

# BIGFOOT

CENTRAL TYRE INFLATION SYSTEMS



# Operating & Installation Manual











## **Bigfoot's Central Tyre Inflation System (CTIS) is an onboard electronic system used to control tyre pressure – all from your vehicle's cab, whilst in motion.**

The system allows you to optimise the tyre pressure to match both the load and speed of your vehicle. Our CTIS is particularly useful when fitted to vehicles involved in heavy haulage operations and especially those that are exposed to different road types (including unsealed roads), extreme gradients and conditions.

After more than two decades of development, our system has been successfully used worldwide in various industries including forestry, agriculture, livestock, woodchip, roading, mining and construction. As well as helping you to achieve cost savings, the system has several built-in safety and performance features.

**To learn more about the Bigfoot Central Tyre Inflation System visit [www.bigfoot.co.nz](http://www.bigfoot.co.nz)**

## **Potential Benefits**

### **Improved traction**

More uptime and less time being bogged down

### **Reduced roading costs**

Less ground force pressure with a larger footprint reduces the 'wash boarding' effect on road surfaces

### **Enhanced floatation**

Less compaction of ground surfaces

### **Effective tyre management**

Correct tyre pressure for the load and the speed as well as constant air supply to keep slow punctures inflated

### **Extended tyre life**

Less case damage and stone bruising

### **Fuel savings**

Achieved by always having the correct tyre pressure

### **Improved ride**

Enhanced shock absorption through tyre deflection

### **Reduced vibration**

Improved component life

### **Reduced maintenance**

Less cracking and fatigue caused by vibration

### **Increased productivity**

Greater uptime

## Important safety information

This manual is a general user guide covering the operation and installation of our Bigfoot CTIS. The expectation is the person/s operating the vehicle will familiarise themselves with both this manual and the system.



### **Pay attention to warning symbols.**

These are for your safety and indicate 'Points of Interest' for the safe and effective installation and operation of the Bigfoot CTIS

### **Occasional maintenance of the system may be required.**

The person/s undertaking both the maintenance and installation should have experience working on heavy road transport vehicles and be confident using all tools and equipment required to install the system (hand tools, power tools, jacks and stands). The use of personal protective equipment will be required for certain tasks, including steel capped boots, eye protection, gloves and hearing protection.







# Contents

## Operating instructions ..... 6

1. Systems available ..... 7
2. Display models ..... 8
3. Pressure settings..... 9
4. Getting started ..... 10
5. Global Positioning System (GPS)..... 10
6. Low air..... 11
7. Single, Dual or Multi Zone..... 11

## Configuring displays and adjustments .... 12

1. Configuring Display Gen.2 (Single or Multi-zone) .. 13
2. Gen.2, Adjusting the display settings ..... 13
3. Gen.2, Single Zone Adjustment..... 14
4. Gen.2, Dual Zone Adjustment ..... 15
5. Gen.1, Adjusting the display settings ..... 16
6. Gen.1, Single Zone Adjustment..... 16
7. Gen.1, Dual Zone Adjustment ..... 17

## Installation instructions

### – Single and Dual Zone CTIS..... 18

1. Electrical supply ..... 19
2. Running the looms ..... 20
3. The air supply..... 20
4. Mounting the CTI System ..... 21
5. Fitting wheel gear and manifolds..... 22
6. Tyre Hoses ..... 23
7. Air supply to Tee Taps ..... 24
8. Testing the system ..... 25
9. System Schematics..... 26

## Installation acceptance ..... 30

## Troubleshooting guide ..... 32

1. Display Fault (Blank)..... 33
2. No response from control box..... 33
3. Display ‘No response Zone 1’..... 33
4. Low air..... 33
5. Excessive display of Low air ..... 34
6. Low air emergency repair ..... 34
7. System not inflating (or slow to inflate) ..... 34
8. System not deflating ..... 34
9. System slow to deflate ..... 34
10. Emergency repair..... 35
11. Service exchange ..... 35

## Parts ..... 36

1. Display ..... 37
2. Electronic control unit (ECU)..... 37
3. Wheel Hoses..... 37
4. Tyre Hoses ..... 38
5. Rotating unions and wheel gear..... 38
6. Air valves ..... 39
7. Electrical items..... 40
8. Hose..... 40
9. Assorted parts ..... 40
10. Tee Tap mounting..... 41
11. Trailer equipment..... 41
12. Brass fittings ..... 42

# Operating instructions



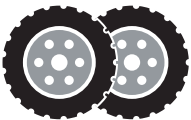


# I. Systems Available



## Single zone system:

A single zone system is the most common and is fitted to the drive axles of the vehicle 4x2, 4x4, 6x4, 8x4, 8x6 combinations or in some cases the drive and tag axle e.g. 6x2 combinations.



## Dual zone system:

A dual zone system allows a vehicle to use two different tyre pressure settings simultaneously on different axle groups (zones) e.g. steer axles and drives, or drive axles and trailer. Both options are common to this system.



## Multi zone system:

Allows a vehicle to use three different tyre pressure settings simultaneously in three different axle groupings (zones) e.g. steers, drives and trailers. (\*note, this system is available but not covered in this document)



The tyre pressure can be altered to suit your individual requirements.

## 2. Display models



### Generation 2 (Gen.2)

This latest generation display includes the following features and benefits:

- Able to fit into 1Din ISO (Radio) slots in vehicles (also supplied with saddle mount for on-dash application)
- Tactile rocker switch allows the operator to adjust without taking their eyes off the road
- Large, easy to read screen
- Download functionality through mini USB on fascia
- Able to be linked with telematics systems
- External or internal GPS aerial to best suit your vehicle



### Generation 1 (Gen.1)

This older style display has four separate buttons to activate different functions.

#### Single zone display

##### LED indicators

Low air LED (red)  
Inflate LED (red)  
Deflate LED (green)

##### Switches

On/Off power  
– centre button  
Pressure settings  
– rocker up/down  
Background brightness  
– rocker left/right

#### Single zone display

##### LED indicators

Low air LED (red)  
Inflate LED (red)  
Deflate LED (green)

##### Switches

On/Off power button  
Pressure settings  
– up/down buttons  
Background brightness  
– light button

#### Dual or multi zone display

##### LED indicators

Low air LED (red)  
Zone 1 LED  
(red inflate/green deflate)  
Zone 2 LED  
(red inflate/green deflate)  
Zone 3 LED  
(red inflate/green deflate)

##### Switches

On/Off power  
– centre button  
Pressure settings  
– rocker up/down  
Background brightness  
– rocker left/right

#### Dual or multi zone display

##### LED indicators

Low air LED (red)  
Zone 1 LED  
(red inflate/green deflate)  
Zone 2 LED  
(red inflate/green deflate)  
Zone 3 LED  
(red inflate/green deflate)

##### Switches

On/Off power button  
Pressure settings  
– up/down buttons  
Background brightness  
– light button



## 3. Pressure settings

### Single Zone

The single zone system has five default pressure settings:

	Pressure (PSI)	Speed	Load
On highway laden	90	High	High
On highway unladen	75	High	Low
Off highway laden	55	Low	High
Off highway unladen	30	Low	Low
Emergency traction	25	Low	High

### Dual Zone

The dual zone has five pressure settings for the drive axle and four for non-driving axles, example below (drive axle and trailer):

	Zone 1 (psi)	Zone 2 (psi)	Speed	Load
On highway laden	100	110	High	High
On highway unladen	65	65	High	Low
Off highway laden	55	65	Low	High
Off highway unladen	30	55	Low	Low
Emergency traction	25		Low	High

These pressures can be altered to suit your vehicle's configuration, tyre specification, weight and speed, so please contact your distributor or tyre manufacturer for recommendations.



The emergency traction setting is available for the drive axles only. When selecting the 'emergency traction' setting, the non-drive zone will stay at the last known pressure setting.

## 4. Getting started

### Generation 1 and 2

Changing settings is done by selecting either the 'up or down' buttons. Each depression (up/down) will select the next pressure setting. The 'emergency traction' pressure setting is the lowest setting and the 'on highway laden' is the highest pressure setting.

The pressure showing on the display is the tyre pressure once the system settles.

The tyre pressure setting will flash if the actual pressure is more than 4 psi away from the target setting and will stop flashing when under 4 psi. This is the 'deadband flash' setting in the display.



