# Hollin Applications High Load Handbrake Kit

Basic Instruction Manual.

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Drawing Number – HOL4-DWG6-040v3

## Basic Operation

This kit uses a standard Tomson Linear Actuator as the motor force mechanism to electrically apply the handbrake on a vehicle. This is to replace the existing mechanical system.

To put the brake on a signal is applied from a switch and the Actuator will move and gradually apply the brake. As the brake is applied and the Actuator is moving a small buzzer will sound on the circuit to alert the user. As the brake is applied the Actuator current will increase. Once the current hits a predetermined level the Actuator will switch off. The Actuator will hold position with the brake applied using no power. The buzzer stops at this point.

At this brake applied point, two contacts on the circuit will close. These can be used to switch a warning dashboard light on, or any other warning device to alert that the brakes are applied.

Switching to brake off will then drive the Actuator in the opposite direction. Again the current is monitored and will stop the Actuator at a pre-set low level around 500N. The intention is for this to be the end of stroke of the Actuator, fully off, either out or in. An exterior mechanical stop can be used to stop at any point in the retract stroke.

If the ignition is switched off then the brake can be applied but not released as a safety measure.

If the brake is switched off when the ignition is off and then the ignition is switched on then the brake will not release as a safety measure. This situation should be avoided if possible.

## Basic Kit.

On receipt of the new kit, please unpack and check the contents for the following

1. Linear Actuator type Thomson LA14 DDA11-20A65M-561 100mm stroke
2. Control box. Black with 1m cables to connector block
3. Switch

Note Appendix 1 for photograph of kit as despatched.

## Actuator.

Note Appendix 2 gives general Actuator description and outline drawing/dimensions.

First take the Actuator and look for a suitable position on the vehicle.
The Actuator will pull or push the load to a set load level, this level is adjustable.
Dynamic adjustable apply load and Static load holding are both the same in each direction.
The Actuator will not rotate so can be used connected to the cable direct, the lever in the cab or onto the mechanism at the rear of the vehicle.
With a flexible end mount such as a cable the Actuator is best mounted rigid, using the rear 12mm pin and the a clamp around the body of the Actuator.
With a fixed end mount such as the lever then the Actuator should be mounted via each end bolt.
As the Actuator has some internal protection (an overload clutch) but testing of the unit must be done with extreme care or via the supplied circuit only.

## Circuit Electronics.

The unit is supplied with a very simple to use electronic control board.

Note Appendix 3 gives General cable ident.

Look to fit the circuit in a dry area, accessible, with as short as possible cable lengths to the battery and to the Actuator.

There is a bung cover on the rear of the box to allow access for load adjustment on initial setup. The unit comes preset at roughly 1000N load, it can be adjusted between 500N and 2000N load. The Actuator maximum rated load is 2250N at which point the clutch will slip
Take care to keep this bung accessible during the fitting and setting up of the unit.

## Power Connections

Note Appendix 4 gives Power Wiring Layout

Red Terminal 4 – Connect direct to positive side of the 12 volt battery
Keep the cable as short as possible, if it needs to be lengthened use 1mm$^2$

Black Terminal 5 – Connect direct to negative side of the 12 volt battery
Keep the cable as short as possible, if it needs to be lengthened use 1mm$^2$

Pink Terminal 6 - Connect to an ignition switched live terminal

## Actuator Connections

Note Appendix 4 gives Actuator Wiring Layout
There are two ways to use the Actuator to apply the handbrake. The Actuator can retract to pull the cable or extend to pull the cable. Both directions work equally well with the same force and holding load. A simple swapping of wires around changes from one to the other.

With a Thomson LA14 Actuator Red positive and Black negative will extend.
Conversely Red Negative and Black positive will retract.

Extend for brake on, wire as follows:
Orange Terminal 1 - Connect to Red on the Actuator
Purple Terminal 2 - Connect to Black on the Actuator

Retract for brake on, wire as follows:
Orange Terminal 1 - Connect to Black on the Actuator
Purple Terminal 2- Connect to Red on the Actuator

Keep the cable as short as possible, if it needs to be lengthened use 1mm$^2$ minimum tri-rated cable if possible.

## Dashboard Connections

**Switch**
Connectors 8-10 are to be wired up to the switch for brake on and off. This can be thin wires and 3-core if required.

