



Volvo P80 850/C70/S70/V70 320mm front brake conversion



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Introduction

Thank you for purchasing our DVS 320mm brake conversion for 1994-2000 Volvo 850/C70/S70/V70 models.

This conversion can ship in multiple forms, depending on what you would like to source yourself or what is more convenient based on geographical or other factors.

The document is a growing document and we'll update it from time to time, with more details and part numbers that may be useful to anyone looking to do the upgrade.

We added this product to our line-up in August 2014, at which point we'd logged thousands of kms with the conversion fitted to a car, tested brake pads and rotors from various manufacturers and had been through multiple iterations of the design.

As with any of our products, we hope that you will enjoy using them as much as we enjoyed designing, fabricating and testing them.

The DVS team.

1. About the conversion

While companies like Wilwood, Alcon and AP Racing manufacture some very serious, high performance brake upgrade packages aimed at very high performance road and motorsport applications and many of our customers do participate in various levels of motorsport, this conversion is focused on providing a cost-effective, easy to fit solution with a significant improvement over stock while using parts that are easy to source.

The added bonus here is that this conversion will fit under standard Volvo 17" wheels including 'Titan' and 'Volan' wheels.

You can expect a decrease in stopping distance, more frequent and repeated harder brake applications before brake fade and a more positive brake pedal feel.

This conversion uses the 320mm brake rotor and caliper found on the following models –

- Volvo S40 T5 AWD. 2005-2012¹
- Volvo V50 T5 AWD. 2005-2012¹
- Volvo C70. 2007-2013¹
- Ford Focus XR5 (ST for the European market). LS-LV models
- **Mazda3 MPS. 07/2006-10/2013²** (Calipers only!!)

The required brake line for this conversion is –

- Volvo V70R 1998-2000 front brake line for models with 302mm brakes

Notes	
1	Volvo C30, S40, V50 & C70 models were available with various brake combinations. It is imperative that you use the correct caliper and rotor from a car equipped with 320mm rotors.
2	Mazda3 MPS also use the same caliper, however brake rotors are not usable due to different stud pattern. Mazda caliper hanger is tapped for M12 x 1.25 rather than M12 x 1.75 as per Ford/Volvo

2. Legal

READ THIS.

While every possible effort has gone into development and testing of this brake conversion to ensure it is safe, reliable and offers a significant improvement over the 280mm and 302mm brakes commonly found on the P80 Volvo models, this product does not carry TUV, DOT or SAE approval or certification, nor does it carry ADR compliance (which may or may not be required in the Australian state your vehicle is registered in).

You are solely responsible for making the decision as to whether this product is suitable or appropriate for you to use in your market/country.

DVS Performance Parts and its resellers are not responsible or liable for fault or failure as a result of end-customer fitting of this product.

2.1 Reference Documents

The following documents contain government guidelines on vehicle brake modifications and references to ADRs which may be useful.

- [South Australian Government Modifications to Vehicles fact sheet - MR1457](#)
- [Australian Design Rule 31/01 – Brake Systems for Passenger Cars. 2005](#)
- [VicRoads Guide to Modifications for Motor Vehicles. 2011](#)