*It's normal for the pressure readout to fluctuate whilst the system is inflating or deflating. The metered air pressure alters quicker than the pressure can be delivered into the tyres. The settled air pressure reading displayed is the actual pressure.*

The display indicates when the pressure is being adjusted. If the system has been fitted to the drive axles only, then only 'zone 1' will be functioning. The inflate LED will glow orange when inflating, and the deflate LED will glow green when the system is deflating.



*An audible alarm will also indicate air leaking from the system. After the system reaches the target pressure, the system will alert the driver every time the inflate solenoid operates to restore the system back to the target pressure.*

## 5. Global Positioning System (GPS)

**Bigfoot CTIS has onboard speed sensing through the GPS.**

This is a safety feature designed to prevent the vehicle operating at a speed greater than intended for specific tyre pressures.

In the emergency traction setting, your vehicle speed limit is typically set at 40kph compared to the off-highway setting at 75kph.



*If you exceed the default speed settings, the system will beep and state 'over speed' on the display screen. If you don't decrease your speed or increase the tyre pressure settings after 30 seconds, then the system's built-in safeguard will automatically inflate your tyres to the highest pressure setting.*





## 6. Low air

### The Bigfoot CTIS will prioritise your vehicle's brake air system.

The system will not inflate the tyres when the low air pressure LED is illuminated. An audible alarm will start after the low air LED has been on for 90 seconds, and the display will indicate 'low air'. When low air is displayed on screen, your vehicle's tank pressure will be displayed rather than tyre pressure.

The system will only use air from the vehicle when the pressure reaches 110 psi (7.5bar).

There is 15 psi pressure variation between the system supplying air to the CTIS at 110 psi (7.5bar), and when it stops supplying air at 95 psi (6.5bar).



*The accessory protection valve will only supply air to the system once the air in your vehicle's braking system reaches a pre-determined pressure.*



*Some older systems are fitted with an 'override switch' on the dash. When this switch is turned off, it prevents the operation of the inflate solenoid. The display indicates 'override on zone 1' whenever this switch is used.*



## 7. Single, dual or multi zone

The **Gen.1** displays are either single or dual/multi zone. Your system will be delivered with the correct display type to suit the system.



**Single zone display**  
*will not work on multi zone systems and;*

**Multi zone display**  
*will not work on a single zone system.*

The **Gen.2** display can be either single, dual or multi zone. To use this functionality the correct software needs to be selected within the display software.

# Configuring displays and adjustments

CENTRAL TYRE INFLATION SYSTEM

TYRE PRESSURE 69  
ON HWAY UNLADEN

**BIGFOOT** EQUIPMENT



# 1. Configuring display Gen.2

(single or multi-zone)

The Gen.2 display holds both single and multi-zone software. The correct software needs to be selected to suit your system.

To select the correct software built into your display you need to:

- Turn power off to the display
- Press the **on/off** and the **right rocker** simultaneously and turn power on
- The display will energise after the initial **BIGFOOT EQUIPMENT** intro screen, the second screen will display **SETUP MODE**, then release the buttons

In the setup mode:

- The on/off button will confirm and select the next function
- The up/down rocker will alter the selection

After the release of the buttons the display will ask **SYSTEM TYPE**

- Move the **up/down** rocker for **1 ZONE** or **MULTIZONE**
- To select the zone required press the **on/off** button

If the display was previously set in a different zone the display will run through a **CLEARING LOGGER MEMORY** process.....(approx. 32 seconds)

# 2. Gen.2, adjusting the display settings

Once the data logger has cleared, you can complete the setup.

For a second time:

- Turn power off to the display
- Press the **on/off** and the **right rocker** simultaneously and turn power on
- The display will energise after the initial **BIGFOOT EQUIPMENT** intro screen, the second screen will display **SETUP MODE**, then release the buttons

The display is now ready for the input of the display settings.



*You are now at a point where you can adjust the settings.*

## 3. Gen.2 – single zone adjustment

Below is a typical truck setting example:

- Pressing the centre on/off button will accept changes and move to the next setting
- Moving the up/down rocker will change the settings

Display readout	Setting	Comments
System Type: ? Zone	<b>1</b>	Single zone system
Reset to factory setting: Y/N	<b>No</b>	No will allow adjustments
Display Pressure:	<b>PSI</b>	PSI, BAR, KPI options
Zone 1 On highway laden	<b>90</b>	Optional
Zone 1 On highway unladen	<b>75</b>	Optional
Zone 1 Off highway laden	<b>55</b>	Optional
Zone 1 Off highway unladen	<b>30</b>	Optional
Emergency traction	<b>25</b>	Optional
PSI Overshoot first time: Y/N	<b>N</b>	N will allow the pressure to deflate to exact pressure, Y will allow 5 psi tolerance
Display speed in:	<b>KPH</b>	KPH, MPH optional
Top Speed - On highway laden	<b>120</b>	Optional
Top Speed - On highway unladen	<b>120</b>	Optional
Top Speed - Off highway laden	<b>75</b>	Optional
Top Speed - Off highway unladen	<b>75</b>	Optional
Top Speed - Emergency traction	<b>40</b>	Optional
Delay before up-shift: ? sec	<b>30</b>	Delay period when speeding before system will self-inflate
Pres. dead band flash: ? psi	<b>4</b>	Display will stop flashing within the desired pressure
Beeper on time: ? sec	<b>1</b>	Beeper time
Maximum speed: ? kph	<b>120</b>	Nominal setting
GPS speed not locked		No action required
GPS data time/date		No action required
GPS data lat/long		No action required
SOL currents		No action required
End of set up - restarting		No action required



## 4. Gen.2 – dual zone adjustment

Below is a typical European truck and trailer (super single) configuration example:

- Pressing the centre on/off button will accept changes and move to the next setting
- Moving the up/down rocker will change the settings

Display readout	Setting	Comments
System Type: ? Zone	<b>Multi zone</b>	Single zone system
Text display: ?	<b>English</b>	English/Swedish options
Reset to factory setting: Y/N	<b>No</b>	No will allow adjustments
Number of zones: ?	<b>2</b>	Dual zone
Trailer inflate extra time: ? sec	<b>4</b>	Will inflate extra 4 seconds when pressure is reached
Display Pressure:	<b>PSI</b>	PSI, BAR, KPI options
Zone 1 On highway laden	<b>100</b>	Optional
Zone 1 On highway unladen	<b>65</b>	Optional
Zone 1 Off highway laden	<b>55</b>	Optional
Zone 1 Off highway unladen	<b>30</b>	Optional
Zone 2 On highway laden	<b>110</b>	Optional
Zone 2 On highway unladen	<b>65</b>	Optional
Zone 2 Off highway laden	<b>65</b>	Optional
Zone 2 Off highway unladen	<b>55</b>	Optional
Emergency traction zone	<b>1</b>	Drive axles
Emergency traction	<b>25</b>	Optional
Display speed in: ?	<b>KPH</b>	KPH/MPH option
Top speed - On highway laden	<b>120</b>	Optional
Top speed - On highway unladen	<b>120</b>	Optional
Top speed - Off highway laden	<b>75</b>	Optional
Top speed - Off highway unladen	<b>75</b>	Optional
Top speed - Emergency traction	<b>40</b>	Optional
Delay before up-shift: ? sec	<b>30</b>	Delay period when speeding before system will self-inflate
Pres. dead band flash: ? psi	<b>4</b>	Display will stop flashing within the desired pressure
Anti-cycling ?	<b>Enabled</b>	Allows zone to be disconnected without display showing fault, zone 'Off'
Beeper on time: ? sec	<b>1</b>	Beeper time
Maximum speed: ? kph	<b>120</b>	Nominal setting
Low air alarm: ? psi	<b>95</b>	Optional recommendation
Low air restore: ? psi	<b>110</b>	Optional recommendation
GPS not locked		No action required
GPS data time/date		No action required
GPS data lat/long		No action required
SOL currents		No action required
End of set up		No action required

# 5. Gen.1 – adjusting the display settings

## Entering the setup mode:

### Gen.1 displays:

Settings can be reset on the driver’s display by entering ‘reset mode’. The three buttons on the right-hand side of the display (up arrow, down arrow, and light), need to be pushed together simultaneously. Once done, the display will read “Reset Mode”, or the number of zones.