Pin 9 is connected to 0 volt on the circuit and should not be connected to ground at the switch, just to the switch.

Brown Terminal 8 - Connect to 0 volts or terminal 9 to brake on.

Yellow/Green Terminal 9 - 0 volts output from the circuit if required.

Blue Terminal 10 – Connect to 0 volts or terminal 9 to brake off.

The switch supplied is SPDT ON-ON style (2-position) toggle switch.

Our alternative switch is a Red/Green Push Button, this gives a ready representation of the state of the brake.

Green pushed in for go and brake off, released.
Red pushed in for stop and brake on, applied.

Alternative switches can be used. We would advise two position non-momentary so that the chance of applying half brake is avoided. Some users prefer momentary switches so there is a definite apply action for the on or off brake.

Switch or relay to operate the on/off there should be a 7msec minimum open circuit between change of state to allow the circuit to reset.

**Dashboard Indicator**
Terminals 11 and 12 white are connected to a small output relay on the circuit. These are non volt contacts attached to an isolated relay on the circuit board.

They are open contact after during brake off or if the ignition is off.

They are closed contact if both the brake is correctly applied to the pre-set trip level and the ignition is on.

These contacts can be used for any brake applied alert system.
The usual is to connect to the dashboard light system.

If the Dashboard is switched negative then connect one lead to the dash light and the other to 0 volts.

If the Dashboard is switch positive then connect one lead to the dash board light and the other to 12 volts.

## Load Level Adjust

Note Appendix 6 shows the Adjustment positions

The unit is supplied with the fixed off trip level of 500N and the on level of 1000N.

It is possible to adjust the on levels if required.

With reference to appendix 6, remove the bung from the rear of the enclosure to access the small adjust screw.

Using a small plastic adjust screw driver fit to the slot.

Use small adjustments only and do not force the screw. After each adjust test the handbrake until the required level is achieved.

At this point retest a number of times to assure consistency.

Refit the bung and refit the circuit enclosure.

## Specifications

| | |
|---|---|
| Type | Hi Load Handbrake kit |
| Voltage | 12 volt DC +/- 2 volts |
| Current | 10 Amp Max |
| Fuse | Internally fused 10 Amps resettable |
| Size | 137mm x 62mm x 30mm |
| Standby current | 14 mAmp ignition off |
| Actuator | LA14  DDA11-20A65M-561 |
| Circuit protection | IP54 – circuit resin filled |
| Input Switch | SPDT non momentary |
| Output Dash light | n/o 2 wire close brake on – 12 volt 8 Amp |


