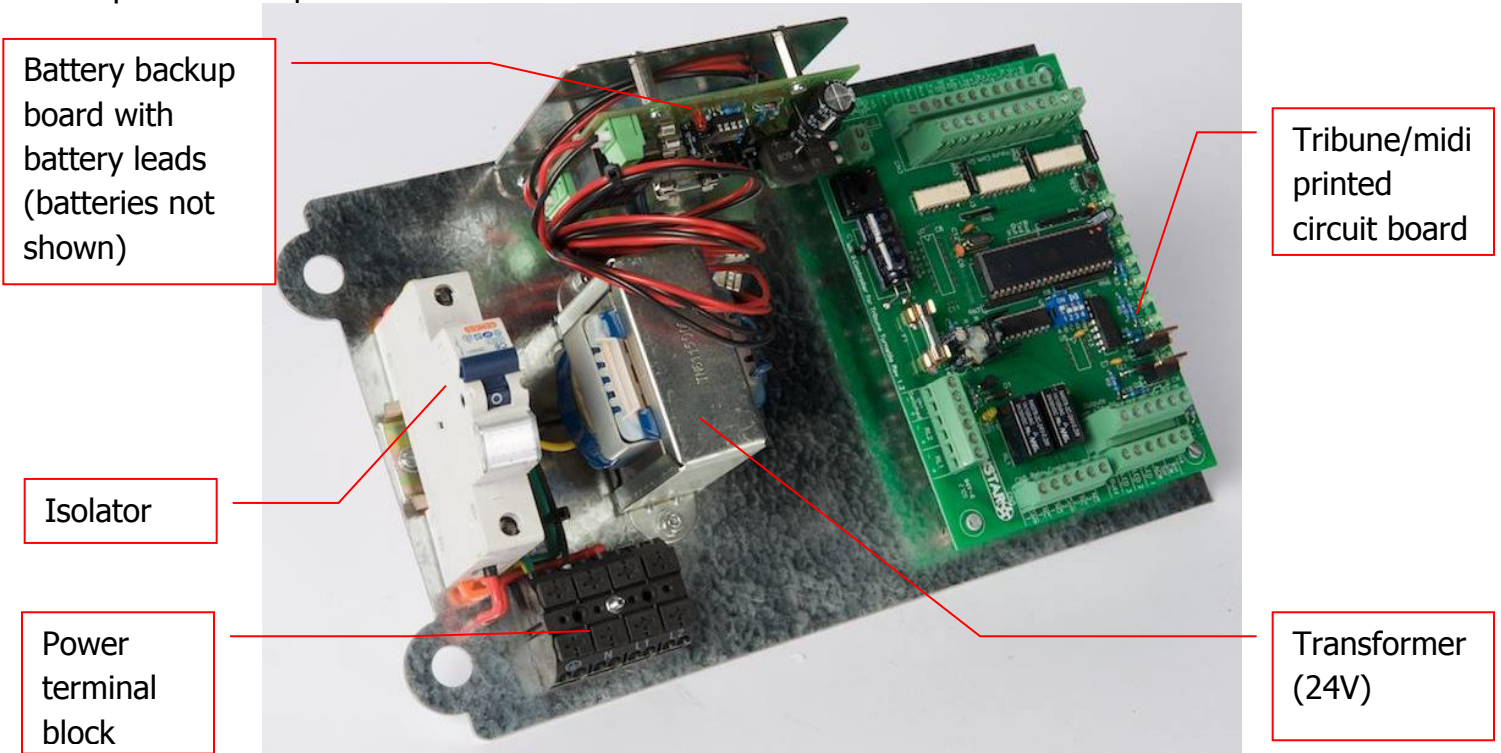


Figure k: ROTALOK Tribune turnstile mechanism



5. TURNSTILE CONTROL PANEL

The turnstile control panel controls the entire locking and unlocking operation of the turnstile. The control panel consists of a chassis plate, power terminal block, isolator, 24V transformer, battery backup board and printed circuit board.