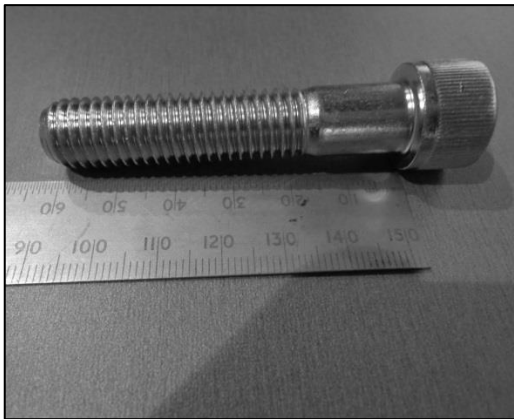
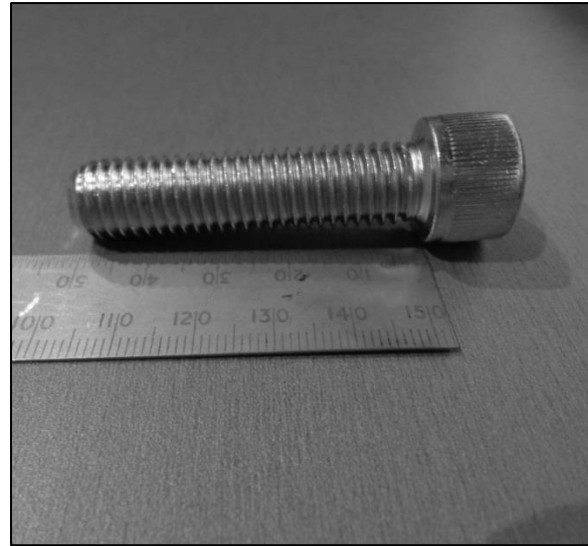
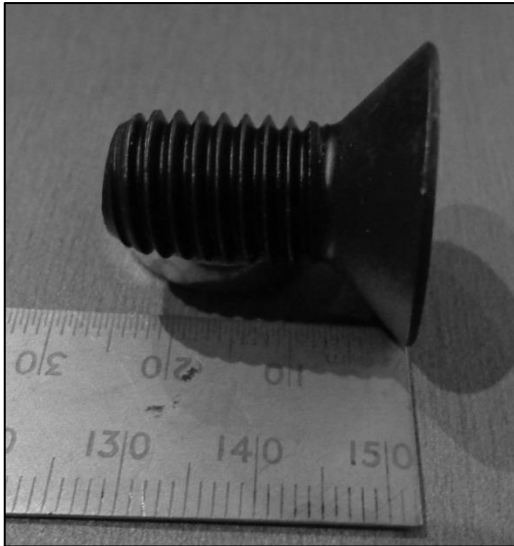
3. Parts List

Qty	Part	Notes
1	LH Caliper & hanger	Used calipers should come with hangers
1	RH Caliper & hanger	Used calipers should come with hangers
1	Pair 320mm brake rotors	See <i>Useful Part numbers</i>
1	Brake pad set	See <i>Useful Part numbers</i>
1	Brake line set	See <i>Useful Part numbers</i>
2	M12 x 1.75 x 25mm countersunk cap screw	Coated Preferred. Grade 12.9
2	M12 x 1.75 x 50mm regular cap screw	Coated Preferred. Grade 12.9
2	M12 x 1.75 x 60mm regular cap screw	Coated Preferred. Grade 12.9. Substitute with M12 x 1.25 x 60mm cap screw if using a Mazda sourced caliper.
4	12mm x 5mm washer	Can substitute for 12.5mm ID x 4.65mm thick
1	DVS P80 320mm caliper adaptor. Pair.	Same part to be used on left and right



Pictured above **left** are required fasteners – M12 x 1.75 x 25mm countersunk cap screw (2 req), M12 x 1.75 x 60mm regular cap screw (2 req), M12 x 1.75 x 50mm regular cap screw (2 req) and 12.5mm x 4.65mm washer/spacer (4 req).

Pictured above **right** are the DVS P80 320mm caliper adaptors.



Top left: M12 x 1.75 x 25mm countersunk cap screw. **Top right:** M12 x 1.75 x 50mm regular cap screw. **Lower left:** M12 x 1.75 x 60mm² regular cap screw.
Fasteners are all grade 12.9

3.1 Parts List amendment if using Mazda sourced calipers

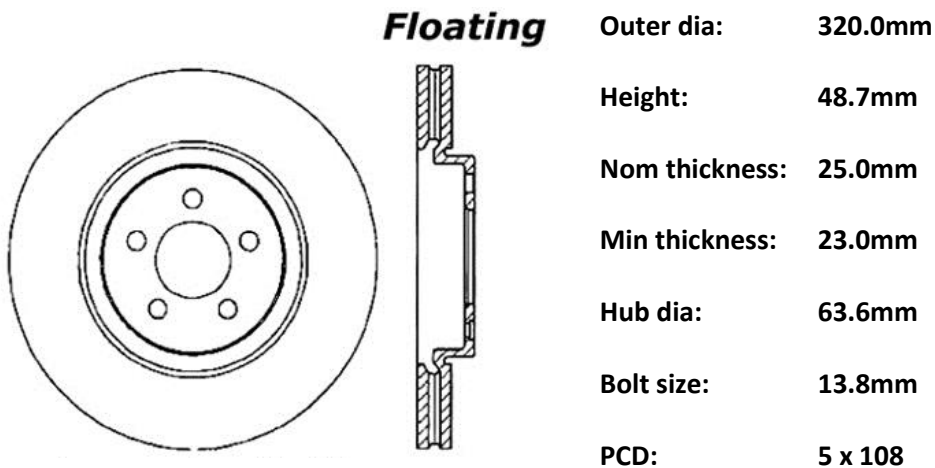
If using calipers sourced from a Mazda3 MPS, be sure that you substitute the M12 x 1.75 x 60mm cap screws with M12 x 1.25 x 60mm cap screws, as per the *Parts List* table.

