Converting an R1200GS or R1200GS Adventure to Supermoto

BMW R1200GS and GS Adventure models, model-years 2004 to 2013

Introduction and rationale

The R1200GS and GS Adventure are roadgoing motorcycles of outstanding overall ability. Their long suspension travel, greater-than-average suspension compliance and upright, commanding riding position, with the added bonus of being able to stand up easily when needed, means greater control during sporting riding on varying, inconsistent or rough surfaces. Further, their higher overall centre of gravity compared to the R1200S and R1200RT mean quicker changes of direction.

However, although the standard GS/GS Adventure wheel dimensions yield perfectly adequate performance in terms of on-road and semi-offroad capability, they quite naturally leave room for improvement in terms of aggressive tarmac-oriented performance.

The relatively narrow standard rims restrict maximum tyre widths, and limit choice of tyres to those with higher aspect ratios and harder compounds. This in turn restricts the potential size of the tyre contact patch. Further, the standard 19-inch front wheel (a compromise beween the on-road characteristics of the industry-standard tarmac-oriented 17-inch, and the rough-terrain rolling characteristics of a 21-inch) also has greater mass located further from the wheel hub, and therefore, greater inertia ('flywheel effect') for the same wheel weight. This places a restriction on the motorcycle's ability to turn quickly under high-speed road conditions.

The aim of this conversion is to tailor the R1200GS and GS Adventure to the tastes of more aggressive road riders by taking a motorcycle which, as standard, is biased approximately 50/50 in terms of tarmac/offroad performance, and shifting it's bias further toward 100/0 in terms of tarmac-oriented handling and grip.
This document was written with extensive reference to 2009 and 2010-model R1200GS Adventure motorcycles. However, it is applicable to all R1200GS and R1200GS Adventure models manufactured between 2004 and 2013, as the conversion procedure is identical for all such models.

Advantages and disadvantages

Advantages:

- A wider rear wheel and standard-width 17-inch front wheel allow the rider access to a much greater variety of road-oriented tyres in sports-touring, supersports, track-day and circuit-racing compounds.
- The above also allows the use of wider and/or higher aspect-ratio rear tyres, thereby increasing grip and improving handling.
- The ability to experiment with different tyre profiles allows the rider further opportunity to 'tweak' the motorcycle's handling characteristics via effective alteration of the steering head angle.
- A 2-inch reduction in front wheel diameter results in more mechanical leverage being exerted from the standard front brake discs, facilitating greater front braking power for a given application of braking effort.
- The 1-inch reduction in front-end static ride height afforded by a 17-inch front wheel steepens the effective steering head angle, resulting in quicker steering.
- If no changes are made to overall gearing, the conversion will have no detrimental effect on ABS and ASC systems (if fitted).

Disadvantages:

- Loss of most off-road capability.
- Alterations in static pitch attitude may have a negative effect on steering stability, which may lead to behaviours such as weaving or tank-slapping under certain conditions.

This conversion can be undertaken with speed and ease. The procedures in this document exploit BMW commonality in terms of parts, since the following are identical between all iterations of 2004-2013 R-series motorcycles:

- Rear wheel bolt-cavity pitch-circle diameter.
- Rear-wheel hub cavity interchangeability.
- Number of rear-wheel bolt cavities.
- Front-wheel hub latitudinal offset.
- Front-wheel brake-disc mounting latitudinal offset.
- Front-wheel brake-disc mounting pitch-circle diameter.
- Front-wheel bearing axle clearance.

Suitable motorcycle types

If a suitable motorcycle has not yet been procured or chosen for conversion, it is recommended that an R1200GS be favoured over a GS Adventure.
There are a number of advantages to this choice:

- The non-Adventure GS is physically smaller in certain critical dimensions, and possesses less mass.

- Although the Adventure's suspension is capable of greater static preload settings, it's springs are softer (i.e. they possess a lesser pounds-per-inch rating), which may result in less precise handling and reduced ground clearance compared to the standard GS, especially on optimal surfaces.

Choosing suitable wheels

As far as available wheels from existing BMW motorcycle types are concerned, there are a large number of possibilities:

1. 1 170cm^3 R-series (2004 to 2013).
   This is the most desirable type, as these wheels require no modification and are a straight 'bolt-on' addition.

   Popular consensus is that the 'turbine'-style wheels from the R1200S are the most visually appealing.
   However, vital dimensions of all R-series wheels from this era are close enough to render all such wheels eminently usable, meaning that wheels from the R1200R, R1200R Classic, R1200RT, R1200S and R1200ST can all be used on the R1200GS and GS Adventure.

   You will need to bear in mind that the standard R-series rear wheel width for on-road motorcycles is 5.5 inches. This rim width permits you to use a maximum tyre width of 180mm.
   Occasionally, it is possible to find 6-inch wide 'turbine' rear wheels: these were a factory-fitted option on some R1200Ss. A 6-inch rear wheel permits the use of 180mm or 190mm-wide tyres.