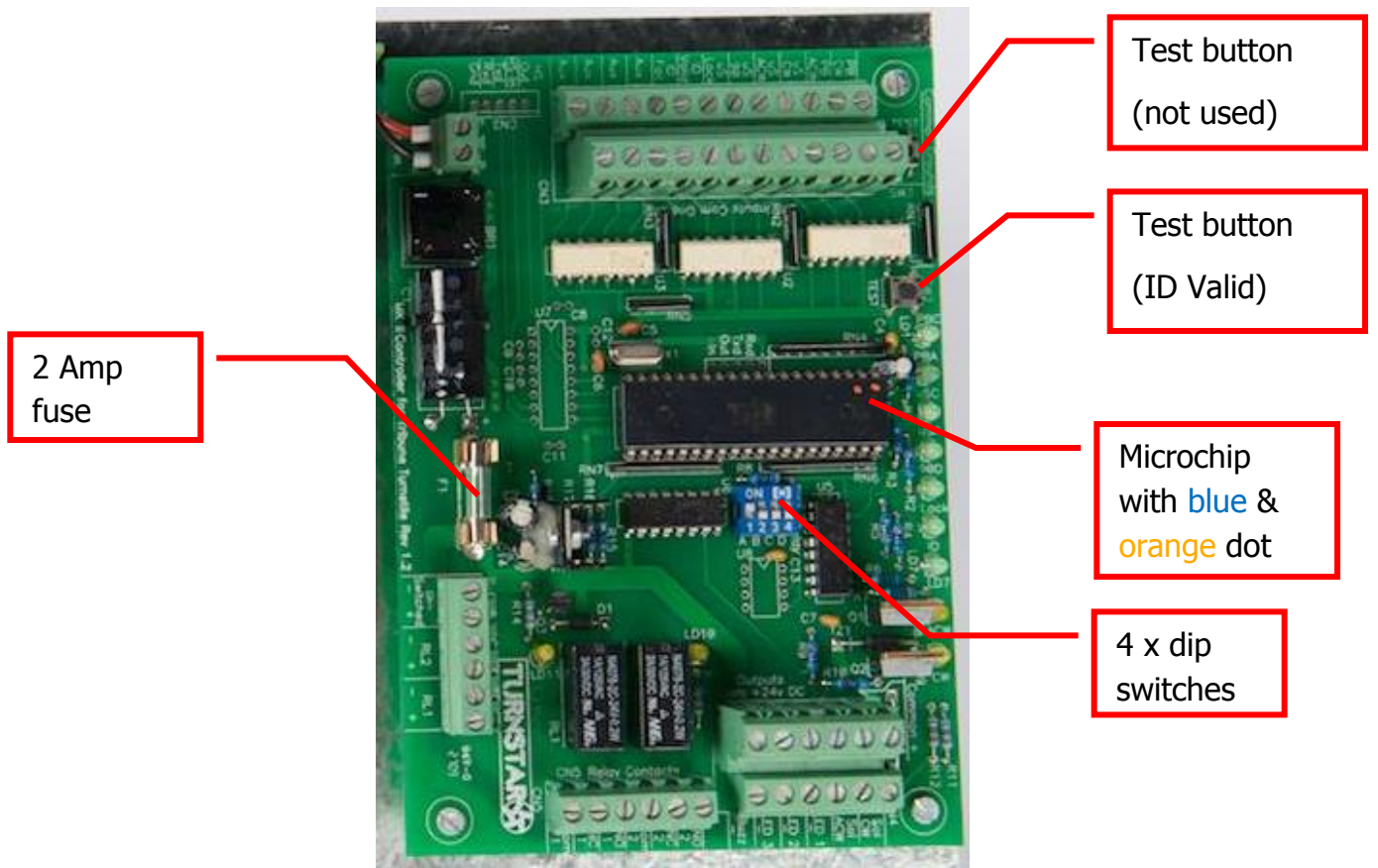
The printed circuit board is fitted with a microchip which contains the computer program which runs all the turnstile functions. The microchip for the TRIBUNE program is marked with 1 x **blue** and 1 x **orange** dots. This information is very important, as the TRIBUNE / MIDI printed circuit board is used in a number of different products and is fitted with a microchip which has a different marking.

Older software versions had either 1, 2 or even 3 **orange** dots.

Connection instructions:

- Terminals A and B are for the pushbutton connections
- Terminal G is for the ID Valid connection
- Terminal H is for the ID Fail connection (not essential)
- Terminals K and L are for the fire alarm free rotation connections