*For your protection, the Bigfoot CTIS has GPS-based speed sensing:*

- *75kph for the two ‘off highway’ settings*
- *40kph for emergency traction*

Once you’ve entered this mode, use the on/off switch to scroll through all the settings, which can be altered using the up and down arrows. Each time the up or down arrow is pressed, the setting is changed by one increment.

# 6. Gen.1 – single zone adjustment

## Below is a typical truck setting example:

- Pressing the on/off button will accept changes and move to the next setting
- Pressing up/down will change the settings

Display readout	Setting	Comments
# of settings: ? Settings (NZ)	5	Number of pressure setting available
On highway laden	90	Optional
On highway unladen	75	Optional
Off highway laden	55	Optional
Off highway unladen	30	Optional
Emergency traction	25	Optional
Top speed - On highway laden	120	Optional
Top speed - On highway unladen	120	Optional
Top speed - Off highway laden	75	Optional
Top speed - Off highway unladen	75	Optional
Top speed - Emergency traction	40	Optional
Delay before up-shift: ? sec	30	Delay period when over speeding before system will self-inflate
Pres. dead band flash: ? psi	4	Display will stop flashing within the desired pressure
Zone 2, 3 deflate enable: Y/N	N	
Beeper on time: ? sec	1	Beeper time
Maximum speed: ? kph	120	Nominal setting
GPS speed		No action required
SOL currents		No action required
End of set up		No action required



## 7. Gen.1 – dual zone adjustment

Below is a typical European truck and trailer (super single) configuration example:

- Pressing the on/off button will accept changes and move to the next setting
- Pressing up/down will change the settings

Display readout	Setting	Comments
Text display: ?	<b>English</b>	English/Swedish options
Number of zones: ?	<b>2</b>	Dual zone
Trailer inflate extra time: ? sec	<b>4</b>	Will inflate extra 4 seconds when pressure is reached
Show Pressure:	<b>PSI</b>	PSI, BAR options
Zone 1 On highway laden	<b>100</b>	Optional
Zone 1 On highway unladen	<b>65</b>	Optional
Zone 1 Off highway laden	<b>55</b>	Optional
Zone 1 Off highway unladen	<b>30</b>	Optional
Zone 2 On highway laden	<b>110</b>	Optional
Zone 2 On highway unladen	<b>65</b>	Optional
Zone 2 Off highway laden	<b>65</b>	Optional
Zone 2 Off highway unladen	<b>55</b>	Optional
Emergency traction zone	<b>1</b>	Drive axles
Emergency traction	<b>25</b>	Optional
Top speed - On highway laden	<b>120</b>	Optional
Top speed - On highway unladen	<b>120</b>	Optional
Top speed - Off highway laden	<b>75</b>	Optional
Top speed - Off highway unladen	<b>75</b>	Optional
Top speed - Emergency traction	<b>40</b>	Optional
Delay before up-shift: ? sec	<b>30</b>	Delay period when speeding before system will self-inflate
Pres. dead band flash: ? psi	<b>4</b>	Display will stop flashing within the desired pressure
Anti-cycling ?	<b>Enabled</b>	Allows zone to be disconnected without display showing fault, zone 'Off'
Beeper on time: ? sec	<b>1</b>	Beeper time
Maximum speed: ? kph	<b>120</b>	Nominal setting
Low air alarm: ? psi	<b>95</b>	Optional recommendation
Low air restore: ? psi	<b>110</b>	Optional recommendation
Calibrate speed		No action required
End of set up		No action required

# Installation instructions - single and dual zone CTIS



# I. Electrical supply

A stable 12 or 24 volt electrical feed is required to supply the system power. An ignition sourced accessory power supply is preferable. Some vehicles are fitted with a accessory 'body builders' board close to the fuse box. Your local vehicle agent will be able to identify the correct power supply.

## There are three loom/leads supplied with the system:

- Power supply loom
- Display lead
- Chassis loom

## Power supply loom

The power supply loom sits in between the display lead and the chassis loom. At one end is a two-pin plug or terminals for connection to a power supply, and at the other end a three pin plug to connect to both the display lead and chassis loom.

The electrical supply to the system will need to be fused with a 3-amp fuse (supplied).

## For the Bigfoot CTI power supply:

- Brown (+) wire
- White/Blue (-) wire

## The tail end has a three-pin plug that will supply power to both the ECU and display:

- Brown (+) wire
- White/Blue (-) wire
- Green is data wire (display to system)

## Display lead

The display lead has a four-pin plug that plugs into the rear of the display and is connected to both the power supply lead and the chassis loom:

- Brown (+) wire
- White (-) wire
- Green is data wire (connecting to the chassis loom via the three-pin plug on the power supply lead)

## Chassis loom

The system is fitted with a Deutsch plug in the base of the system. This is pre-wired into the chassis loom and the other end connects to the power supply loom and display lead.

## Deutsch plug:

- Brown (+) = 'A' Position on the plug
- Blue (-) = 'B' Position on the plug
- Green/Yellow Data = 'C' Position on the plug

## Tail end:

- Brown (+) wire
- Blue (-) wire
- Green is data wire (connecting to the display lead via the three-pin plug on the power supply loom)

## 2. Running the looms

The connection between the power supply, the display and the ECU needs to be established with the loom/leads provided. This should be fastened along the length of the chassis to the vehicle's main loom or brackets as often as practicable. The manufacturer's loom will provide a reliable route for looms.



*Protect the loom (as far as practical) from the heat off the exhaust system and away from any place where it could be covered in diesel or oil.*



*Care needs to be taken around the cab hinge area to ensure that enough loom is available for the cab to tilt, or for any movement in the cab suspension to occur without damaging the loom.*

## 3. The air supply

A protected air supply is required to operate the CTIS. This is taken from your vehicle's primary wet tank or via a multi-circuit protection valve.

The air supply should be set at minimum  $\geq 120$  psi (8.3bar) to ensure a good continuous supply of air.

The air supply goes to the 'air in' fitting in the base of the system.

**Single Zone**



**Dual Zone**



*Pay attention to any unintended release of air.*



*Guidance may be required to identify the 'wet tank' or a spare multi-circuit protection port. Check with your truck dealer.*





*For added protection, a Williams accessory protection valve (WM778a) can be fitted in the air line. This valve allows for tractor protection and will prioritise reduced air pressure to the braking system.*



*Note direction of air flow.*

The air supply must flow through the Williams tractor protection valve to the CTIS in the direction of the arrow. The valve has been preset and won't supply air to the CTIS until the pressure in the vehicle's wet tank reaches a minimum of 80 psi (5.8bar).

If taking air from an air tank to prevent contamination entering the CTIS, the air supply must come from the upper half of the tank. Truck air tanks should be drained of any fluid periodically.

The air supply from the vehicle runs through the tractor protection valve to the CTIS via the 'air in' brass fitting on the base of the system, using either 3/8" or 10mm air brake nylon.

## 4. Mounting the CTIS

A channel pressing mounting bracket is provided in the kit and can be mounted anywhere on the truck chassis where there is suitable space. Ensure there is clearance from moving parts and allow enough space to service.

Once the mount is in place, the aluminum tank and box can also be mounted. The black nylon flanged insulator bushes must be fitted to eliminate any corrosion caused by dissimilar metals.



*When mounting the bracket to the chassis, it's advisable to pick up as many existing holes in the chassis as possible.*

*If holes need to be drilled in the chassis, ensure they are no larger than those drilled by the manufacturer. Do not drill any closer to the top/bottom flanges than the manufacturer.*

### System mounting examples





## 5. Fitting wheel gear and manifolds

**Wheels need to be mounted with the valve stems orientated 180° opposite each other. If not, the outer wheel will need to be removed and rotated to suit.**

Manifolds need to be fitted to the ends of the drive axles or hubs. Depending on the make and model of the vehicle, it may have either bolts or studs. Studs can be removed by using a stud extractor or double nutting the stud and winding the studs out.

Care needs to be taken when selecting the two studs on each axle to be used. It is best to line up the tap with the inner valve stem to select the correct orientation.