   A classic 'wire-spoked' supermoto look can be achieved with relatively low cost if using the wire-spoked 17-inch wheels from the R1200R Classic. Vital dimensions of these wire-spoked wheels are identical to the alloy wheels used on the regular R1200R.

Note:	R1200R, R1200RT, R1200S and R1200ST alloy rear wheels have a latitudinal offset which positions them approximately 15mm to the left of the motorcycle's centre line when used on the R1200GS and GS Adventure. It must be stressed that although this latitudinal offset is clearly visible when standing behind the motorcycle, it has negligible effect on the motorcycle's handling. R1200R Classic wire-spoked rear wheels possess the same latitudinal offset as R-series alloy wheels. However, this offset can easily be corrected by adjusting spoke tension to bring the rim 'into line' with the motorcycle's centre line. If undertaken, it is recommended that this alignment procedure be performed only by an experienced wheel builder. When installed on an R1200GS or GS Adventure, K-series rear wheels possess approximately 8mm latitudinal offset.

   Should you be lucky enough to come across a set of the 'revised' turbine-style forged aluminium wheels fitted to the HP2 Sport, these can also be used. However, these wheels are extremely rare and expensive.

   In summary, there are five suitable R-series wheel types which can be used. The relevant wheel dimensions are:

   i. 'Standard' style, 5.5-inch rear, 3.5-inch front (R1200R, R1200RT, R1200ST).

   ii. Wire-spoked style, 5.5-inch rear, 3.5-inch front (R1200R Classic)

iii. ‘Turbine’ style, 5.5-inch rear, 3.5-inch front (R1200S).

iv. ‘Turbine’ style, 6-inch rear, 3.5-inch front (factory option on R1200S).

v. Revised turbine style, 6-inch rear, 3.5-inch front (HP2 Sport).

2. 1 157cm^3, 1 293cm^3 and 1 649cm^3 K-series (2005 onward).
K-series rear wheel design is nearly identical to that of R-series, following a pattern of ‘standard’ and ‘turbine’ wheel designs, with one vital difference: on K-series, the wheel mounts to the rear wheel carrier from the right, whereas on R-series, the wheel is mounted from the left. This means that K-series wheels, although following the same aesthetic model, are actually a ‘mirror image’ of R-series wheels. This does not, however, prevent their effective use on R-series.

   In summary, two different K-series rear wheel types are available:

   i. ‘Standard’ style, 5.5-inch rear, 3.5-inch front (K1200R, K1300R, K1200R Sport, K1200GT, K1300GT).

   ii. ‘Turbine’ style, 6-inch rear, 3.5-inch front (K1200S, K1300S, K1600GT/GTL; optional extra on K1200R, K1300R and K1200R Sport).

   K-series front wheels will require modification if used on R-series. K-series wheels both use an asymmetric hub design, necessitating a wheel hub modification. Since the wheel bearings are spaced further from the wheel centreline, a modified R-series front axle in conjunction with a custom axle spacer, as well as a different wheel-bearing grease seal, will also be needed.
   Also, as standard, K-series wheels possess a greater brake-disc mounting latitudinal offset (i.e. greater distance between the two brake discs) than R-series wheels, which means that the wheel brake-disc mounting points of K-series wheels will require machining in order for the brake discs to locate correctly.

3. Twin-cylinder F-series (F800S & F800ST [both wheels], F800R [front wheel only]).
Parallel-twin belt-drive F-series use an entirely different design of rear wheel which accommodates an eccentric adjuster, wheel bearing and drive pulley. These wheels cannot be used on R-series without interposing a substantial spacer between the wheel and rear drive unit. The required conversion is not detailed in this document.

   F-series front wheels will require modification if used on R-series. The front-wheel average latitudinal offset is different (these wheels use a hub design of greater asymmetry than K-series) and will thus need careful measurement to bring the wheel centreline to a match with the motorcycle’s centreline.
   Also, a reduced brake-disc mounting latitudinal offset (i.e. less distance between the two brake discs than on R-series) means that R-series wheels will require alloy or steel spacers to be mounted between the brake discs and wheel brake-disc mounting points, as well as requiring longer high-tensile disc mounting bolts. The required conversion is not detailed in this document.

4. R1200R Classic.
If you are looking for wire-spoked wheels to use on the R1200GS, it is strongly recommended that you first attempt to obtain a set of such wheels from the R1200R Classic, as these wheels are available ‘off-the-shelf’ (see sections above).

5. An alternative not often explored by GS owners (but very popular within the Supermoto racing fraternity) is to use standard GS or GS Adventure wire-wheel hubs, in conjunction with an aftermarket 3.50x17 front rim and 5.50x17 or 6.00x17 rear rim. This option will necessitate having wheels custom-built using new spokes.

Choosing suitable tyres

TYRE SIDEWALL MARKINGS AND CODES

A tyre will typically be moulded with marks such as ***190/55 R17 78W***.