4. Useful Part Numbers

Caliper (and parts)		
36000732	Genuine Volvo	Caliper Hanger. Left and right
30665010	Genuine Volvo	Caliper anti rattle spring
36000731	Genuine Volvo	LH front caliper
36000704	Genuine Volvo	RH front caliper
1368543	Ford	LH front caliper
1368542	Ford	RH front caliper
Rotor		
CRD6F3709	Project Mu	Brake Rotor. CRD Slotted. 320mm. Sold as a pair.
BRE-9A72811	Brembo	Brake Rotor. 320mm. Left and right
31329122	Genuine Volvo	Brake Rotor. 320mm. Left and right
RDA7885D	RDA	Brake Rotor. Slotted & dimpled. 320mm. Sold as a pair.
126.39038SL	StopTech	Brake Rotor. Slotted. 320mm. Left. Sold as individual rotor.
126.39038SR	StopTech	Brake Rotor. Slotted. 320mm. Right. Sold as individual rotor.
Brake Pad		
Z165 NS	Project Mu	Project Mu NS400 brake pad set
EUR915A	Akebono	Akebono Euro Ultra Premium ceramic brake pad set
BRE-P10012N	Brembo	Brembo brake pad set
DP21524	EBC	EBC Greenstuff brake pad set
DP31524C	EBC	EBC Redstuff brake pad set
FDB1706 DS2500	Ferodo	Ferodo DS2500 brake pad set
6G912M008GF	Ford Genuine	Ford Focus XR5 LS-LV brake pad set
HB549F.702	Hawk	Hawk HPS brake pad set
4N512K021AB	Motorcraft	Ford Focus XR5 LS-LV brake pad set
Brake Line		
VOL-4-183 F	HEL	Braided stainless line. Left and right. ADR approved (P80 cars)
9191400	Genuine Volvo	Brake Line. Left and right (P80 cars)

5. Identifying the correct rotor

While we typically wouldn't recommend purchasing used rotors, you may be fortunate enough to stumble across a decent, low km, pair with your calipers if you're sourcing them from a wrecker. To ensure that you're getting the correct rotor, the following diagram provides measurements of the rotor to use in this conversion. Part numbers for the rotors are listed in section 4 of this document.



6. Identifying a 320mm caliper

Brake calipers fitted to cars from the factory vary massively according to the market they're sold in. Typically, the North American market saw fewer Volvo models fitted with 320mm brakes from new. Consensus seems to be that 320mm brakes, in this market, were fitted only to S40/V50 T5 AWD Manual-only models from 2009 on.

Cars in the European and Australian markets had 320mm in more model variations. If you are in Australia, you can be sure beyond doubt that you'll find a set on LS-LV Ford Focus XR5 models, without exception.

The following pictures show the visual difference between the calipers used on cars using 278mm and 300mm rotors and the calipers used with the 320mm rotors which we are interested in for this conversion.



*Pictured above **left** is the 320mm brake rotor and caliper to be used in this conversion. Pictured on the **right** is a 300mm brake rotor and caliper – this caliper is not the caliper we will be using. Note the larger, heavier cradle/hanger assembly featured in the caliper on the left.*