*Occasionally, a stud may be too tight to be removed by the double nutting method. If this happens, weld the nut to the stud and let the heat travel up the stud. This will soften any thread locker products. The nut and stud can then be removed without too much difficulty.*

Prior to fitting the manifold, make sure the bolts supplied are the right length and thread TPI and pitch. If the bolts are too short, they may strip the thread out of the hub. If the bolts are too long,

there is a risk they will bottom out in the hub prior to pulling the manifold tight onto the axle flange. The worst case would be where the bolt splits the hub.



*Care needs to be taken with aluminium hubs. Ensure that bolts aren't overtightened, as it's easy to strip out the aluminium thread. Use an anti-seize compound on the threads.*

If the drive axle has tapered cones fitted (to transmit the drive axle forces from the flange to the hub), these must be fitted between the hub and the Bigfoot manifold.



## 6. Tyre hoses

In most cases, the hoses can be fitted to the valve stems without the need for the wheels to be removed. To ensure a good seal between the valve stem and the tyre hose fitting, the valve stem needs to be in good condition. The end of the stem (where it will seal against the rubber) needs to be flat. Try the tyre hose fitting on the valve stem to ensure the fitting will screw onto the stem.

Remove the valve core and screw the hose onto the stem. Air loss is inevitable so care needs to be taken and appropriate personal protective equipment worn. Blanking the end of the tyre hose will reduce the air loss.



*In some cases, the outer valve stem will need to be turned 90° (by releasing the valve stem locknut) to align the valve stem with the hose.*

Do not over-tighten the hose fitting that screws onto the valve stem. Over-tightening the tyre fitting will shorten the life of the rubber seal in the fittings and could potentially cause the fibre washer to dislodge and block off the hose.

The hose fitting should only be finger tight. Stop tightening the fitting once an air tight seal has been obtained. Attach the 7/16" JIC fitting onto the manifold outlets and tighten.



*Eye and hearing protection along with gloves should be worn when valve cores are removed.*



## 7. Air supply to tee taps

The air supply to the tee taps is a combination of nylon hose along the length of the chassis from the system and 3/8" rubber hose to the tee taps across the chassis out towards the tee tap.

Dual zone systems have two outlets for air supply to the tyres with the forward-most group of tyres being zone 1 and the rear-most group being zone 2.

Chassis poles can be supplied to support the tees, along with pole clamps to mount the distribution tees to the orange hoses.



*Spiro flex is supplied to provide additional protection for the rubber.*

**Chassis Pole**



**Airline Routing**



**Chassis Pole and Tee Tap**



**Tee Assembly**



**Tee Assembly,  
Pole Clamp and Bracket**



**Fixed Guard Mount**





## 8. Testing the system

**Once the installation is complete, system testing should begin:**

- Turn all tyre and tee taps on.
- Power the system up.
- Display will start up and 'low air' light should come on.
- Start the truck, build air.
- 'Low air' light will remain on and display will register 00 psi.
- When the truck reaches 110 psi the 'low air' light will go off and the tyre pressure will register on the display.
- Toggle the display to 'on-highway laden' and the system will start inflating.
- When 'on-highway laden' pressure has stabilised, toggle down through each of the zones letting the pressure stabilise before moving to the next.
- Toggle down, through each of the zones letting the pressure stabilize before moving to the next.
- Once at the 'emergency traction' setting, the process can be reversed back to 'on-highway laden' through each of the zones.
- Once satisfied with the system operation, test for any leaks.
- With a spray bottle of soapy water, spray all air connections from the air supply through to the tyre hoses.

Once testing is complete and you are satisfied there are no leaks, the system is ready for on road testing.

- Start with a slow speed in 'emergency traction'. Once you reach >40kph for 30 seconds, the display will warn of speeding.
- Increase pressure to an 'off-highway' setting and repeat the process to >75kph. After 30 seconds the display will warn of speeding.
- Increase pressure again to 'on-highway' settings and return to base.
- Recheck for any leaks.

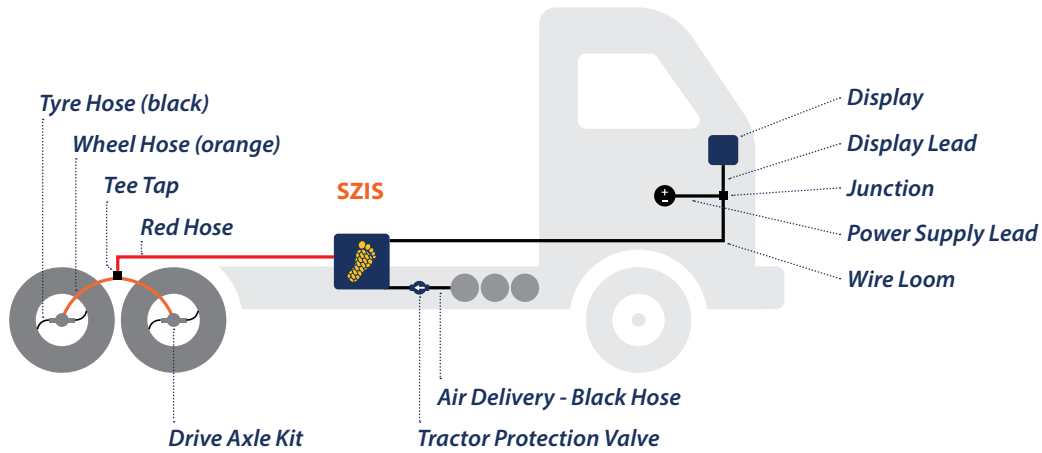
**The system is now ready for operation.**