Herein follows an explanation of the information being presented:
190: The width between the widest part of the tyre sidewalls, expressed in millimetres.
55: The tyre's aspect ratio, expressed as a percentage of tyre width. For example, the radial distance between this tyre's bead and the topmost portion of it's tread is 55% of 190 millimetres.
R: This denotes that the tyre carcass is of radial-ply construction. Bias-ply (AKA cross-ply) tyres are marked 'B', and tolerate lower temperatures and speeds.
17: The wheel-rim diameter in inches.
78: The tyre's maximum permissible load rating. This particular tyre can handle an overall loading of 425 Kg.
W: This is the tyre's maximum-speed rating. This particular tyre can handle a maximum speed of 270 Km/h at it's maximum weight loading.

CHOOSING TYRE COMPOUNDS

Given the pace of tyre development and the ranges of offerings available from different manufacturers, it is impossible to compile a comprehensive digest of tyres which may or may not suit this conversion.
However, a few possible tyres to choose for different styles of riding include:

- MEDIUM-SPEED TOURING/COMMUTING:
  Michelin Pilot Road, Michelin Pilot Road 2, Michelin Pilot Road 3, Metzeler Roadtec Z8.

- SPORTS TOURING:
  Metzeler Sportec M3, Metzeler Sportec M5.

- VERY HIGH-SPEED ROAD RIDING:
  Michelin Pilot Power (biased toward longer life), Michelin Power Pure (biased toward more grip).

- TRACK DAYS:
  Michelin Power One, Michelin Power Cup, Metzeler Racetec, Dunlop D211, Pirelli Dragon Corsa, Pirelli Diablo Corsa.

CHOOSING TYRE SIZES, SPECIFICATIONS AND CONFIGURATIONS

Assuming that you will be using standard BMW wheels, the tables below illustrate the tyre dimensions which can and cannot be used for this conversion:

FRONT:

Tyre dimension	Suitability for use / Reason
110/80-17, 110/70-17	No (Excess sidewall deflection on 3.5" rim.)
120/70-17, 120/60-17	Yes

REAR:

Tyre dimension	Suitability for use / Reason
150/70-17	No (Excess sidewall deflection on 5.5" or 6" rim.)
160/80-17, 160/70-17, 160/60-17	No (Excess sidewall deflection on 5.5" or 6" rim.)
170/80-17, 170/70-17, 170/60-17	No (Excess sidewall deflection on 5.5" or 6" rim.)
180/65-17, 180/60-17, 180/55-17	Yes (5.5" or 6" rims)
190/50-17, 190/55-17, 190/60-17	Yes (6" rims only)
200/50-17, 200/55-17	No (Excess sidewall deflection on 5.5" or 6" rim; clearance issues against rear swingarm and exhaust.)

Warning:	Higher-profile tyre configurations (for example, 180/60 or 190/55) may cause some loss of directional stability, particularly at low speeds.

	Therefore, it is strongly recommended that higher-profile rear tyres be fitted for use by experienced riders only.

Warning:	The reduction in steering-head angle facilitated by a 17-inch front wheel will greatly increase the motorcycle's sensitivity to rear-tyre quality. Therefore, it is strongly recommended that only new rear tyres with at least the majority of their tread remaining be used. 'Squared-off' (i.e. centre-worn) rear tyres will lead to a likelihood of uncontrolled weaving and/or 'tank-slapping' which increases in proportion to speed. This is particularly noticeable where lower-profile (for example, 180/55 or 190/50) tyres are used.

Where tyre aspect ratios have been correctly matched to rim widths, and tyres are in optimal condition, the converted motorcycle should feel stable and predictable during normal riding, rapid changes of direction and high speeds.
It is strongly recommended that only new or very low-mileage tyres be used, and that the rim width-to-tyre aspect ratio recommendations given in this section be adhered to at all times.

If the converted motorcycle exhibits instability behaviours such as tank-slapping, weaving, and steering wander over uneven surfaces, check the following:

1. Is the rear tyre 'squared-off' (i.e. has the centre portion of the tyre tread worn down substantially further than the side and outer portions?) If so, replace the worn tyre with one of recommended width and aspect ratio for the relevant wheel.

2. Is the rear tyre of an incorrect width? If so, replace the tyre with one of the correct width and aspect ratio. 5.5" rear wheels are designed to accept a maximum of 180mm-width tyres, and 6" rear wheels are designed to accept a maximum of 190mm-width tyres.

Bear in mind that the standard 150/70-17 rear tyre is closest in overall rolling circumference to a 180/55-17. Using a 190/55-17 tyre will effectively lengthen the motorcycle's overall gearing. This may help to reduce average fuel consumption and may also help facilitate a higher top speed, but it will also result in a slight degradation in acceleration.

TYRE LOAD-RATINGS

The GS and GS Adventure are heavier-than-average motorcycles. This means that choosing tyres with the correct load rating is important for safety, legality and absence of unpleasant handling quirks.
The load rating of any tyre is moulded on the tyre sidewall, just after the size indication. For instance, if a given tyre is marked **190/50 R17 72W**, the number 72 signifies that the load rating for that tyre is 355 Kg.

