



2 Pedal Area and Pipes

The floor mounted pedal assembly on the Westfield chassis is designed to cater for various brake and clutch operation systems. The braking system will cater for single standard master cylinder, AP updated single master cylinder and also bias braking twin master cylinder set-up. If a bias braking system is to be utilised, certain alterations need to be taken in order to pass SVA.

Tools Required

Pedal Area

13mm spanner
Copper Slip
5mm Drill
Needle File

Pressure Switch & 3-way Connectors

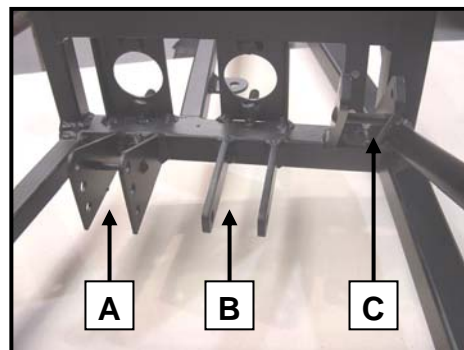
22mm Spanner
10mm Spanner

Brake and Fuel Pipes

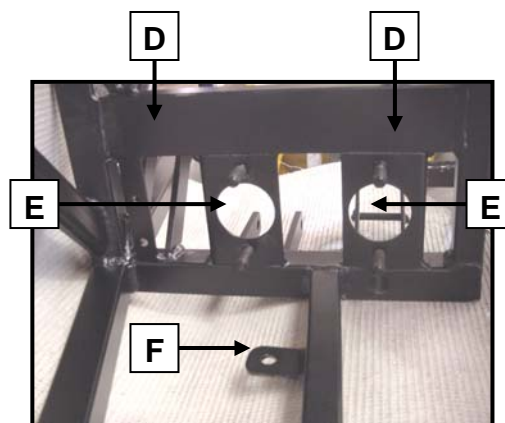
Rivet Gun
4.1mm Drill
Pipe Bender

Standard Chassis

- A. Clutch Pedal Mounting Point
- B. Brake Pedal Mounting Point
- C. Accelerator Pedal Mounting Point



- D. Pedal Stop Mount
- E. Master Cylinder Mounting Points
- F. Brake Pressure Switch Mounting Lug



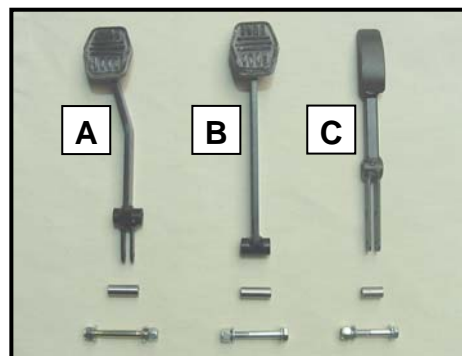


2 Pedal Area and Pipes

Standard Pedal Layout

- A. Cable Clutch Pedal
- B. Single Master Cylinder Brake Pedal
- C. Standard Accelerator Pedal

Unless specific brake and clutch requirements are stated, this is the basic pedal system supplied in the kit.

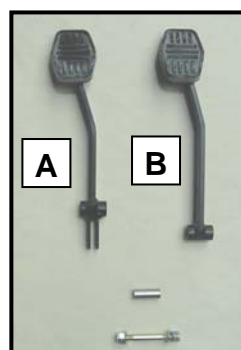


Clutch Pedal Options

- A. Hydraulic Type
- B. Cable Type

Fixings – Both pedal types use the same fixings

- 1 x 70mm long x 8mm stud
- 1 x 31mm long bush
- 2 x 8mm plain washer
- 2 x 8mm nyloc nut

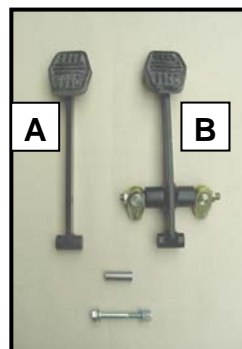


Brake Pedal Options

- A. Standard Type
- B. Bias Type

Fixings – Both pedal types use the same fixings

- 1 x 60mm long x 8mm bolt
- 1 x 31mm long bush
- 2 x 8mm plain washer
- 1 x 8mm nyloc nut

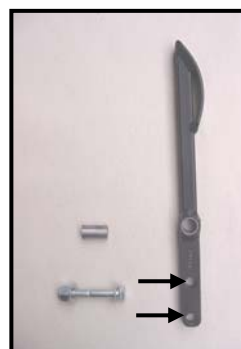


Accelerator Pedal

With the standard pedal, the trunnion can be fitted in 2 positions to change the pedal ratio.