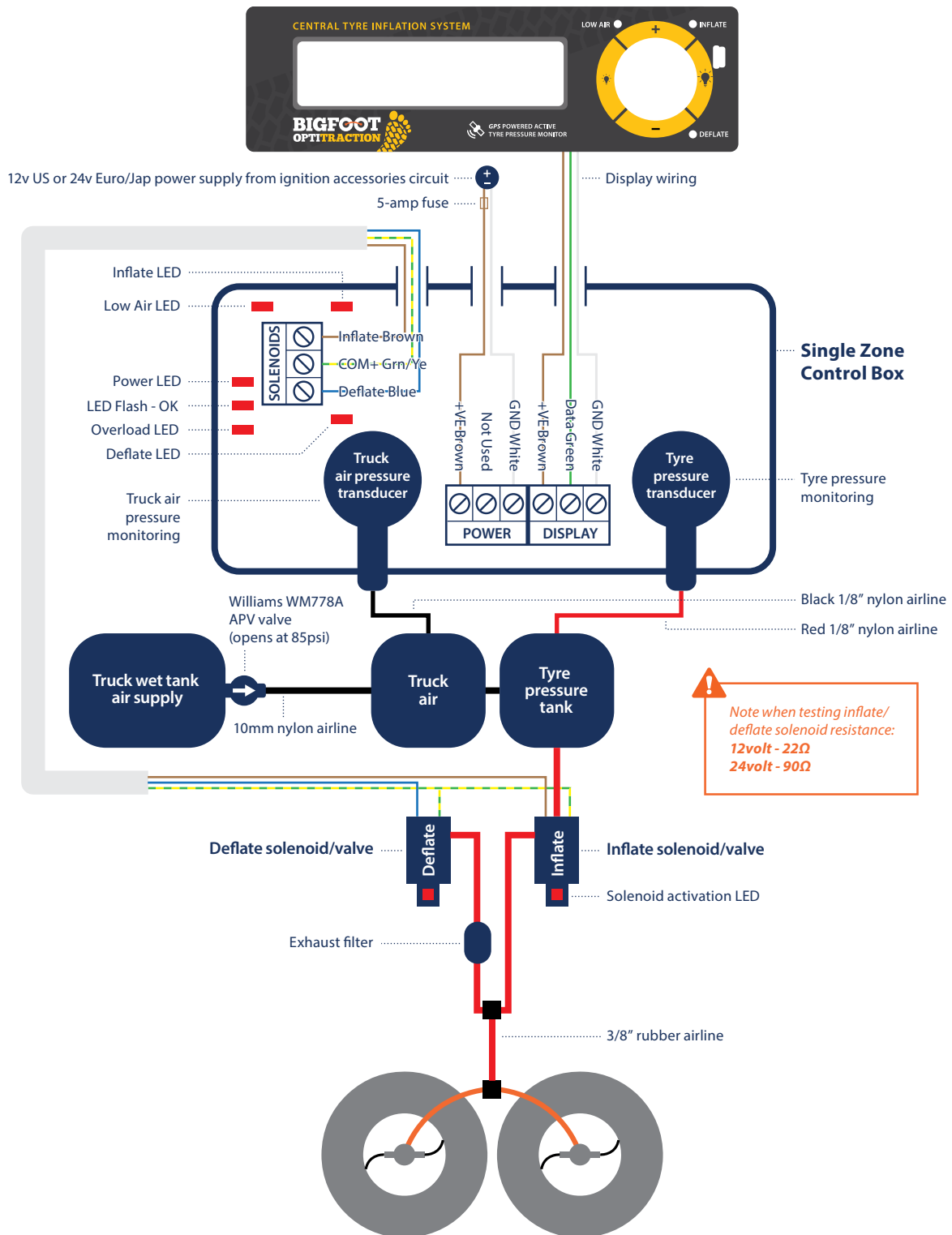
# 9. System schematics

## General arrangement - single zone

### Single Zone Inflation System (SZIS) – Drive Axle



## Single zone basic schematic

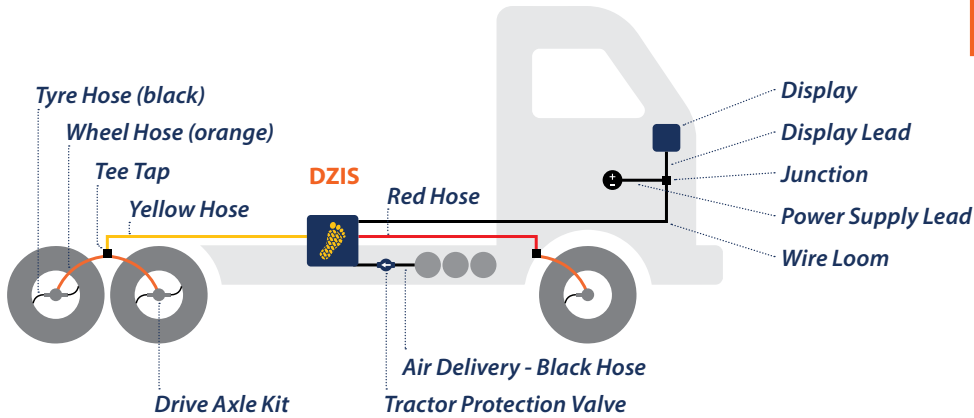




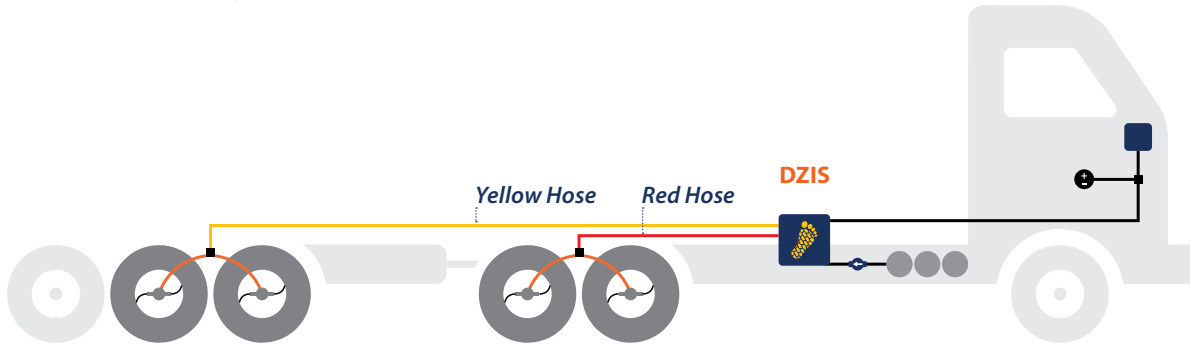
## General arrangement - dual zone

### Dual Zone Inflation System (DZIS) – Steer + Drive Axle

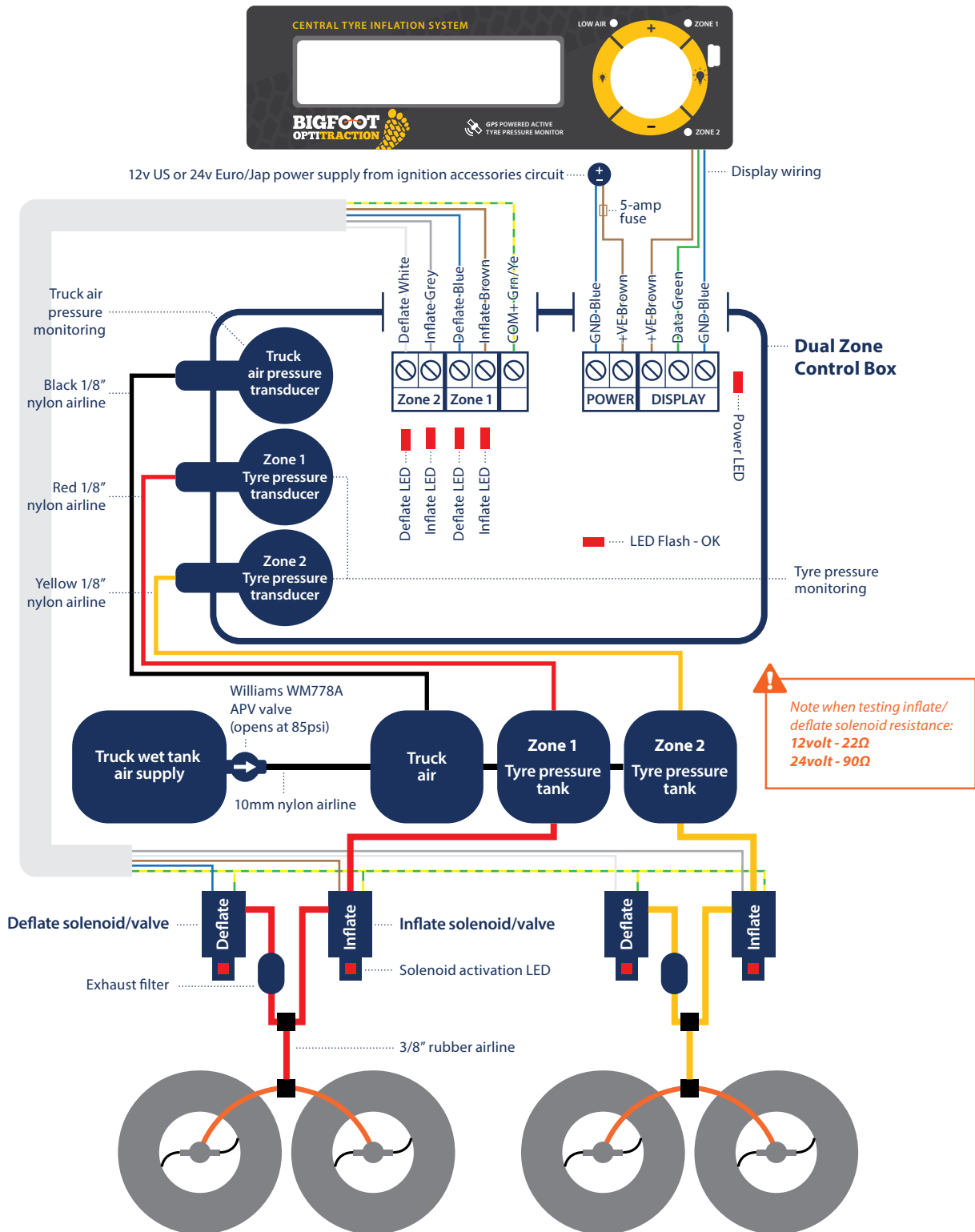
**Note:**  
Zone 1 – Red hose  
Zone 2 – Yellow hose



### Dual Zone Inflation System (DZIS) – Trailer + Drive Axle



## Dual zone basic schematic



# Installation acceptance

By signing this document, you have confirmed your understanding of the processes involved in the installation of Bigfoot Equipment's Central Tyre Inflation System, as a result of reading this document and familiarising yourself with the kit provided. This document should be kept on record as a part of the service maintenance documentation and induction records.

Name: .....

Position: .....

Date: .....

Signed: .....