To determine what load in Kg a tyre of a given load rating can safely be permitted to carry, use the following load-rating table:

Load Index	Maximum permissible Carrying capacity	Load Index	Maximum permissible Carrying capacity	Load Index	Maximum permissible Carrying capacity	Load Index	Maximum permissible Carrying capacity
43	155 Kg	55	218 Kg	67	307 Kg	79	437 Kg
44	160 Kg	56	224 Kg	68	315 Kg	80	450 Kg
45	165 Kg	57	230 Kg	69	325 Kg	81	462 Kg

46	170 Kg	58	236 Kg	70	335 Kg	82	475 Kg
47	175 Kg	59	243 Kg	71	345 Kg	83	487 Kg
48	180 Kg	60	250 Kg	72	355 Kg	84	500 Kg
49	185 Kg	61	257 Kg	73	365 Kg	85	515 Kg
50	190 Kg	62	265 Kg	74	375 Kg	86	530 Kg
51	195 Kg	63	272 Kg	75	387 Kg	87	545 Kg
52	200 Kg	64	280 Kg	76	400 Kg	88	560 Kg
53	206 Kg	65	290 Kg	77	412 Kg	89	580 Kg
54	212 Kg	66	300 Kg	78	425 Kg	90	600 Kg

TYRE SPEED-RATINGS

It is critical that only radial-ply tyres of an adequate speed rating be used for this conversion.
Each speed rating in the table below assumes constant running at the listed speed, at the maximum loading permitted by the tyre's load index. For example, a 67V-rated tyre can handle indefinite running at a maximum of 240 Km/h, carrying a maximum of 307 Kg, when inflated to it's recommended pressure.

All tyres listed under the 'Choosing tyre compounds' section above are radial-ply, and all are either V or W-rated.
Modern bias-ply tyres are usually limited to off-road applications, and typically carry a maximum speed rating of S. Tyres which carry speed ratings in the 'red' sectors below are not considered suitable for the R1200GS or GS Adventure.

Speed code	L	P	S	T	H	V	W
Maximum rated speed	120 Km/h	150 Km/h	180 Km/h	190 Km/h	210 Km/h	240 Km/h (> 240 Km/h at reduced loading)	270 Km/h (> 270 Km/h at reduced loading)

Warning: It is strongly recommended that only tyres with a speed rating of H or higher be used on R1200GS and derivative models, since these motorcycles are able to reach approximately 210 Km/h in standard trim.

TYRE COMBINATIONS

My personal tyre recommendations, ranging from 'Totally un-sporting' to 'Isle Of Man TT-eligible', are as follows:

COMBINATION A
Minimum cost, maximum tyre life, maximum stability (most suitable for 'two-up' riding, daily commuting and long-distance touring):
120/70-17 front, 180/55-17 rear, commuting compound.

COMBINATION B
For slightly greater rear grip than combination A:
120/70-17 front, 190/50-17 rear, commuting compound.

COMBINATION C
For slightly greater grip and turning agility than combination A, at the cost of some straight-line stability:
120/70-17 front, 190/50-17 rear, sports-touring compound.

COMBINATION D
For experienced, sporting riders who want higher levels of grip, and don't mind having to replace tyres somewhat more often:
120/70-17 front, 190/50-17 rear, supersports compound.

COMBINATION E
For very aggressive riders who are experienced enough to cope with handling quirks, want the best possible levels of grip and turning agility, and don't often encounter rain or standing water:
120/60-17 or 120/70-17 front, 190/55-17 rear, track-day compound.

Modifying a K-series front wheel for use on R-series

If you will be using the front wheel from any of the following motorcycles:

- K1200R / K1300R
- K1200S / K1300S
- K1200R Sport
- K1200GT / K1300GT
- K1600GT / K1600GTL

Then you will need to amend the Parts List as follows:

- 1x original R-series front wheel axle for permanent modification.
- 1x front wheel grease seal of suitable dimensions (see below).
- 1x front-wheel axle spacer in aluminium, to the following dimensions: 16mm width, 32mm outside diameter, 25mm inside diameter.

The chosen front wheel will also undergo permanent modification.

Note:	If required, the modified front wheel and axle can be re-modified to perform their original functions.

Access to an engineering workshop will be required. For the wheel modifications to be performed, you will need a suitable CNC milling machine. For the axle modifications to be performed, you will need a suitable metalworking lathe.

Remove the tyre from the rim, remove the wheel's left-hand-side hub grease seal and blank off the wheel hub to prevent contamination of the wheel bearings before performing the following modifications:

1. The front wheel brake disc mounting points (there are five on each side of the wheel) need to be machined in the direction of the wheel centreline by exactly 5mm from standard (machined mounting points shown in Figure 1 below). This will ensure brake disc latitudinal spacing to the R-series standard of 120mm between mounting points, from the original 130mm.