Fixings

- 1 x 50mm long x 8mm bolt
- 1 x 21.5mm long bush
- 2 x 8mm plain washer
- 1 x 8mm nyloc nut

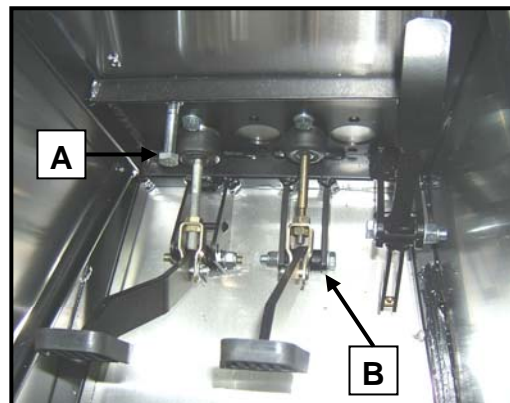


Standard Assembly Fitted

Photo shows the pedal assembly fitted with the standard brake master cylinder and a hydraulic clutch pedal with master cylinder.

- A.** Pedal stop fitted to the clutch pedal
- B.** Pedal attached to a single master cylinder

The pedal stop bolt is adjusted so that when full throttle or full clutch travel is attained, the pedal touches the stop.



Every Westfield model requires a different length of bolt for both the clutch and throttle pedal stops, use the following table to find the correct bolt length for your application.

Model, Engine & Gearbox	Throttle	Hydraulic Clutch	Cable Clutch
Sport 2000s, Duratec, 6-speed	75mm	65mm	
Sport 2000, Duratec, 5-speed	60mm	40mm	

Brake Cylinder Options

Standard brake and clutch master cylinders mounted in position



AP upgrade brake master cylinder



Bias Brake Cylinders

The standard integral brake master cylinders are not SVA approved. For an SVA approved bias circuit, use remote reservoirs with warning level caps. The balance bar must also be changed for a non-adjustable type.



Pedal Fitting Order

When mounting the pedals to the chassis, there must also be at least 2 threads protruding through the nyloc nut after assembly (SVA requirement). Once you have completed the assembly of the pedal area it must be stressed that under no circumstances must the pedals be restricted in their operation i.e. no tightness or restriction in their full range of movement.

Standard Hydraulic Clutch

1. Feed the brake master cylinder pushrod through the bulkhead hole and secure it using

2 x 30mm long x 8mm bolt

4 x 8mm plain washer

2 x 8mm nyloc nut

When installed the reservoir must be uppermost and the nyloc nuts on the cylinder side of the bulkhead



2. Apply Copper slip before placing the bush in the pedal. Mount the pedal using the following fixings

1 x 70mm long x 8mm stud

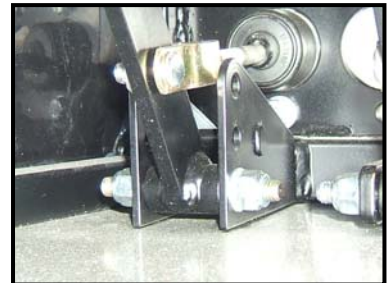
1 x 31mm long bush

2 x 8mm plain washer

2 x 8mm nyloc nut



On the clutch pedal mount, there is provision for 3 mounting points. The pedal should be mounted on the **bottom** hole

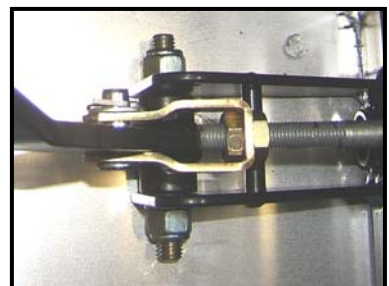


3. Connect the pushrod to the pedal using a clevis pin, place a flat washer between the clevis and the split pin.

1 x 8mm x 20mm Clevis pin

1 x 2mm x 20mm Split pin

1 x 8mm plain washer



4. Adjust the pushrod locking nuts until the clutch pedal rubber is aligned with the footrest on the inner footwell panel

5. Fit the clutch pedal stop and pedal rubber (See table as start of chapter for bolt size)



Cable Clutch

Every chassis comes with provisions for a hydraulic clutch system. Therefore when fitting a cable clutch, a blanking plate must be fitted over the clutch master cylinder hole.