# Troubleshooting guide

Use the following step-by-step guide to help resolve any fault issues you may encounter. Please contact your distributor or the manufacturer if ongoing faults persist.

## 1. Display fault 'blank'

- A. Check your display is getting power
- B. If yes,
  - i. Check voltage minimum requirement
    - $\geq 12$ Volts is required for North American trucks, and;
    - $\geq 24$ Volts for European and Japanese trucks
  - ii. display is faulty return to manufacturer
- C. If no,
  - i. Check fuse
  - ii. Check power at fuse
  - iii. Trace wiring back to system, check Deutsch plug contacts
  - iv. Trace wiring back to control box, check power to control box
  - v. If yes, control box is faulty. Return to manufacturer
  - vi. If no, check wiring loom for break in cable

## 2. No response from control box



- A. Fault shows there is no contact between the display and the control box and no power reaching the control box
  - i. Test for power on the Deutsch plug
    - Brown (+) = 'A' Position on the plug
    - Blue (-) = 'B' Position on the plug
  - ii. Check fuse
  - iii. Check Deutsch plug is connected and pushed all the way in
  - iv. Check for severed or broken cabling running from the display to the control box

## 3. Display 'no response Zone 1'



- A. This fault is an indication that the display and control box are not communicating, a connection is made but no communications are made.
- B. Open control box cover. If the communications LED is flashing excessively fast (faster than you are able to count) that confirms the display and the control box are not communicating, hence the fault.
- C. Check voltage minimum requirement
  - i.  $\geq 12$ Volts is required for North American trucks, and;
  - ii.  $\geq 24$ Volts for European and Japanese trucks
- D. Check display lead plug contacts and firmness of plug
- E. Check the display lead plug connection in the control box
- F. Check the display lead for chaffing, signs of entrapment

## 4. Low air



- A. Check display
  - i. Low air light on
  - ii. Truck air should operate at a minimum  $\geq 120$ psi (8.3bar)
  - iii. Truck air should show  $\geq 110$ psi (7.5bar) for the light to go off
  - iv. Truck air  $\geq 110$  psi (7.5bar) but 'low air' light still energised. Check tractor protection valve and/or replace.



## 5. Excessive display of low air

- A.** As above, check display
- i. 'Low air' light on
  - ii. Truck air should operate at a minimum  $\geq 120$  psi (8.3bar)
  - iii. Truck air should show  $\geq 110$  psi (7.5bar) for 'low air' light to go off
  - iv. Truck air  $\geq 110$  psi (7.5bar) but 'low air' light still energised
  - v. Check tractor protection valve and/or replace.
- B.** Usually an indication of
- i. On a new truck (new installation)
    - Check source of air supply is correct
    - Low volume compressor
    - Compressor governor set to low
  - ii. On older truck
    - Check/replace the tractor protection valve
    - Compressor governor set to low
    - Worn compressor struggling to make air

## 6. Low air emergency repair

- A.** Stuck on the side of road with low air, and unable to effect repairs above
- i. Unplug display. As long as control box is getting power, unplugging the display will cause the control box to default to maximum pressure.
  - ii. If no power is getting to the control box you can manually override the inflate valve by pushing a small screw driver or pen into the small plunger at the base of the solenoid. Holding this override in for a period will inflate the tyres as long as air is getting into the system.
  - iii. Inflate valve.



## 7. System not inflating (or slow to inflate)

- A.** Check display
- i. 'Low air' light on (see above)
  - ii. 'Low air' light off, 'inflate' light on, but system still not inflating
  - iii. Check inflate solenoid LED is energised
  - iv. If yes
    - Check for any airline blockage
  - v. If no
    - Check electrical connections and continuity of power to the valve
    - Check resistance in the solenoid cable from the control box green/yellow wire and brown. 12v systems 20-27 $\Omega$ , 24v systems 87-92 $\Omega$
    - Check inflate valve is opening. Do this by operating the manual override. If the system is then inflating change the valve.

## 8. System not deflating

- A.** Check display
- i. 'Low air' light on (see above)
  - ii. 'Deflate' light on, check deflate exhaust
  - iii. Check for blocked filter
- B.** If no
- i. Check electrical connections and continuity of power to the valve
  - ii. Check resistance in the solenoid cable from the control box green/yellow wire and blue. 12v systems 20-27 $\Omega$ , 24v systems 87-92 $\Omega$
  - iii. Check inflate valve is opening, do this by operating the manual override. If the system is then inflating change the valve.

## 9. System slow to deflate

- A.** If system is deflating but appears to be very slow
- i. Check deflate filter - it is most likely blocked
  - ii. Crack the airlines starting at tyre hoses, orange wheel hoses. 'Air out' airlines at system end for blockages
  - iii. Check deflate valve

## 10. Emergency repair

We recommend each truck should carry spare hoses in the event of damage or system fault and the operator is familiar with the basics of the system.

- A. System will not inflate or display not working**
  - i. Unplug the display. This will default the system to full pressure (90 psi). In the event the tyres still do not inflate;
  - ii. Press the manual override on the inflate valve to inflate
- B. Broken Orange hose**
  - i. Turn off tee tap and wheel hose taps
  - ii. Replace hose
- C. Broken wheel hose**
  - i. Turn off effected wheel
  - ii. Replace hose
    - If no hose is available call tyre shop for assistance and remove hose. The tyre shop will put a valve core in the stem and re-inflate tyre until a hose can be sourced.
- D. Slow leaking tyre**
  - i. The system will alert the driver by an audible beep to a problem. It will beep when it has cycled 30 times and not reached the desired pressure.
  - ii. The system will keep up with a slow leak if the air can be replaced quicker than the loss of air. Seek assistance from tyre shop immediately.

## 11. Service exchange

Bigfoot Equipment runs a service exchange program whereby faulty components can be exchanged with factory remanufactured components.

In the process, faulty used products and assemblies are fully disassembled, cleaned and inspected, then reassembled with all genuine, new parts.

All components that are worn, damaged or built according to an outdated design are replaced by genuine new or remanufactured parts.

### Key Benefits of Remanufactured Components:

- ✓ Reduces customer downtime by providing an exchange component
- ✓ Saves 25-30% compared to a new component
- ✓ Provides known repair costs up front
- ✓ Provides a product to new quality specifications using only genuine OEM parts and approved remanufacturing processes.

### Components able to be exchanged

- ✓ Displays
- ✓ Control box ECUs
- ✓ Mac valves (inflate/deflate)
- ✓ Line filters
- ✓ Tee taps
- ✓ Unions
- ✓ Drive axle assemblies

Should you require service exchange components in the first instance, please contact your distributor or Bigfoot Equipment direct.

# Parts





Note the parts listed here are the most common parts ordered. Please do not hesitate to contact Bigfoot Equipment, or one of our representatives, if you require any clarification.

## 1. Display

Item code	Item description
Display MZ	Display (multi zone) Gen.1
Display SZ	Display (single zone) Gen.1
PBFDISP4ID	Single/Multi zone in-dash display (1DIN) Gen.2
PBFDISP4OD	Single/Multi zone on-dash display (1DIN) Gen.2
DisplayBracket	Display bracket
DisplayLabelMulti	Display label (multi zone)
DisplayLabelSingleZone	Display label (single zone)
DL2M	Display lead 2 metre
DL4M	Display lead 4 metre
DL6M	Display lead 6 metre
DL8M	Display lead 8 metre

Gen.1 display



Gen.2 display



Display Lead



## 2. Electronic control unit (ECU)

Item code	Item description
PBF2ZONE	Multi zone control box
PBFMOD5	Single zone control box

Single zone



Multi zone



## 3. Wheel hoses

The orange air delivery hoses are measured by the cut length of the orange hose.

Item code	Item description
OrangeHose700/45x45	Wheel hose: Bigfoot External Hose 700/45°x45°
OrangeHose750/90x45	Wheel hose: Bigfoot External Hose 750/90°x45°
OrangeHose800/90x45	Wheel hose: Bigfoot External Hose 800/90°x45°
OrangeHose850/90x45	Wheel hose: Bigfoot External Hose 850/90°x45°
OrangeHose900/90x45	Wheel hose: Bigfoot External Hose 900/90°x45°
OrangeHose950/90x45	Wheel hose: Bigfoot External Hose 950/90°x45°
OrangeHose800/180x45	Wheel hose: Bigfoot External Hose 800/180x45°

Measure orange hose to get correct length



## 4. Tyre hoses

The black tyre hoses are measured by the cut length of the hose.