Figure 1

2. The front wheel brake disc mounting bolt holes do not need to be deepened. However, after all brake-disc mounting bolts have been removed, it is good engineering practice to slightly chamfer the outside edges of all brake disc mounting holes, and clean and refurbish the threads using M8x1.25 thread taps.

3. K-series wheel hubs are asymmetric (i.e. wider on the left-hand side than the right). The left-hand outer edge of the wheel hub face (i.e. the side of the hub which accepts the wheel spacer) must be machined twoards the wheel centreline by 2mm in order to clear the lower left fork leg. Figure 2 below shows the appropriately modified hub face. For this modification to be performed, the left-hand wheel bearing grease seal must be temporarily removed.

Figure 2

4. While separate from the front wheel, the left-hand wheel bearing grease seal must be narrowed by approximately 1.5mm as described below:
    a. Place the grease seal on a work surface with it's inner side (i.e. the side not visible in normal operation) facing upward.
    b. Use a Stanley knife, hobby knife or box-cutter to trim down the grease seal's inner lip. After cutting for a short time, the blade will contact the seal's steel core. Continue trimming slowly and evenly along the edge of the steel core to produce a uniform edge.
    c. Clean the contact lips of the grease seal thoroughly with solvent. Lightly lubricate the seal's contact lips with a very small amount of copper grease.
    d. Re-install the grease seal to the left-hand side of the wheel hub. When correctly mounted, the seal should protrude above the hub face by a maximum of 0.5 to 0.8mm as in Figure 3 below:

Figure 3

5. The wheel-bearing inner race contact face of the front axle must be machined toward the axle's right-hand outer side by 16mm, at a constant outside diameter of 25mm (i.e. consistent with the wheel-bearing inner race inside diameter). This modification is needed to accomodate the K-series wheel's increase in wheel-bearing latitudinal offset from the wheel centreline (130mm between bearing outer faces on K-series, compared to 90mm on R-series).

Figure 4A below shows an unmodified K-series front axle at left, and an unmodified R-series front axle at right. Figure 4B below shows an appropriately modified R-series front axle. Note the reduced depth of the wheel-bearing inner race contact face in Figure 4B, compared to the unmodified R-series axle shown in Figure 4A.

Figure 4A **Figure 4B**

6. A front-wheel axle spacer must be machined from 6061-grade or 6082-grade aluminium to the following dimensions: 16mm width, 32mm outside diameter, 25mm inside diameter, as in Figure 5 below. This spacer will replace the original 20mm-wide butted aluminium spacer installed to the left-hand side of the front wheel.

Figure 5

Tip:	If an unused wheel-bearing spacer (the tubular aluminium spacer located inside the front wheel, between the two wheel bearings) is available from a disused BMW R-series or K-series front wheel, this spacer can be used as a material donor to create the needed spacer.

7. When all other modifications have been completed, the original right-hand K-series wheel bearing grease seal must be removed from the wheel, and replaced by an aftermarket double-lip Viton grease seal of 47mm OD and 32mm ID to accommodate the reduced diameter of the R-series front axle.

8. If a ‘turbine’-style front wheel (i.e. from K1200S, K1300S or K1600GT / GTL) is being used, note that the bottom inner edges of the front brake calipers must be ‘shaved’ to prevent clearance issues.
   The required procedure is illustrated in the ‘How to perform the conversion‘ chapter below (‘FRONT WHEEL’ section).

With the appropriately-modified K-series front wheel mounted, there should be no clearance issues whatsoever, and no change in performance characteristics compared to an equivalent R-series front wheel.
Figure 6A below shows the right-hand side of the wheel; Figure 6B below shows the left-hand side.