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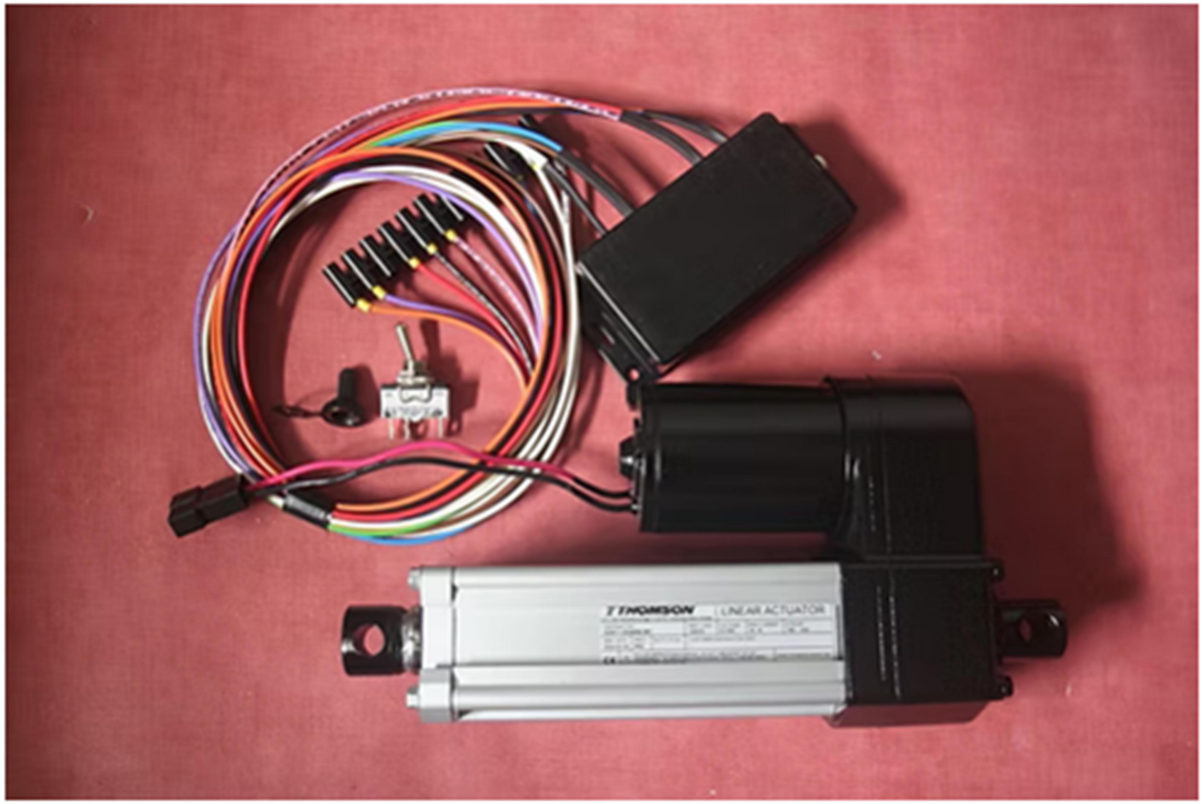
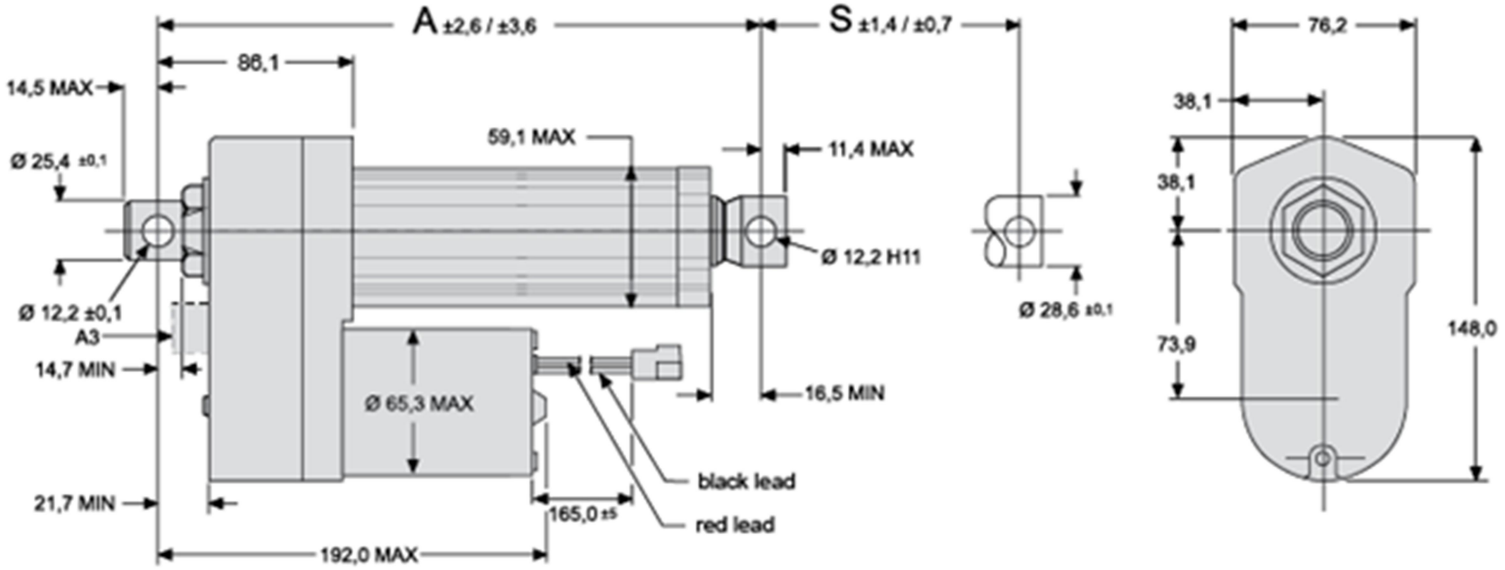