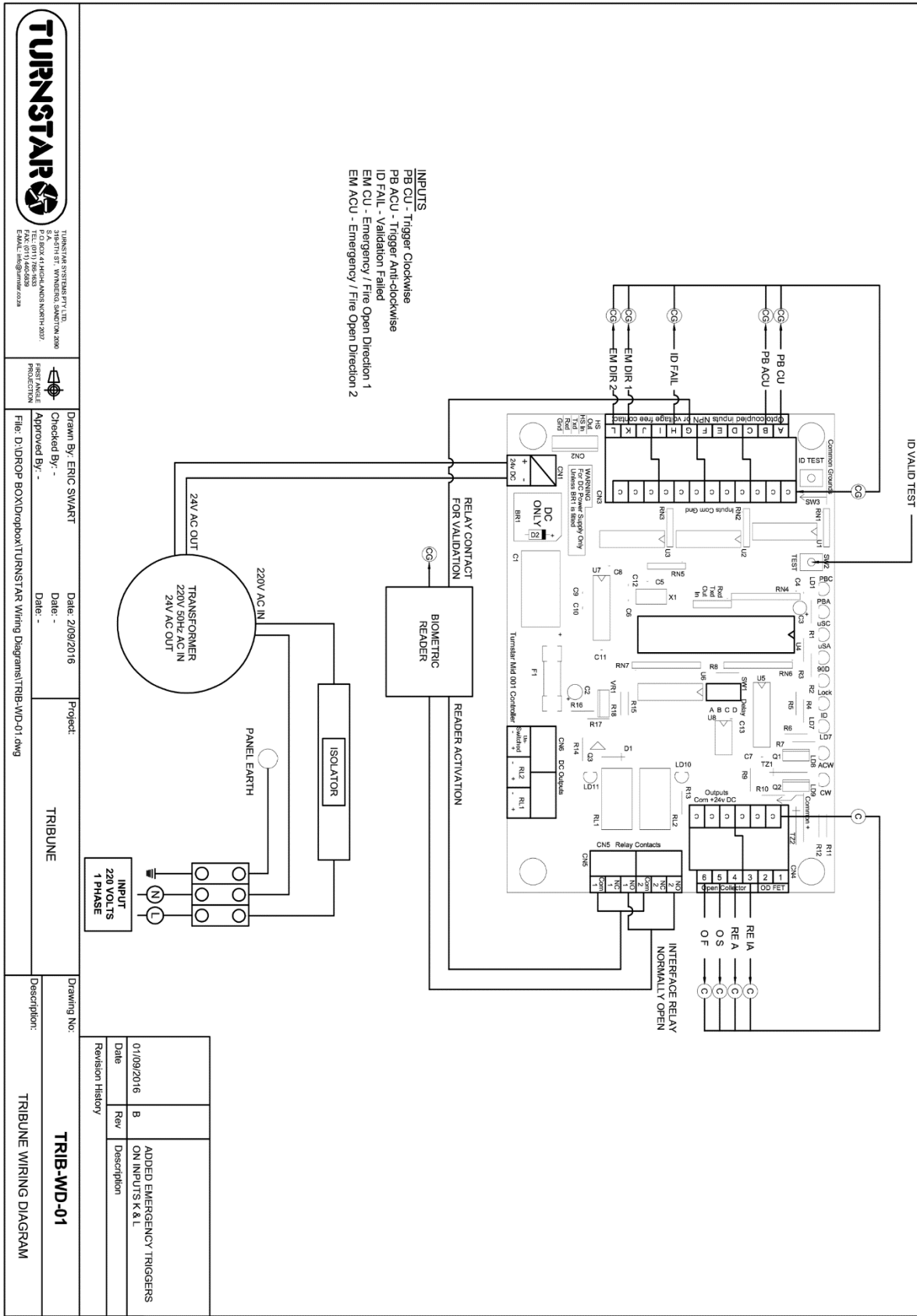
Wiring diagram follows below.



The TRIBUNE printed circuit board was recently renamed the 'midi' control board as it is now used in a number of different products, including man-trap cubicles and curved glass turnstiles. All the terminals for wiring have been relabeled with generic letters and numbers. The distinguishing factor will always be the coloured dot markings on the microchip.

The printed circuit board is also fitted with four dip switches. The first two dip switches are used to adjust the timeout period whilst in the trapped position. The second two dip switches are unallocated.

Dip switch position		Time in seconds
1	2	
OFF	OFF	25
ON	OFF	20
OFF	ON	15
ON	ON	10



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Project: TRIBUNE

File: D:\DROP BOX\Dropbox\TURNSTAR Wiring Diagrams\TRIB-WD-01.dwg

Drawing No: TRIB-WD-01

Description: TRIBUNE WIRING DIAGRAM

Revision History

Date	Rev	Description
01/09/2016	B	ADDED EMERGENCY TRIGGERS ON INPUTS K & L

6. PACKING AND FREIGHT

Large orders

We are able to fit six fully assembled **TRIBUNE** turnstiles into a 20 foot container and thirteen fully assembled **TRIBUNE** turnstiles into a 40 foot container.

Small to medium orders

1 x **TRIBUNE** full height single turnstile - goes according to volumetric weight

Pallet: 2.2m long x 1.1m wide x 1.4m high (230kg)

Crate: 2.2m long x 1.1m wide x 1.4m high (360kg)

Two **TRIBUNES** cannot be packed onto the same pallet or into the same crate. Each turnstile must be packed separately

7. NOTES ON OPPOSITION TURNSTILES

Boomgate Systems, Alltech and Gunnebo offer a man-trap turnstile which is a copy of the TRIBUNE and which make us wonder if they themselves understand the concept of the turnstile. Their offerings have the following flaws:

- a. No overhead cage - A person can climb out of the turnstile during mid-rotation.
- b. Can reach the reader from outside the turnstile as the arms are not spaced close enough and the reader mounting box is not deep enough.
- c. 90° cycle - Does not offer '100% validated access' unless properly integrated with the reader, which is a feature I don't think they have.
- d. An inferior design turnstile comb which can be circumvented by an industrious and agile criminal.