Figure 6A

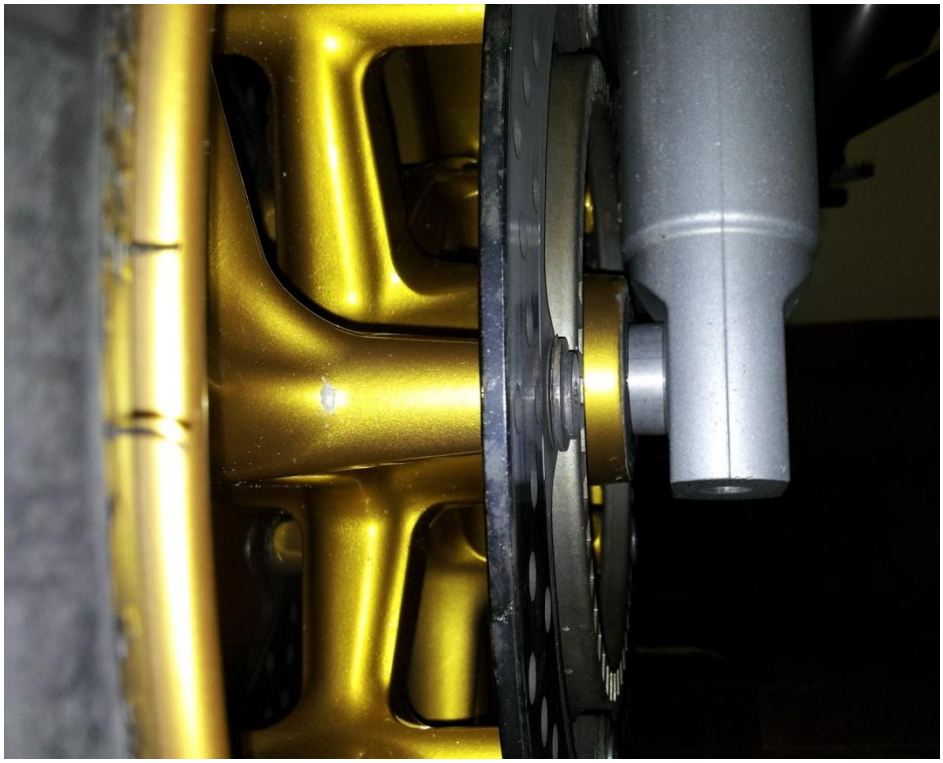

Figure 6B

Parts List

The following parts will be required for this conversion:

- 1x BMW 17” front wheel.
- 1x BMW 17” rear wheel.
- 1x appropriate rear tyre.
- 1x appropriate front tyre.
- 2x appropriate 305mm front brake discs (the original R1200GS / GS Adventure brake discs can be used).
- 10x appropriate brake disc mounting screws.
- 1x R-series front-wheel ABS wheel-speed measuring ring (if the motorcycle being converted is equipped with ABS). Note that K-series ABS wheel-speed measuring rings cannot be used.
- 2x wheel-mounted RDC sensors (if the motorcycle being converted is equipped with BMW RDC tyre-pressure monitoring).
- 2x suitable tyre-inflation valves (if the motorcycle being converted is not equipped with BMW RDC tyre-pressure monitoring).
- 1x original R-series front wheel axle (if an R-series front wheel is being used).
- 1x original R-series front wheel axle spacer (if an R-series front wheel is being used).

- 5x BMW alloy-wheel-specific rear-wheel bolts. (The threaded shank on BMW alloy-wheel bolts is 30mm in length. The 42mm wheel bolts used on R1200GS / GS Adventure wire wheels may be cut to the shorter length if alloy-wheel bolts are not available.)

How to perform the conversion

Note:	Due to a high likelihood of rear-tyre clearance issues, it is strongly recommended that this conversion be performed only on GSs and GS Adventures equipped with aftermarket exhaust systems featuring a physically small exhaust silencer, and from which the centre stand has been removed. If it is not practically possible to perform either or both of these modifications, procedures to obtain greater component clearance are given in this document.

FRONT MUDGUARD

Many suitable alternatives exist. Some riders who have performed this conversion have had front mudguards custom-made from fibreglass or carbon-fibre. At least one has successfully made use of the front mudguard from the F800S/ST.

If a preferred alternative is not immediately available, the standard R1200GS front mudguard can be ‘trimmed’ and re-positioned to achieve the result shown in Figure 7 below.

Figure 7

The ‘trim’ uses the following procedure:

1. Remove the front brake calipers and front wheel.
2. Using a T25 Torx wrench, remove the four screws holding the front mudguard to the lower triple clamp.
3. Remove the front mudguard.

4. Trace symmetrical trim outlines from one side of the mudguard to the other, both at the front and the rear.

5. Using a jigsaw with a coarse-toothed blade suitable for soft plastics, cut approximately 70mm from the rear of the mudguard and approximately 20mm from the front, following the trim lines.

6. Smooth the resulting cuts using 150-grit sandpaper.

7. At this time, the mudguard can be painted using suitable plastic primer and automotive paint, if desired.

8. Cut four 50mm lengths of 10mm outside-diameter, 1.6mm wall-thickness aluminium tubing using a pipe-cutter. These will be used as spacers to bring the mudguard closer to the tyre.

9. Mount the spacers between the mudguard and bottom triple clamp one at a time, using the step below.

10. Coat the last few threads of an M5x60 cheese-head screw with thread-locking compound. Insert the screw through a 5mm penny washer. Insert this assembly through the mudguard mounting hole and spacer. Thread the screw through a second penny washer, then the spacer.