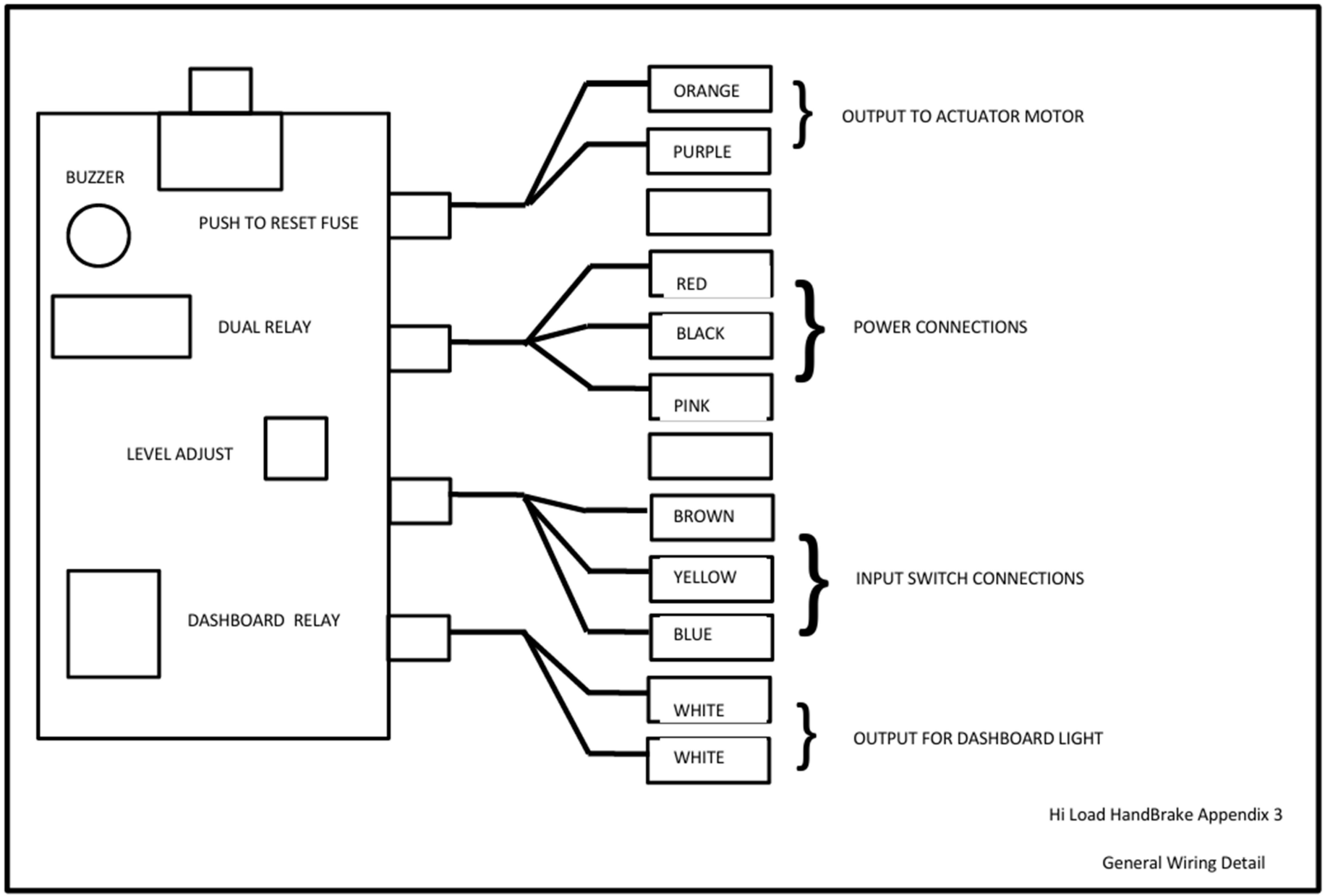

Hi Load HandBrake Appendix 1

Picture of Handbrake Kit



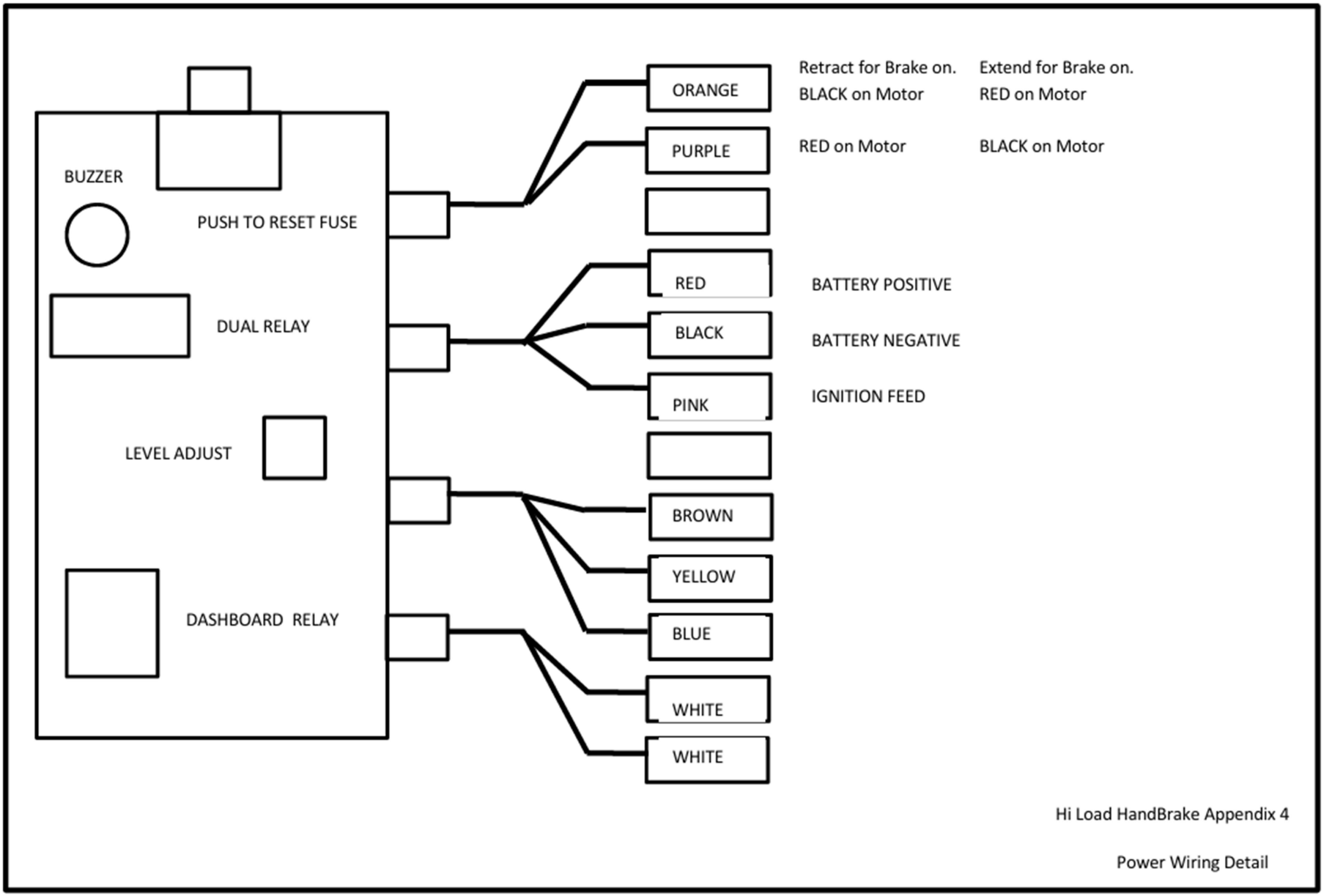

S: stroke, tolerance acme / ball screw
A: retracted length, tolerance acme / ball screw
A3: manual override input (optional)