Item code	Item description
ITH	Tyre hose: Inner tyre hose 300mm
ITH-STD	Tyre hose: Inner tyre hose 325mm
ITH-P	Tyre hose: Inner tyre hose planetary 400mm
OTH	Tyre hose: Outer tyre hose 225mm
OTHC	Tyre hose: Outer tyre hose curved fitting 225mm
OTHC-P	Tyre hose: Outer tyre hose curved planetary 295mm
OTH90	Tyre hose: Outer tyre hose 90° 225mm



## 5. Rotating unions and wheel gear

All drive axle kits, except where stated, include unions, taps and fittings

Item code	Item description
1115-660	Rotating Union
1115-660-SA	Rotating union for steer axle
FDAK	Fuso drive axle kit
HDAK	Hino/Isuzu drive axle kit
NDAK	Nissan drive axle kit
RDAK	Rockwell drive axle kit
SDAK	Scania drive axle kit
SHSK	Scania hub reduction heat shield kit
SHRK	Scania hub reduction kit
SDAS	Scania drive axle studs (M12 x 216mm long x 50mm thread)
1115-660 Scania Tag	Scania tag axle cap (with union)
SSAK-LB	Stemco steer axle kit (large body)
VDK	Volvo drive axle kit
ITE-VHCR	Volvo hub reduction cap
VHRK	Volvo hub reduction kit (excluding union)
MDAK	MAN drive axle kit
MDAKP	MAN drive axle kit (planetary)
MTAK	Man tag axle kit
MUB	Mercedes union body
ITE-BW	Brass washers 15.5mm x 22.2mm x 1.1mm
A70404	Fitting 1/4 BSP- 7/16 JIC (wheel hose fitting)
A70904	Fitting 1/4 BSP- 9/16 JIC (orange hose fitting)
T8RUB	Ball valve 1/4 Female/Female
8RubAssembly	Ball valve assembly

Rotating union



RDAK



Scania hub reduction union

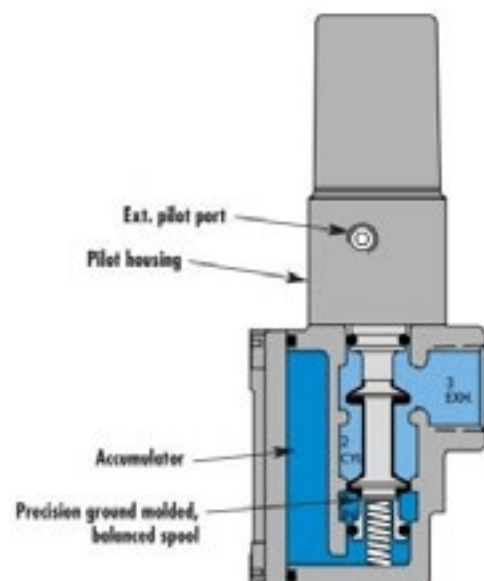
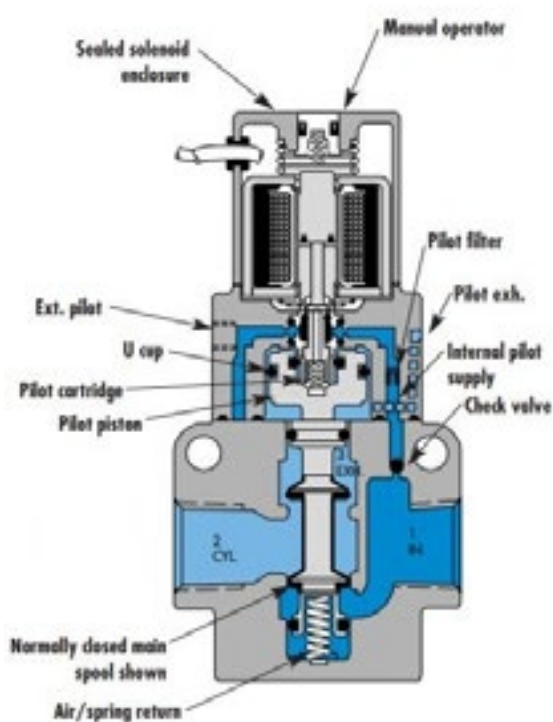


Merc hub reduction union



## 6. Air valves

Item code	Item description
5514551JD	Mac 12v 3/8 air solenoid/valve
5514501JD	Mac 24v 3/8 air solenoid/valve
55-Coil12V	Mac 55 series coil 12v
55-Coil24V	Mac 55 series coil 24v
55-Gasket	Mac 55 series gasket
55-Heater	Mac 55 series heater
55-Spool	Mac 55 series NC spool
55-PilotKit	Mac 55 series pilot kit
55-Plug	Mac 55 series plug
55-35213	Mac 55 series screw
55-Screw	Mac 55 series screw
55B-14PI	Mac 55 series valve
514RA	Mac air pilot valve
55-16340	Mac 55 series JD plug gasket
5514PI	Mac normally closed valve
55-16363	Mac pressure seal for 55 series
55-16364	Mac pressure seal pilot adaptor
55-Pin	Mac solenoid pin
55-16234	Mac solenoid cover gasket 100 S
55-35206	Mac solenoid screw
DeflectorShield	Valve deflector shield



## 7. Electrical items

Item code	Item description
DL2M	Display lead 2 metre
DL4M	Display lead 4 metre
DL6M	Display lead 6 metre
Display Plug	Display plug
Loom10m	Electrical chassis loom 10 metre
Loom15m	Electrical chassis loom 15 metre
LPS	Electrical power supply lead (including fuse)

Display Lead



## 8. Hose

Item code	Item description
1/2Nylon	Hose 1/2 nylon hose
1/4Nylon	Hose 1/4 nylon hose
1/8Nylon	Hose 1/8 nylon hose
3/8Nylon	Hose 3/8 nylon hose
3/8Rubberbrakehose	Hose 3/8 rubber brake hose
10mmNylon	Hose 10mm nylon hose
12mmNylon	Hose 12mm nylon hose
MSS6	Hose clip SS 11-20mm
MSS4	Hose clip SS 6-16mm

## 9. Assorted parts

Item code	Item description
LineFilter	3/8 Line filter
3MPad	Linefilter pad
WM778A	Williams tractor protection valve
T8RUB	Ball valve 1/4 FF
T8RubAssembly	Ball valve assembly
BSLM-03	Brass silencer 3/8

Line filter



Tractor protection valve



Brass Silencer





## 10. Tee tap mounting

Item code	Item description
CPOL	Rhino chassis pole 750mm long
CPLCL	Rhino chassis pole clamp
CPLCLB	Rhino chassis pole clamp and bolts
CPCap40NB	Rhino chassis pole internal cap 40NB
CPCap50NB	Rhino chassis pole internal cap 50NB
CPLL	Rhino chassis pole offset 850 long
CPOS	Rhino chassis pole offset step out
CPSO	Rhino chassis pole Scania outrigger
CPSL	Rhino chassis pole spring loaded