1. Apply silicone sealant around the outside of the clutch master cylinder hole



2. Fix the blanking plate on the outside using
2 x 20mm long x 8mm bolt
4 x 8mm plain washer
2 x 8mm nyloc nut



3. Use a file to fettle the cable hole so that it will fit neatly

4. Place the cable through the bulkhead hole and into the pedal end. Securing with a clevis pin, place a plain washer between the split pin and clevis.

- 1 x 6mm x 20mm clevis pin
- 1 x 1.5mm x 20mm split pin
- 1 x 6mm plain washer



5. Apply Copper slip before placing the bush in the pedal. Mount using

- 1 x 70mm long x 8mm stud
- 1 x 31mm long bush
- 2 x 8mm plain washer
- 2 x 8mm nyloc nut



The pedal mounts on the **top** hole of the mounting bracket.

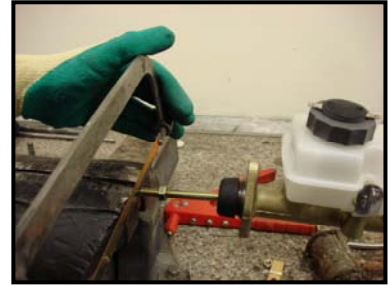
6. Fit the clutch pedal stop and pedal rubber
(See table at start of chapter for bolt size)



Standard & AP Brake Master Cylinder

If fitting a standard master cylinder and not the AP Upgrade, proceeded to step 2.

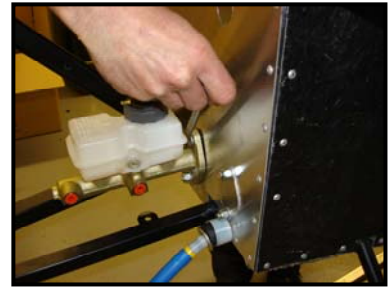
1. When using the **AP Lockheed** master cylinder, the pushrod length is shortened by 10mm to allow the pedal to operate correctly. Before cutting, screw a nut on the pushrod to reclaim the thread afterwards



2. Feed the pushrod through the bulkhead and secure using
2 x 30mm long x 8mm bolt
4 x 8mm plain washer
2 x 8mm nyloc nut



When installed the nyloc nuts should be on the cylinder side of the bulkhead



3. Apply Copper slip before placing the bush in the pedal and attach the pedal to its mount using
1 x 60mm long x 8mm bolt
1 x 31mm long bush
2 x 8mm plain washer
1 x 8mm nyloc nut



4. Connect the pushrod to the pedal using a clevis pin, place a flat washer between the clevis and split pin.
1 x 8mm x 20mm Clevis pin
1 x 2mm x 20mm Split pin
1 x 8mm plain washer

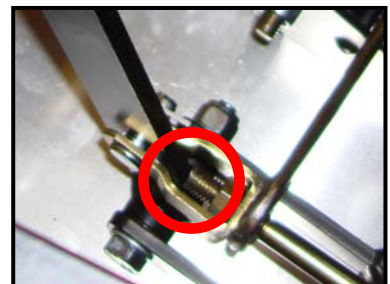


5. Now fit the pedal rubber

6. Hold a straight edge against the pedal rubbers and adjust the pushrod locking nuts until the brake and clutch pedal align



When aligning the pedal with a Standard or AP Lockheed master cylinder, if the pushrod fouls on the back of the pedal once installed. Remove the master cylinder and shorten the pushrod fractionally as in step 1.

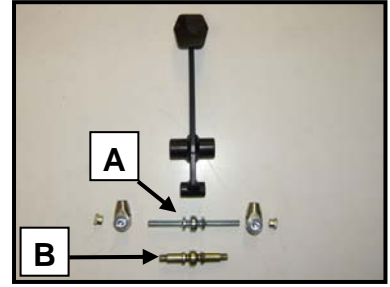


Bias Brake Twin Master Cylinders

The bias brake upgrade comes complete with an adjustable balance bar, however for SVA approval, a fixed balance bar is required that allows no adjustment of the brake Bias.