| Dimension | Value |
|---|---|
| [A] | 266.7 mm |
| [S] | 100 mm |



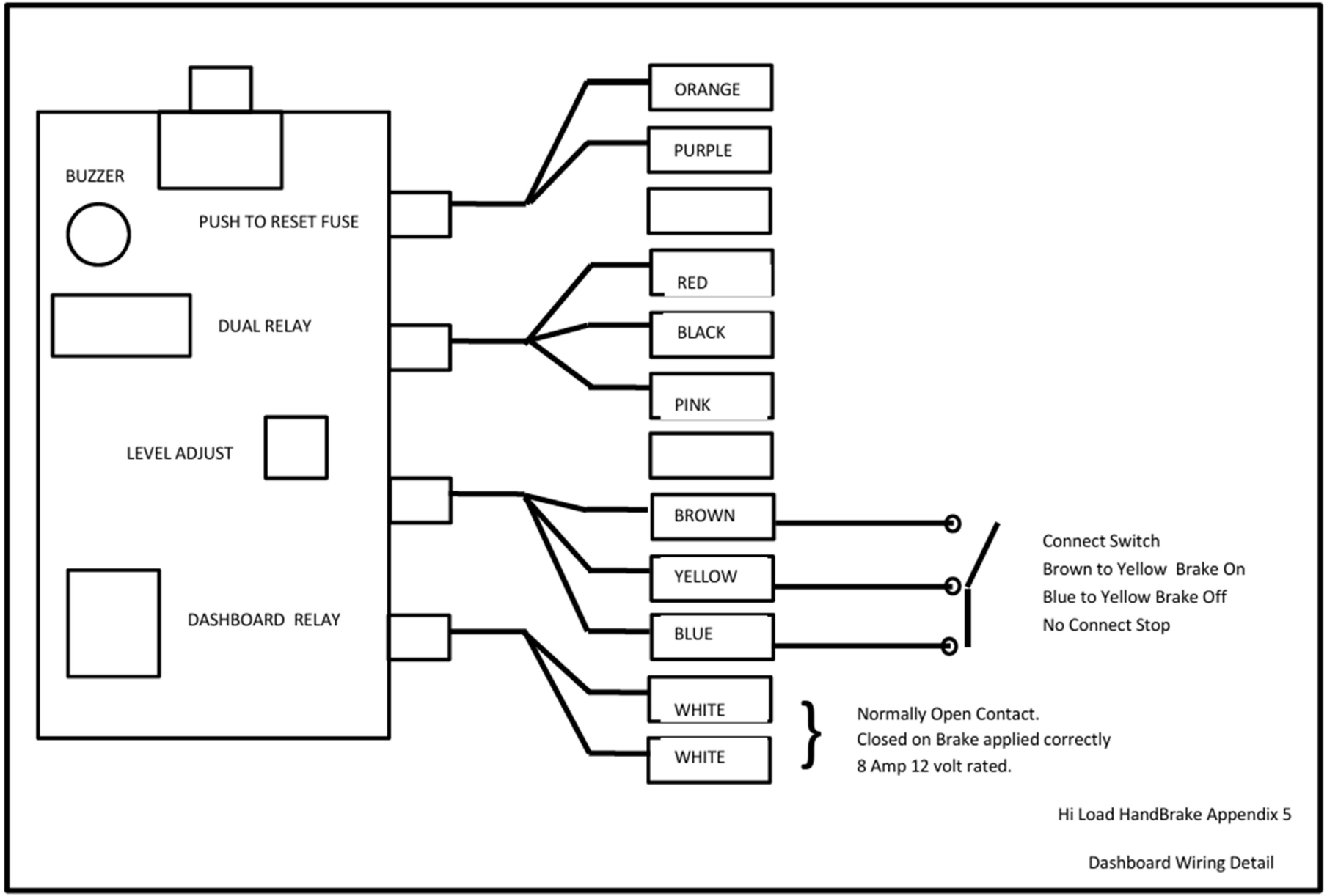

Hi Load HandBrake Appendix 3

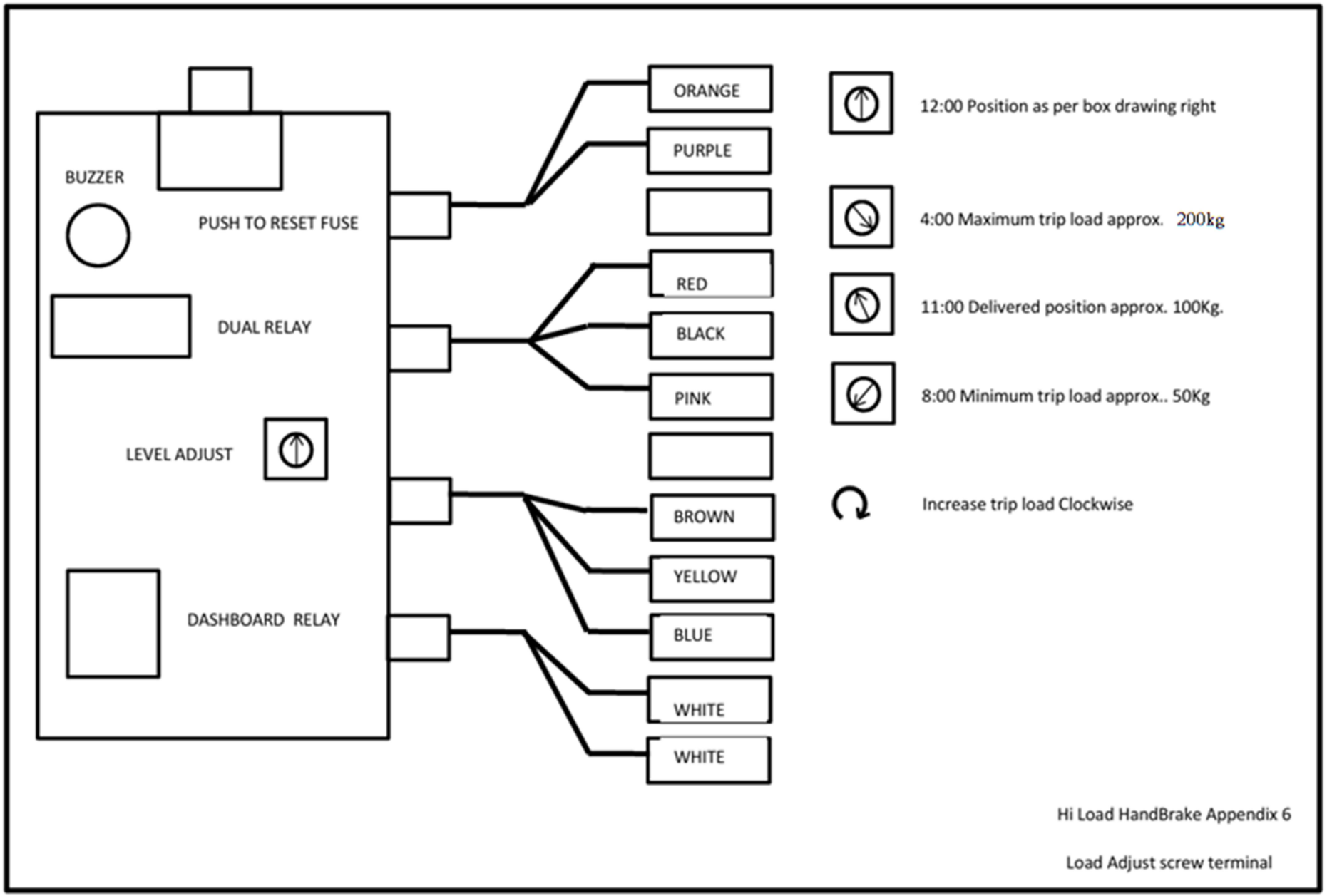
General Wiring Detail




Hi Load HandBrake Appendix 4

Power Wiring Detail


BUZZER
PUSH TO RESET FUSE
DUAL RELAY
LEVEL ADJUST
DASHBOARD RELAY
ORANGE
PURPLE
RED
BLACK
PINK
BROWN
YELLOW
BLUE
WHITE
WHITE
Connect Switch
Brown to Yellow Brake On
Blue to Yellow Brake Off
No Connect Stop
Normally Open Contact.
Closed on Brake applied correctly
8 Amp 12 volt rated.
Hi Load HandBrake Appendix 5
Dashboard Wiring Detail


BUZZER
PUSH TO RESET FUSE
DUAL RELAY
LEVEL ADJUST
DASHBOARD RELAY
ORANGE
PURPLE
RED
BLACK
PINK
BROWN
YELLOW
BLUE
WHITE
WHITE
12:00 Position as per box drawing right
4:00 Maximum trip load approx. 200kg
11:00 Delivered position approx. 100Kg.
8:00 Minimum trip load approx.. 50Kg
Increase trip load Clockwise
Hi Load HandBrake Appendix 6
Load Adjust screw terminal