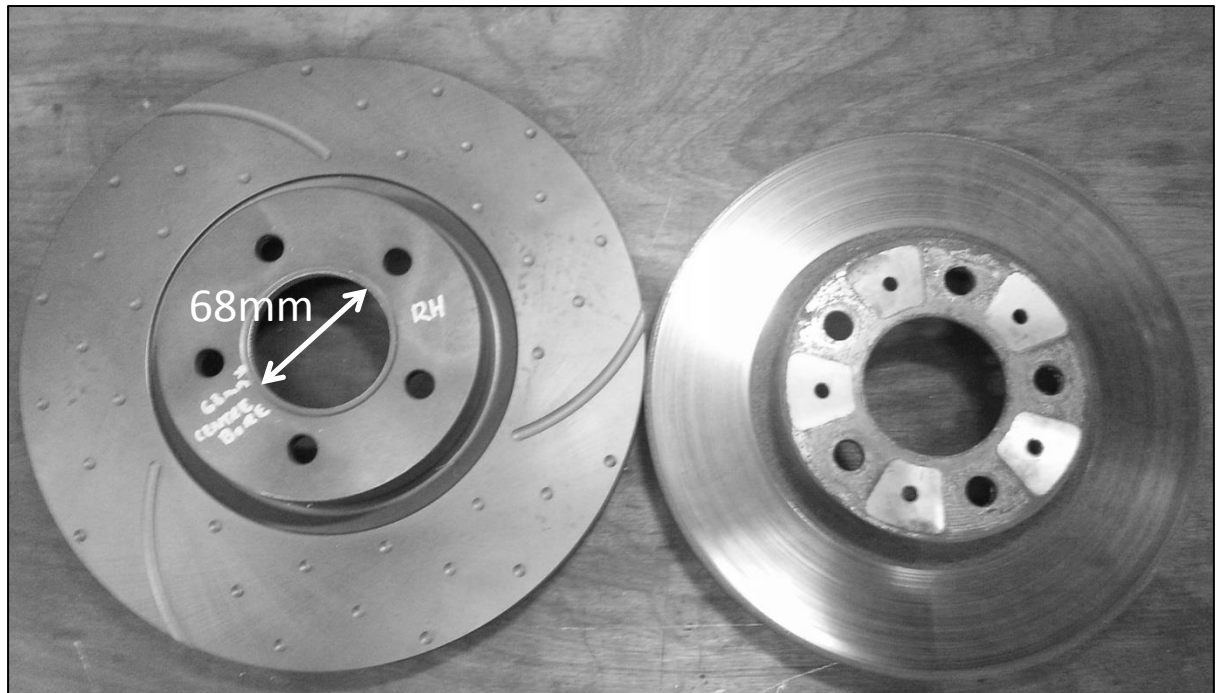
7. Getting everything ready to fit

While one of the biggest appealing factors of this conversion is it's simplicity, there are still a couple of things that need to be done before you can put it all together on the car.

7.1 Brake rotor

The brake rotor being used in this conversion will be for a Volvo C30/V40/V50/C70 or an LS-LV Ford Focus XR5. Unfortunately the centrebore of the rotors on these cars is 63.6mm, whereas the 1994-2000 Volvo 850/C70/S70/V70 that we're fitting that rotor to requires the rotor centrebore to be 68.0mm.

If you're purchasing your rotors through *DVS Performance Parts*, we can supply them with the centrebore already machined to 68mm to suit the conversion. If you are sourcing your rotors via another supplier, you can have an engineering business do this for you, without issue, at minimal cost.



Shown on the **left** is a 320mm brake rotor. On the **right** is a Volvo 280mm brake rotor.

7.2 Caliper hanger

The calipers we are using in this conversion are labelled on the back as RH and LH. Calipers are the same between left and right, except for the location for the brake line.

Hangers are the same regardless of side. However, the hole in the hanger for the lowest mounting point on the stub needs to be drilled to 12mm and this hole is to be countersunk with a 90° taper to suit the countersunk cap screw which will mount the adaptor to the hanger.

The cap screw to be used is M12 x 1.75 x 25mm long.

To drill and countersink the hole, it is considerably easier to separate the caliper and work with the hanger only. The caliper can be separated by removing the four bolts from the back side of the caliper and then simply pulls apart.



*Shown **above**: Lower hole in RH caliper hanger drilled to 12mm and countersunk to suit M12 x 1.75 x25mm long countersunk cap screw.*

The hole is to be countersunk so that the cap screw sits only just proud of the surface of the hanger. We suggest test fitting with the cap screw here. The result should be as per the following picture.



Shown on **above**: Countersunk 12mm hole with M12 x 1.75 x 25mm long countersunk cap screw seated.

A hole will need to be drilled and countersunk in each caliper hanger, with one caliper hanger mirroring the other for hole location.

With these two tasks complete, we're ready to begin assembly.

7.3 Wheels

For vehicles fitted with 17" wheels, there is minimal clearance between the caliper and the wheel. The internal shape of wheels varies with wheel design. Volvo genuine 'Titan' and 'Volan' wheels have very small margins of clearance. If using 17" wheels, it is extremely important to check that wheels do not have flat spots and have no bends or buckles (even if these cannot be felt through poor steering/ride feedback). Volvo 'Titan' and 'Volan' wheels are also very soft and prone to bending through pothole or road debris impact. Even a slight bend in one of these wheels is likely to cause clearance issues with the caliper.