CPOL chassis pole



Chassis Pole Clamps



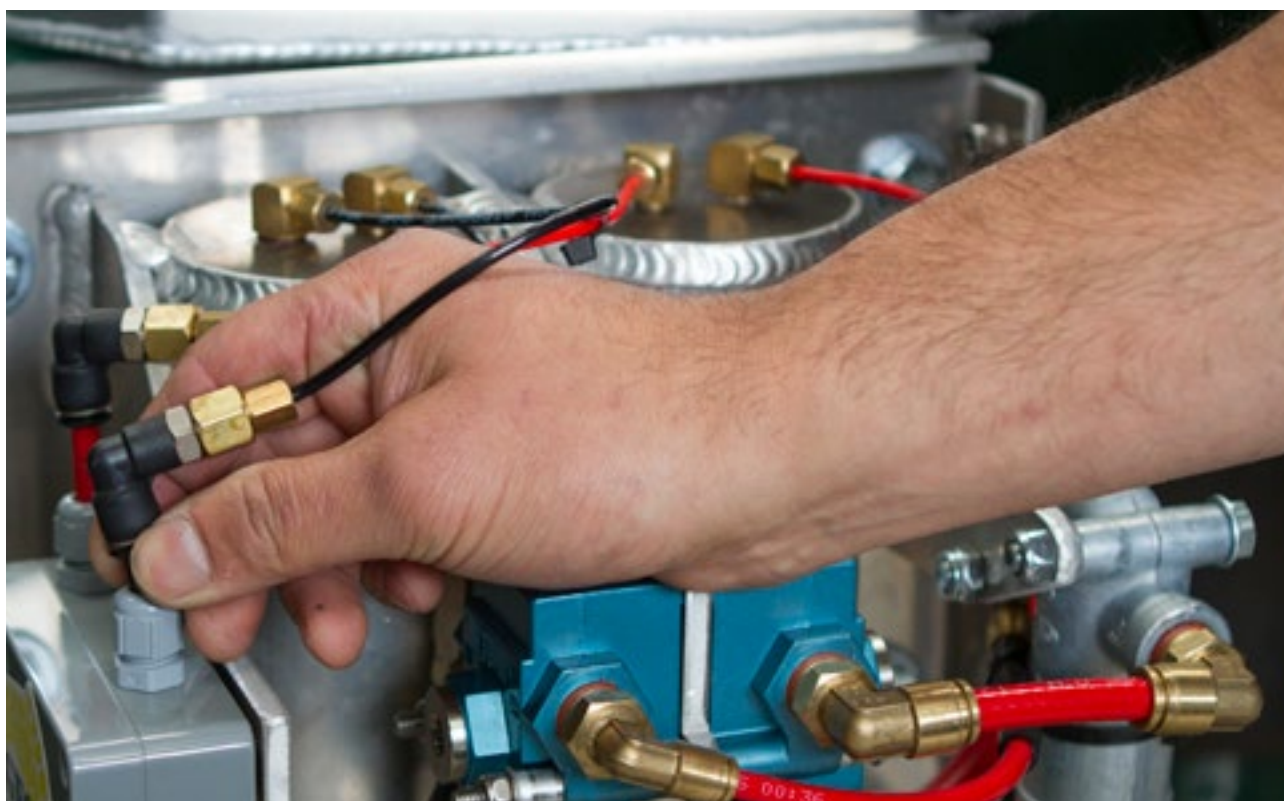
## 11. Trailer equipment

Item code	Item description
ITE-SAFPC	SAF plastic caps black acetal
1115-660-ROR	Rotating union ROR and SAF
1115-660-Hubcap	Rotating union and hubcap
1115-660 BPW+2	Rotating union BPW Eco Plus 2
NC30SF	Air Nitto QR coupling (3/8 female)
NC20PF	Nitto male coupling (1/4 female)
ITE-AM25mm Square	Alloy five port trailer manifold
ITE-BPW ECO PLUS 3	BPW Eco 3 hub cap adapter
ITE-BPW ECO PLUS 2	BPW Eco Plus 2 adapter bayonette fitting
SuziCoil	Suzi coil 3.7M
SA	Suzi assembly
6boltbare	6 bolt bare hub cap
6boltdouble	6 bolt die cast cap (dual wheels)
6boltsingle	6 bolt die cast cap (single wheels)
TMA	Trailer manifold assembly
TCAPBU	Trailer cap bulk head union and nut
ITE-AM 25mm square	Alloy five port trailer manifold 25 x 25mm

## 12. Brass fittings

Item code	Item description
<b>A70404</b>	Brass 1/4 BSP- 7/16 JIC
<b>A70904</b>	Brass 1/4 BSP- 9/16 JIC
<b>A70904Ext</b>	Brass 1/4 BSP - 9/16 JIC ext. nipple
<b>A70906</b>	Brass fitting 3/8 BSP- 9/16 JIC
<b>A225/8"UNF</b>	Brass 5/8 UNF- 9/16 JIC nipple
<b>BFW18690806</b>	Brass 1/2 NPT x 3/8 nylon male elbow
<b>BF2090604</b>	Brass 1/4 BSP x 3/8 hose barb
<b>BF36000404</b>	Brass 1/4 Male 90° elbow
<b>BF34004504</b>	Brass 1/4 MF 45° elbow
<b>BF340004</b>	Brass 1/4 MF 90° elbow
<b>BFW18680404</b>	Brass 1/4 NPT x 1/4 nylon male conn
<b>BFW18680604</b>	Brass 1/4 NPT x 3/8 nylon male conn
<b>BFW18690604</b>	Brass 1/4 NPT x 3/8 nylon male elbow
<b>BF400004</b>	Brass 1/4 street tee
<b>BF32240402</b>	Brass 1/4 x 1/8 reducing bush
<b>BF3327041.5</b>	Brass 1/4 x 1-1/2 extended nipple
<b>BF690202</b>	Brass 1/8 BSP x 1/8 nylon male elbow
<b>BF6202</b>	Brass 1/8 compression double union
<b>BF6102</b>	Brass 1/8 compression nut
<b>BF60N02</b>	Brass 1/8 compression sleeve
<b>BF680202</b>	Brass 1/8 M compression connector
<b>BF400002</b>	Brass 1/8 street tee
<b>BFW116910M04</b>	Brass 10mm nylon x 1/4 NPT male elbow
<b>BFW116810M06</b>	Brass 10mm nylon x 3/8 NPT male elbow
<b>BFW116912M04</b>	Brass 12mm nylon x 1/4 NPT male elbow
<b>BFW116912M06</b>	Brass 12mm nylon x 3/8 male elbow
<b>BF3200M1604</b>	Brass 16mmx1.5x1/4 NPT MF adaptor
<b>BF3200M2204</b>	Brass 22mmx1.5x1/4 NPT MF adaptor
<b>BF20306</b>	Brass 3/8 3 Way hose barb
<b>BF36000606</b>	Brass 3/8 Male 90° elbow
<b>BF34004506</b>	Brass 3/8 MF 45° elbow
<b>BF340006</b>	Brass 3/8 MF 90° elbow
<b>BFW18690406</b>	Brass 3/8 NPT x 1/4 nylon male elbow
<b>BFW18690606</b>	Brass 3/8 NPT x 3/8 nylon male elbow
<b>BF400006</b>	Brass 3/8 street tee
<b>BF32240604</b>	Brass 3/8 x 1/4 reducing bush
<b>BF3200M1204</b>	Brass 3200M 12mmx1.5x1/4 NPT M/F adaptor
<b>ITE-BBHN</b>	Brass bulk head nut
<b>ITE-BBHU</b>	Brass bulk head union

Item code	Item description
<b>Drainvlv1/4</b>	Brass drain valve ¼
<b>BF332504</b>	Brass hex nipple ¼
<b>BF332506</b>	Brass hex nipple 3/8
<b>BSLM-03</b>	Brass silencer 3/8
<b>BF2090304</b>	Brass 1/4 BSP x 3/16 hose barb
<b>VS169PMTNS-4-2</b>	Brass 1/8 NPT x 1/4 nylon 90° Male elbow
<b>VS68PMT-4-2</b>	Brass 1/8 Npt x 1/4 nylon male conn
<b>BF490404</b>	Brass 1/4 x 1/4 flare M elbow
<b>BFW116812M04</b>	Brass 12mm nylon x 1/4 Npt male conn
<b>BFW116812M06</b>	Brass 12mm nylon x 3/8 Npt male conn
<b>BFW116910M06</b>	Brass 10mm nylon x 3/8 Npt male elbow
<b>BFW116910M06</b>	Brass 10mm nylon x 3/8 Npt male elbow
<b>BF36000604</b>	Brass 3/8 x 1/4 male 90 elbow
<b>BF350006</b>	Brass 3/8 female 90 elbow



**Disclaimer:** This manual is intended to be used as a reference guide for the safe operation, maintenance and installation of the Bigfoot Equipment Central Tyre Inflation System (CTIS). Every effort has been made to ensure the reliability and accuracy of the information contained in this instruction manual at the time of publication. The company shall not be held liable for improper installation, operation, or maintenance of the system in circumstances where procedures and specifications have not been followed correctly. It is essential therefore, that you follow the specifications, procedures, and recommendations outlined in this manual.



To learn more about the Bigfoot Central Tyre Inflation System visit:

**[bigfoot.co.nz](http://bigfoot.co.nz)**