11. Fasten the mudguard to the bottom triple clamp.

12. Repeat steps 10 and 11 above for the remaining three mudguard mounting holes.

13. Reinstall the front wheel and front brake calipers.

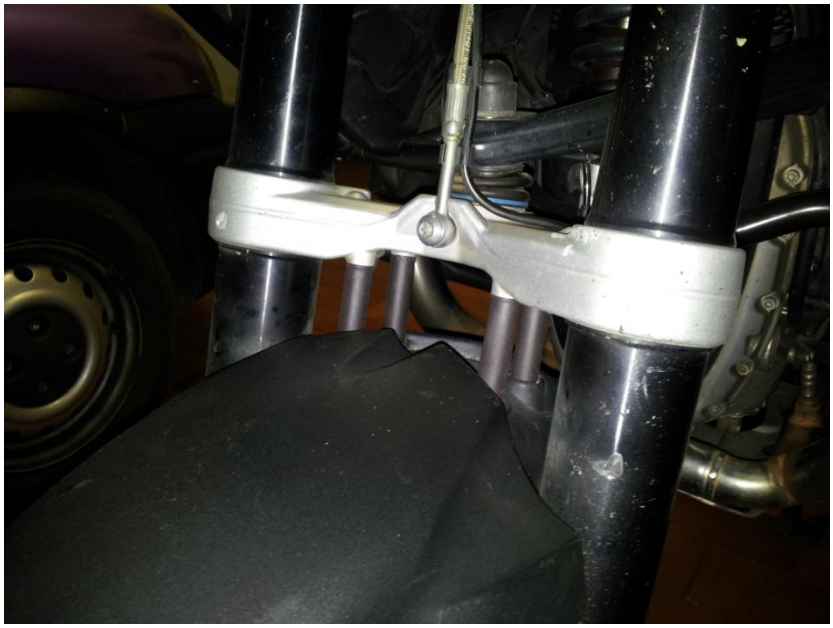

Figure 8

REAR WHEEL

1. Allow the engine and exhaust to cool.

2. Lift the motorcycle onto it’s centre stand. If the motorcycle doesn’t have a centre stand, lift the rear wheel using a suitable paddock stand.

3. Engage the transmission in first gear.

4. Remove the standard rear wheel.

5. If the motorcycle is equipped with RDC (tyre-pressure monitoring), the rear RDC wheel sensor must be transferred from the original rear wheel to the new rear wheel as follows:

    a. Remove the tyres from both rear wheels.

    b. Holding the sensor body securely in one hand, use a 12mm open-ended wrench to remove the sensor's securing collar from the threaded shaft.

Caution:	To avoid damage to the sensor and/or the threaded shaft, hold the sensor body securely in one hand as the securing collar is removed.

    c. Gently pull the sensor away from the wheel rim in a straight line.

    d. Carefully inspect the black rubber sealing ring at the bottom of the threaded shaft. If the sealing ring is in less than optimal condition, do not attempt to repair it. Instead, replace it with a genuine BMW part (Repair kit, BMW part number 36 31 7 694 420).

    e. Mount the sensor to the new rim by pushing the shaft through the inflation valve hole.

    f. Holding the sensor body securely in one hand, use a 12mm open-ended wrench to fasten the sensor's securing collar to the threaded shaft.

    g. Re-install the tyre to the new rim.

6. Ensure that the rear tyre is mounted for correct rotational direction. There will be an arrow indicating direction of rotation on the tyre sidewall:

    a. If installing an R-series rear wheel, this arrow must run in the **same** direction as the indicated direction of rotation cast on the R-series rear wheel.

    b. If installing a K-series rear wheel, this arrow must run in the **opposite** direction to the indicated direction of rotation cast on the K-series rear wheel.

7. Inflate the rear tyre to the 'baseline' pressure illustrated in this document.

8. Seal the inflation valve using a suitable rubber-sealed steel valve cap only.

9. Temporarily install the replacement rear wheel/tyre assembly, securing it in place with two alloy-wheel-specific wheel bolts (note that wheel bolts specific to alloy wheels are 12mm shorter than GS/GS Adventure wire-wheel bolts).

10. Examine the area around the exhaust silencer carefully, noting whether clearance between the tyre sidewall and the inner part of the silencer is sufficient. If tyre-to-silencer clearance is a minimum of 8mm, proceed to the next step. If not, steps to increase the clearance can be found in the 'Increasing tyre-to-silencer clearance' section.

11. Set the rear suspension to minimum spring preload:

    a. For conventional suspension, turn the spring preload adjuster completely anti-clockwise until it reaches the detent.

    b. On ESA-equipped motorcycles, start the engine. Use the ESA button to achieve minimum preload (i.e. a single helmet on the digital display).

12. Shift the motorcycle off the centre stand. Have someone weighing at least 80 Kg sit on the rider's seat with both wheels on the ground. Check whether:

a. Tyre-to-silencer clearance is still at least 8mm.

b. Tyre sidewall-to-centre stand clearance is at least 5mm at both sides of the centre stand. If tyre-to-centre stand clearance is a minimum of 5mm, proceed to the next step. If not, steps to increase the clearance can be found in the 'Increasing tyre-to-centre stand clearance' section.

13. With all clearances in order, install all wheel bolts and fasten them to the correct torque value.

FRONT WHEEL

1. Allow the engine and exhaust to cool.

2. Lift the motorcycle onto it's centre stand. If the motorcycle doesn't have a centre stand, lift the rear wheel using a suitable paddock stand.

3. Jack up the front of the engine and place a suitable trestle under the front of the engine, or lift the front end of the motorcycle using a front paddock stand.