8. Fitting

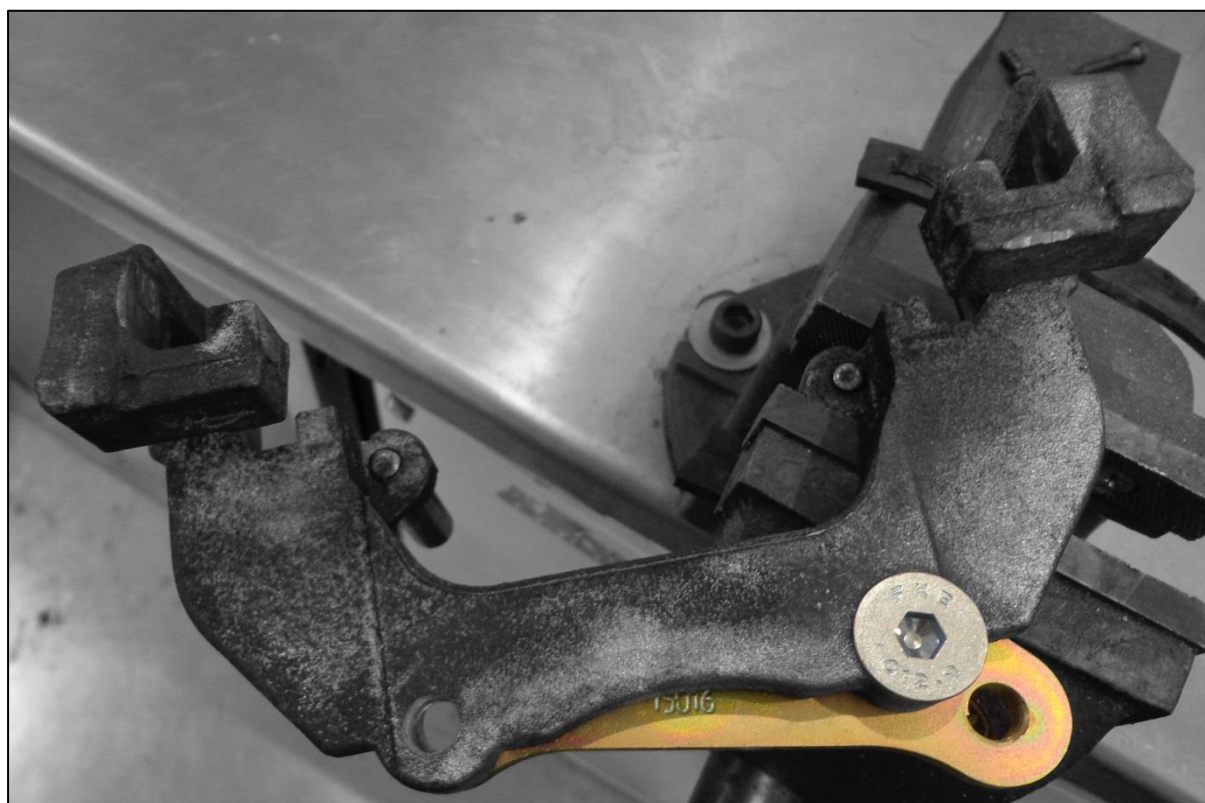
The starting point for fitting assumes that the old brake rotors, calipers and brake lines have already been removed from the car and that the car is in a state where it is ready new hardware to be fitted.

8.1 DVS caliper adaptor to Volvo/Ford caliper hanger

With the caliper hanger still separated from the rest of the caliper, align the non-threaded hole in the DVS caliper adaptor with the threaded hole in the Volvo/Ford caliper hanger - you can use one of the M12 cap screws if required.

This will ensure that the adaptor doesn't move when tightening the countersunk cap screw.

Using the M12 x 1.75 x 25mm countersunk cap screw, fasten the DVS caliper adaptor to the caliper hanger and tighten to 100Nm. Ensure that you use a high strength thread locking compound, such as Loctite 263, on the thread of the cap screw before fitting.



*Shown **above**: Volvo/Ford caliper hanger with DVS caliper adaptor fitted. Ready to be fitted to the vehicle.*

8.2 Fit the brake rotor

Depending on your choice of brake rotor, your chosen brake rotor may or may not have a hole machined into the face that mates to the hub for a locating bolt/pin.