A – Adjustable Balance Bar

B – Fixed Balance Bar (SVA compliant)



1. Feed the brake master cylinder pushrods through the bulkhead holes and secure each cylinder using

- 2 x 30mm long x 8mm bolt
- 4 x 8mm plain washer
- 2 x 8mm nyloc nut



When installed the reservoirs or outlets must be uppermost and the nyloc nuts on the cylinder side of the bulkhead

2. Apply Copper slip before placing the bush in the pedal and attach the pedal to its mount using

- 1 x 60mm long x 8mm bolt
- 1 x 31mm long bush
- 2 x 8mm plain washer
- 1 x 8mm nyloc nut



3. Remove the locking nut and clevis from one side of the balance bar. Place the balance bar through the tube in the pedal and re-attach the clevis and locking nut.



4. Place a locking nut on the push rods and screw the push rods into the clevis assembly on the balance bar. It may be necessary to remove the master cylinder dust cover clip to enable the push rod to rotate.



5. Fit the pedal rubber

6. Hold a straight edge against the brake and clutch pedal rubbers, adjust the pushrods until the brake and clutch pedals align. Tighten the lock nuts against the clevis assembly



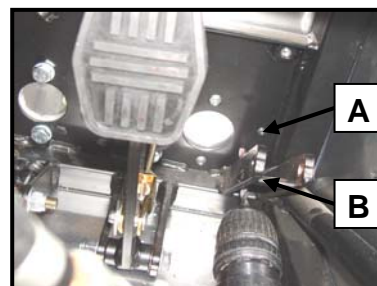


Standard Accelerator Pedal

1. Using a 5mm drill, from the inside of the car, drill through the throttle cable hole.

A – For car engine powered kits, drill the bottom hole

B – For motorbike engine powered kits, drill the top hole



2. Use a file or a drill to enlarge the bulkhead hole so the outer cable fits inside against the chassis. Be careful not to enlarge the chassis hole, as this prevents the outer cable pulling through



3. Apply Copper slip before placing the bush in the pedal. Mount the pedal using

1 x 50mm long x 8mm bolt

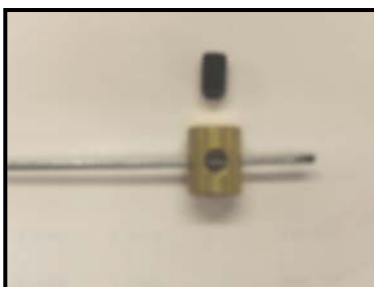
1 x 21.5mm long bush

2 x 8mm plain washer

1 x 8mm nyloc nut



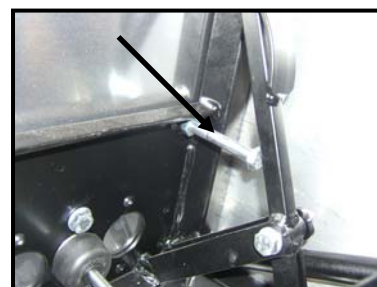
4. Fit the trunnion in the pedal, aligned with the hole drilled in the bulkhead. Slide the inner throttle cable through the trunnion and tighten down the grub screw with a 2.5mm allen key



Throttle cables can vary in size, so trial fit the inner cable through the trunnion first, as the hole may need slightly enlarging.

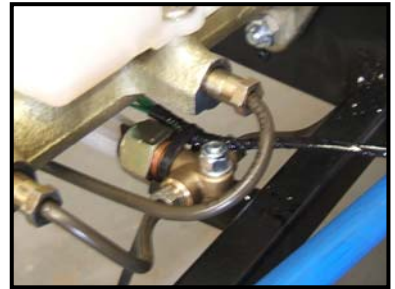
5. Fit the throttle pedal stop to the mounting nut
(See table as start of chapter for bolt size)

This needs to be adjusted when the engine is fitted so that full throttle is obtained when the pedal touches the stop.



Brake Pressure Switch

The brake pressure switch mounts underneath the brake master cylinder on a mounting lug welded to the chassis.



1. Screw the brake pressure switch into the middle outlet with a copper washer. Torque to a maximum 7n/m (5 ft/lbs)
1 x 10mm copper washer

After tightening, make sure the copper washer is tightened between the pressure switch and connector.



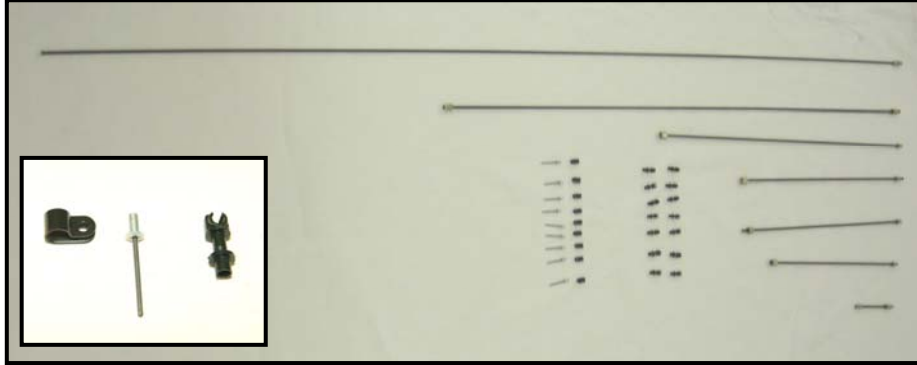
2. Fit the three-way connector to the chassis as shown using
1 x 30mm long x 6mm bolt
2 x 6mm plain washer
1 x 6mm nyloc nut

The bolt should go up through the connector, with the nyloc nut uppermost. Torque to a maximum 7n/m (5 ft/lbs)



Break Pipes

The brake pipe kit contains all the necessary pipes to complete the brake system. These pipes are fixed to the chassis using two methods, 5mm P-clips held in place with 4.1mm rivets and clip-In pipe holders fixed to the chassis via a 1/4" drilled hole.



Mounting Brake Pipes

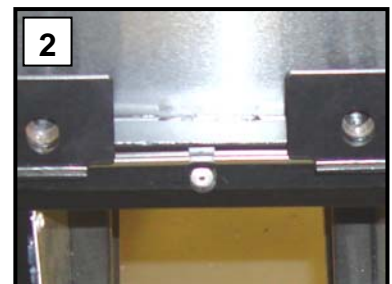
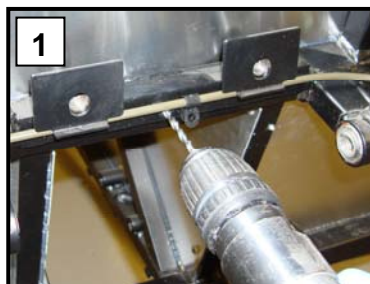
The method for fixing the clip-in holders is shown below:

1. First drill the chassis using a 1/4" drill in the desired position for routing the pipe.
2. Using a small scrap piece of brake pipe to hold the clip in position at the hole.
3. Using a rubber mallet, gently tap the clip into the hole and remove the brake pipe.



The method for fixing the P-clip holders is shown below, it is worth noting that this method of fixing can only be done when the pipes are routed in their final position.

1. Place a P-slip over the brake pipe and drill the chassis using a 4.1mm drill in the desired position for routing the pipe.
2. Position a 4.1mm rivet through the clip and into the chassis, it can then be pulled up with a rivet gun.



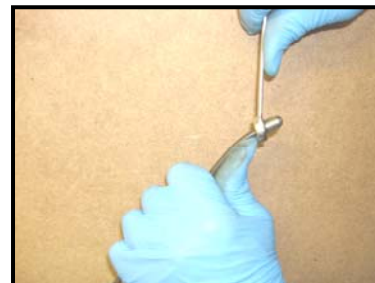


Shaping Brake Pipes

Take **CARE** when forming the brake pipes. We would prefer that you practiced on **SCRAP** or **SPARE** brake pipe before attempting to bend the brake pipe supplied.

DO NOT attempt to **RE-BEND** or **RE-MAKE** incorrectly formed brake pipe bends as premature failure of the brake, due to fracture, may occur.

When forming a bend close to the brake pipe union, a useful method is by placing a 13mm spanner over the union and bending the pipe around your thumb.



When shaping pipes to follow the chassis tubes, use your thumb to bend the pipe, taking care not to kink it at any point.



Brake Pipe Identification Chart

	From	To	Length
A	BMC Primary port	Front 3-way connector	1350 mm
B	Front 3-way connector	Front RHS brake hose	550 mm
C	Front 3-way connector	Front LHS brake hose	550 mm
D	BMC Secondary port	Brake pressure switch mount	145 mm
E	Brake pressure switch mount	Rear 3-way connector	2000 mm
F	Rear 3-way connector	Rear RHS brake hose	450 mm
G	Rear 3-way connector	Rear LHS brake hose	780 mm

BMC = Brake Master Cylinder

RHS = Right Hand Side

LHS = Left Hand Side

PLEASE NOTE - The master cylinder outlets are marked P and S.