If your rotors have a hole, fit the rotor, insert the bolt/pin through the hole, align with the threaded hole in the hub and tighten.

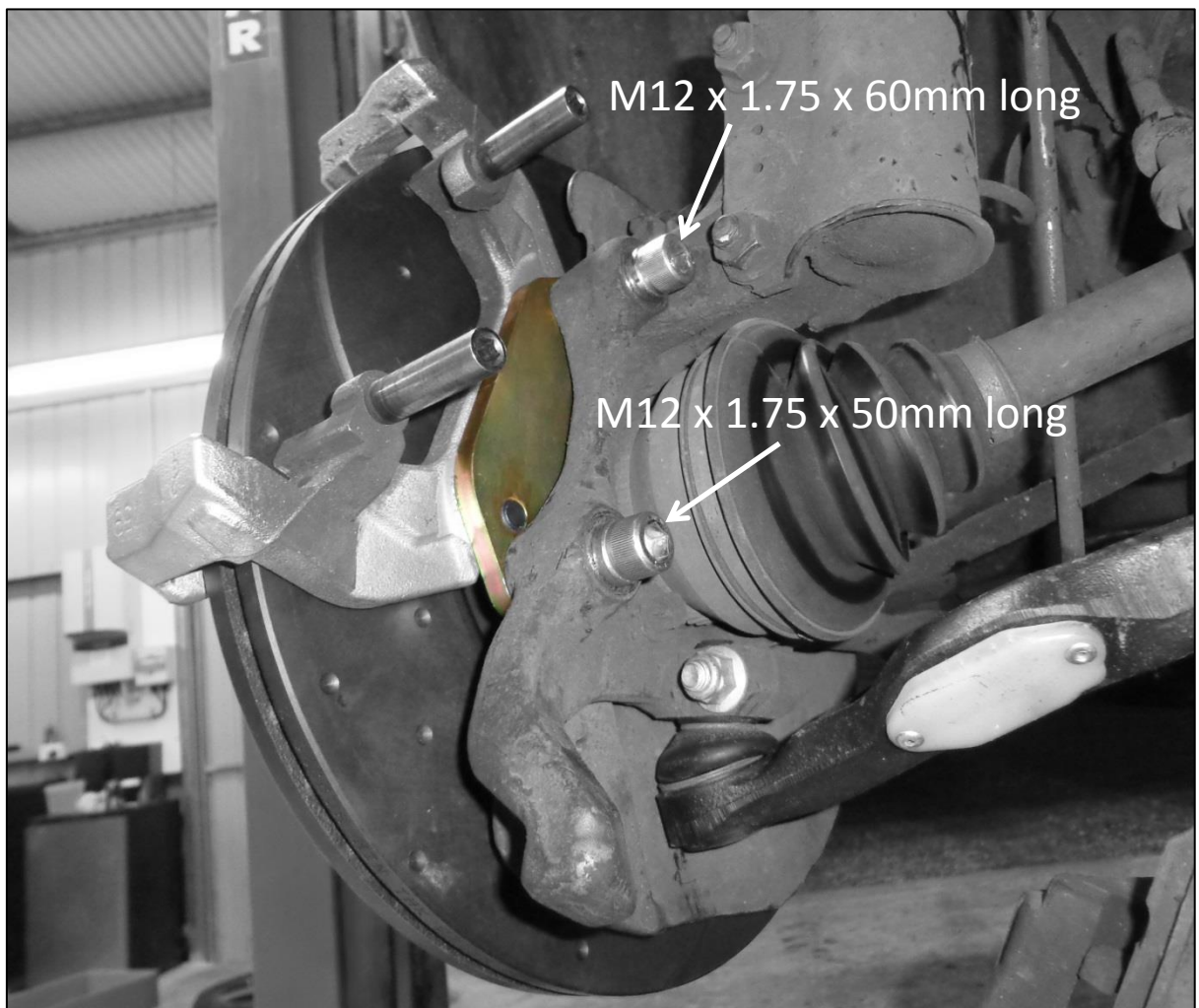
If your chosen brake rotor does not have a hole machined into the face for a locating bolt/pin, screw in two wheel bolts through the rotor and into the hub and tighten by hand. This will make fitting the calipers a little easier.

8.3 Fit DVS caliper adaptor and Ford/Volvo caliper hanger to the vehicle

Fasten the DVS adaptor and Volvo/Ford caliper hanger to the vehicle as shown below. As per Volvo's specifications, the fasteners are to be tightened to 100Nm.