P= Primary front brake circuit

S= Secondary rear brake circuit

Front Brake Pipe Routing

1. Position the front 3-way connector as shown, with the middle outlet pointing towards the car centre. Attach with
2 x 6mm plain washer
1 x 6mm nyloc nut



2. From the brake master cylinder, route **pipe A** (see chart) from the primary port, under the cylinder body and follow the 45° tube to the top chassis rail.



The pipe is then routed as along the top chassis rail to the 3-way connector, where it is shaped to fit the middle outlet.

Fix the pipe using clip-in type fixings spread along its length at 150mm intervals.



3. The front brake pipes are then routed as shown.

A - Right hand side **pipe B**

B - Left hand side **pipe C**

Fix the pipes using clip-in type fixings spread along its length at 150mm intervals.



Rear Brake Pipe Routing

1. Position the rear 3-way connector as shown, attach with
2 x 6mm plain washer
1 x 6mm nyloc nut



2. From the brake master cylinder, route **pipe D** (see chart) from the secondary port, down to the 3-way connector.



3. On the 3-way connector with the pressure switch, the outlet pointing towards the rear of the car takes **pipe E** (see chart) to the rear 3-way connector.

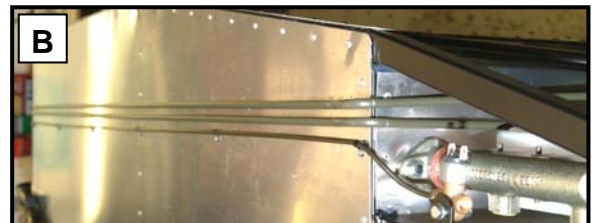


This pipe is routed on the underside of the chassis floorpan. The pipe is fixed using 4.1mm rivets and the 5mm P clips. Fix through the aluminum floor pan and where possible the chassis box sections. The rivet heads will protrude into the interior floor, but will be covered by the carpeting.



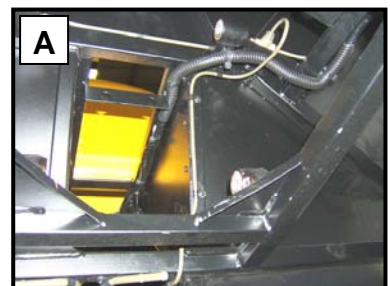
A – Fitting the rear pipe on lowered floor cars

B – Fitting the rear pipe to flat bottomed cars

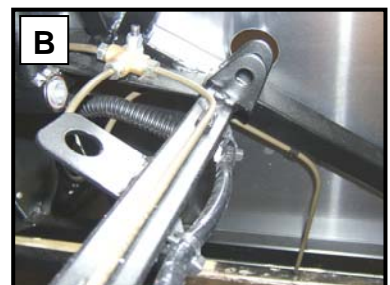


4. The rear pipe on flat and lowered floors exits the floor at different points. The route taken to reach the 3-way connector is as follows.

A – Lowered Floor



B – Flat Floor



Use the 5mm 'P' clips to attach the pipe to the chassis rail.



5. The rear brake pipes attach to the 3-way connector and run down the upper face of the top chassis rail.

Right hand side is **pipe F**

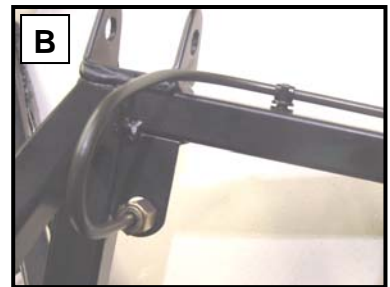
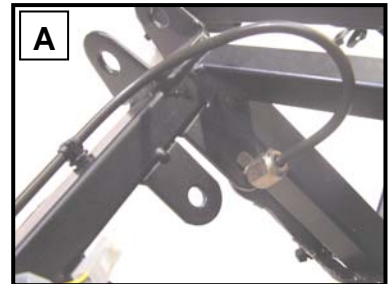
Left hand side is **pipe G**



The right and left rear brake pipes are fixed to the chassis using clip-in fixings spread along its length at 150mm intervals. A clip-in fixing is also positioned 35mm in from the upper wishbone mounts on the top face of the chassis rail.

A – Right hand side

B – Left hand side



Fuel Pipe Routing

For all Westfield models, that same fuel pipe is utilised, the pipe measures 1830mm in length and 8mm in diameter. Independent of whether the vehicle is to be right or left hand driven, routing the fuel pipes is determined by the engine layout. Use the following table to determine which vehicle side to route the pipes.

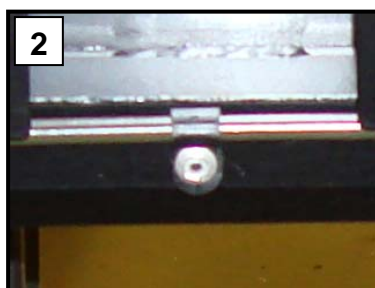
Engine	Fuel Pipes Routed
Sigma 1600cc	Left Hand Side
Duratec 2000cc	Left Hand Side
Zetec (all derivatives)	Right Hand Side
Crossflow 1700cc	Right Hand Side
Pinto SOHC 2000cc	Left Hand Side
Vauxhall XE 2000cc	Right Hand Side

The number of fuel lines installed on the car is also determined by the engine layout. Fuel-injected engines will require two fuel lines (feed and return), engines fitted with carburetors may only require one fuel line if there is no provision for a fuel return.

Fixing The Fuel Pips

The pipes are held to the chassis using 8mm P-clips. It is worth noting that this method of fixing can only be done when the pipes are routed in their final position

1. Place a 8mm P-slip over the fuel pipe and drill the chassis using a 4.1mm drill in the desired position for routing the pipe.
2. Position a 4.1mm rivet through the clip and into the chassis, it can then be pulled up with a rivet gun.
3. When fixing two pipes to the chassis, turn one P-clip around and use a single rivet.



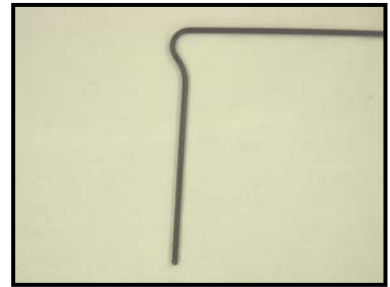
Fitting order

Regardless of which side the pipe is to be fitted, or whether the car has a lowered or flat floor, the initial process is the same.

1. Measure and mark a point 330mm from one end of the pipe.



2. Use a suitable pipe bender, starting at the mark made, form the shape shown in the picture.



Fitting For Lowered Floor

From the table, determine which side of the car the pipe is to be routed. The example shows the pipes on the left hand side.

1. Place the pipe on the floor panel so the bend goes around the chassis and down the bulkhead, between the first and second rivet from the outside. Mark where the fuel pipe meets the edge of the lowered floor panel.



Bend the pipe at this point so it runs on the chassis tube and along the lowered floor panel

2. Mark where the pipe exits from the lowered floor panel. Bend the pipe 45° as shown.



3. When fitting two fuel pipes, the process is repeated, but where the pipe exits from the lowered floor panel, form the 45° bend in the opposite direction.



4. Fix the fuel pipes in place using 8mm P-clips spread along its length at roughly 300mm intervals. Where possible attach the P-clips to chassis tubes.



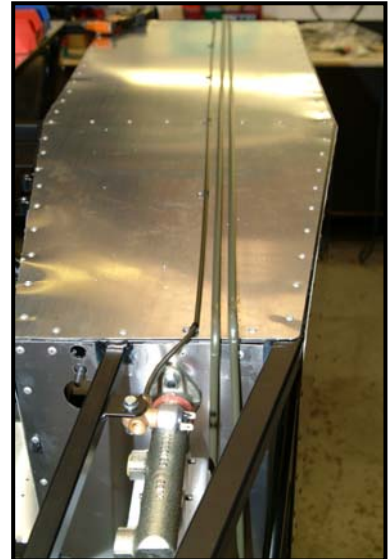
Fitting For Flat Floor

From the table, determine which side of the car the pipe is to be routed. The example shows the pipes on the right hand side.

1. Place the pipe on the floor panel so the bend goes around the chassis and down the bulkhead panel.



As a general rule the pipes should lie between the first and second floor rivet from the outside at the front. At the rear you should grind out the fourth rivet from the outside and mount the pipes there.



2. Mark where the pipe exits from the floor panel. Bend the pipe 90° as shown.



3. When fitting two fuel pipes, the process is repeated,

4. Fix the fuel pipes in place using 8mm P-clips spread along its length at roughly 300mm intervals. Where possible attach the P-clips to chassis tubes.