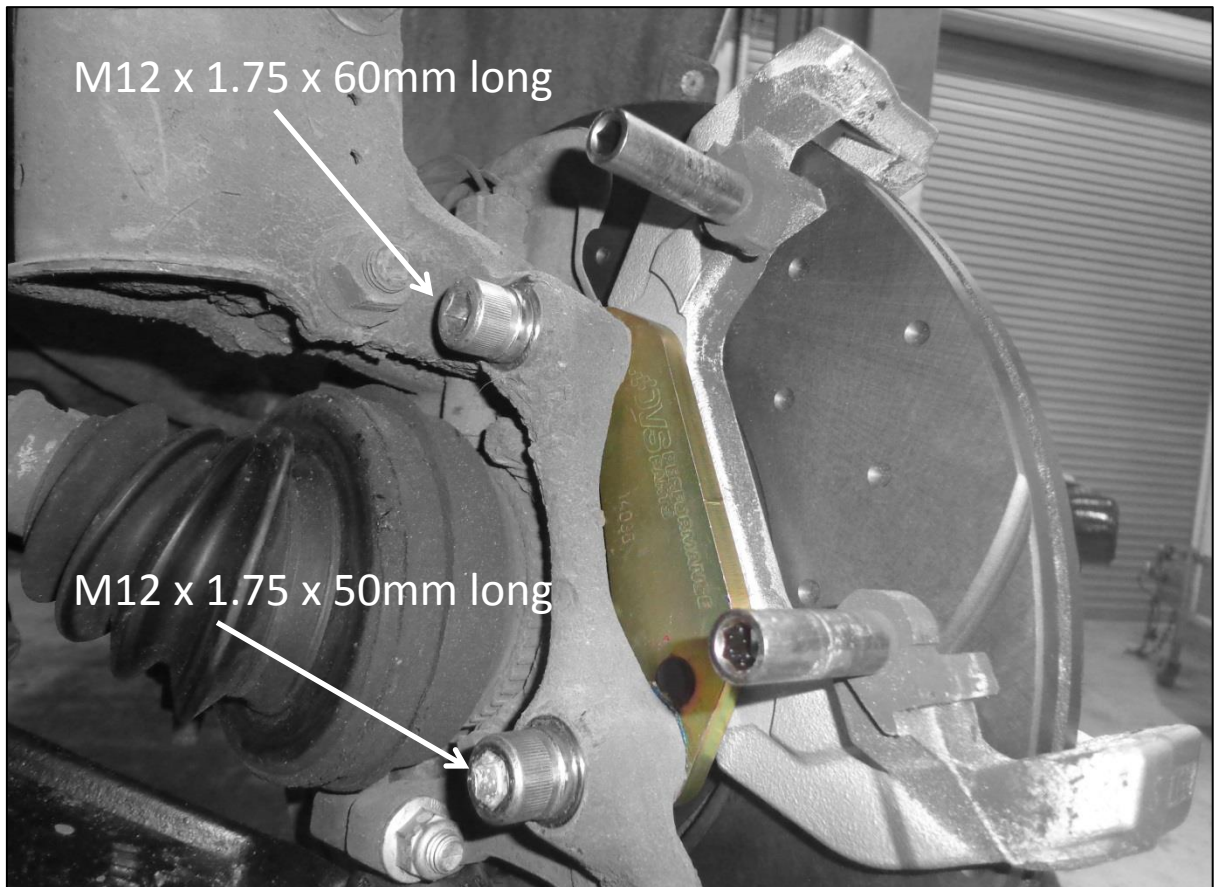
The top bolt is a M12 x 1.75 x 60mm² long regular cap screw (preferably coated) and has a 12mm x 5mm washer fitted underneath the head. Ensure that you use a medium strength thread locking compound, such as Loctite 242, on the thread of the cap screw before fitting.

The lower bolt is a M12 x 1.75 x 50mm long regular cap screw (preferably coated) and has a 12mm x 5mm washer fitted underneath the head. Ensure that you use a medium strength thread locking compound, such as Loctite 242, on the thread of the cap screw before fitting.



Shown on previous page:

RH DVS caliper adaptor and Volvo/Ford caliper hanger fitted to the vehicle.



Shown above: LH DVS caliper adaptor and Volvo/Ford caliper hanger fitted to the vehicle.

You may notice that the 'DVS Performance Parts' branding and the component build number is only visible on the LH side of the vehicle. The adaptors are interchangeable and this means that on the RH side of the vehicle markings face in, toward the brake rotor.

8.4 Reassemble the caliper

If you've removed the brake pads already or need to replace them, fit new pads to the caliper halves. The rear caliper half (with brake line fitting) is to be fitted first and slides onto the pins on the back of the caliper hanger.

Fit the front caliper half and push together. Be careful not to bend or squash pad retaining clips. Refit original torx screws.

Refit caliper anti rattle spring if you have changed brake pads.

8.5 Fit new brake line

Fit replacement brake line, as per Volvo 302mm brakes, Volvo Genuine part number 9191400.



8.6 Bleed brakes

Bleed brakes as per standard brake bleeding procedure that you'd follow when doing fluid change or regular maintenance. See workshop manual (Haynes, or similar).

9. Road test

Once brakes are bled and wheels have been refitted, it is an ideal opportunity to do a slow road test to confirm all is ok.

Start the car and pump the brake pedal to confirm that pistons are up against pads in the caliper.

Do a low-speed and short distance drive before returning. Remove wheels, confirm fasteners are tight and that there are no leaks from the caliper or newly fitted hoses.

Once complete, refit wheels, complete another short road-test and re-check.

If your brake pad manufacturer has a bed-in process for the pads you have chosen, follow the bed-in steps according to their recommendation.

10. Constraints

This conversion is not suitable for everyone. It is a very good compromise between cost and dramatic improvement in braking performance.

10.1 Wheel size

As a minimum, 17" wheels must be used with this conversion.

16" Wheels are often found on the Volvo S40 & V50 T5 AWD models, however 16" wheels cannot be used with this brake conversion on the Volvo P80 platform 850/S70/S70/V70 models.

10.2 Wheel weights and balancing

Some of the genuine Volvo 17" wheels, such as 'Titan' and 'Volan' wheels offer very tight clearance to the caliper. As such, stick-on wheel weights on the inside of the wheel surface should not be used as these may foul against the caliper. Instead, ensure that weights are affixed to the rear lip of the rim.

10.3 Pad surface area

This conversion is an entirely 'bolt-on' arrangement allowing, if desired, the car to be converted back to its original brake package at a later stage. As a result of this and the bolt pattern arrangement this limits us to, the caliper is mounted slightly further outboard than would be ideal and the pad surface overlaps the edge of the brake rotor by 3-4mm. This is one of the limitations in using inexpensive, off-the-shelf, calipers and rotors. As pads wear, a 'lip' may be worn into the pad surface.

11. Thank you

We trust that you'll enjoy the improvement in braking performance and that you'll enjoy your DVS product as much as we did designing, fabricating and testing it. Thank you.

12. Document History

Rev 1.00	September 2 nd 2014	Original
Rev 1.01	September 7 th 2014	Minor update
Rev 1.011	September 19 th 2014	Minor update
Rev 1.10	October 9 th 2014	<i>Useful Part Numbers</i> and <i>About the conversion</i> updated
Rev 1.11	November 23 rd 2014	<i>Parts List</i> updated
Rev 1.12	December 16 th 2014	Cover page updated, <i>Introduction</i> and <i>About the conversion</i> updated
Rev 1.13	January 1 st 2015	Cover page updated, <i>Parts List</i> updated
Rev 1.20	March 19 th 2015	Updates made to <i>About the Conversion</i> , <i>Parts List</i> , <i>Useful Part Numbers</i> , <i>Road Test</i> and <i>Constraints</i>
Rev 1.21	April 5 th 2015	<i>Parts List</i> updated
Rev 1.22	April 9 th 2015	<i>Useful Part Numbers</i> updated
Rev 1.23	April 19 th 2015	<i>Useful Part Numbers</i> and <i>Getting Everything Ready to Fit</i> updated
Rev 1.231	April 27 th 2015	<i>Useful Part Numbers</i> updated. Minor update
Rev 1.24	May 15 th 2015	<i>About the Conversion</i> , <i>Useful Part Numbers</i> and <i>Fitting</i> updated
Rev 1.241	May 17 th 2015	<i>Introduction</i> updated. Minor update
Rev 1.30	May 28 th 2015	Updates made to inside cover page, <i>Getting Everything Ready To Fit</i> and <i>About the Conversion</i> .
Rev 1.301	June 24 th 2015	Updated <i>Getting Everything Ready to Fit</i> . Minor update