Caution:	Do not attempt to use a jack on the front end of the engine crankcase if a protective sump plate is fitted to the motorcycle. There is a possibility of damaging the sump plate and/or causing the motorcycle to topple to one side. If using a jack at the front of the engine, first remove the sump plate. Place the jack under the engine, at it's front sump plate mounting point.

4. Unbolt the front brake calipers and remove them from the brake discs.

5. Remove the standard front wheel.

6. With the front tyre removed from the 17-inch front wheel, follow the steps below *in sequence.*

7. Tyre-pressure sensors fitted as standard to BMW 19-inch wire-spoked front wheels cannot be fitted to BMW 17-inch alloy front wheels without modification. In this case, there are two alternatives:

    a. A new or second-hand sensor compatible with BMW 17-inch alloy rims can be sourced and mounted.

Note:	Tyre-pressure sensors compatible with BMW 17-inch alloy front wheels use different mounting hardware. This relies on a shaft which screws into a threaded portion of the tyre-inflation aperture (this aperture is clearly visible when the tyre is removed from the rim). Not all BMW 17-inch alloy front wheels are threaded to accept these sensors. If your 17-inch alloy wheel does not have a threaded aperture, use method 'b' below.

    b. A sensor for 19-inch rims can also be mounted un-modified to a 17-inch alloy rim using the following procedure:

        i. Place the wheel on it's side on a firm, flat surface such as a rubber car floor mat.

ii. Locate the point at the wheel rim exactly opposite the existing inflation valve. Using a permanent marking pen, mark this opposite point inside the wheel well.

iii. Locate the exact midpoint between two of the wheel spokes which is closest to the opposing point in item ii. above. Mark this point inside the wheel well.

iv. Drill a 12mm hole through the wheel rim at the marked point above.

v. Use a rose countersink suitable for hard metals to apply a chamfer of no more than 0.6mm to the inside and outside edges of the hole, as per Figures 9A and 9B below.

Figure 9A

Figure 9B

Warnings:	The chamfer described above must be applied evenly to both the inner and outer edges of the hole. If the chamfer is not applied, there is a risk of stress cracks originating at the hole edges. Ensure that the chamfer is even around the hole's inner and outer edges, and does not exceed 0.6mm. Excessive chamfer may weaken the wheel structure, possibly leading to wheel failure.

vi. The RDC wheel sensor must now be transferred from the original front wheel to the new front wheel as follows:

vii. Remove the tyre from the 19-inch front wheel.

viii. Holding the sensor body securely in one hand, use a 12mm open-ended wrench to remove the sensor's securing collar from the threaded shaft.

Caution:	To avoid damage to the sensor and/or the threaded shaft, hold the sensor body securely in one hand as the securing collar is removed.

ix. Gently pull the sensor away from the wheel rim in a straight line.

x. Carefully inspect the black rubber sealing ring at the bottom of the threaded shaft. If the sealing ring is in less than optimal condition, do not attempt to repair it. Instead, replace it with a genuine BMW part (Repair kit, BMW part number 36 31 7 694 420).

xi. Mount the sensor to the new wheel by pushing the shaft through the newly-drilled 12mm hole.

xii. Holding the sensor body securely in one hand, use a 12mm open-ended wrench to fasten the sensor's securing collar to the threaded shaft.

Note:	The front wheel is now equipped with two inflation valves. Note that both valves must be sealed using appropriate Schrader-type valve cores, and protected using suitable rubber-sealed steel valve caps. Either valve can be used to inflate or deflate the front tyre.

8. Install the front tyre to the front wheel, ensuring that the tyre is mounted for correct rotational direction. (There will be arrows indicating the correct direction of rotation on both the tyre sidewall and the wheel).

9. Inflate the front tyre to the correct 'baseline' pressure illustrated in this document.

10. Seal the inflation valve using a suitable rubber-sealed steel valve cap only.

11. For ABS-equipped motorcycles, note that the wheel-speed measuring ring must be mounted on the LEFT side of the front wheel. Place the ABS wheel-speed measuring ring over the disc mounting bosses before installing the left-hand brake disc.

12. If a 'turbine'-style front wheel (as fitted to R1200S, K1200S, K1300S or K1600GT / GTL) is being used:

    a. The inside lower edge of both front brake calipers (areas highlighted by red ovals, Figure 10 below) must be shaved before the front wheel is mounted, as there may be insufficient clearance between the caliper bodies and the front wheel disc-mounting bosses.
    Using an orbital sander with a fresh sheet of 100-grit sandpaper, shave the illustrated areas by no more than 0.5mm at a time until clearance is sufficient. This is done in order to prevent the calipers from damaging the front wheel's disc mounting bosses, as shown by the red arrow in Figure 11 below.

Note:	Figure 10 illustrates Brembo four-piston front calipers as fitted to a K1200S. The calipers and caliper-mounting arrangement used on the R1200GS and GS Adventure are identical.

Figure 10

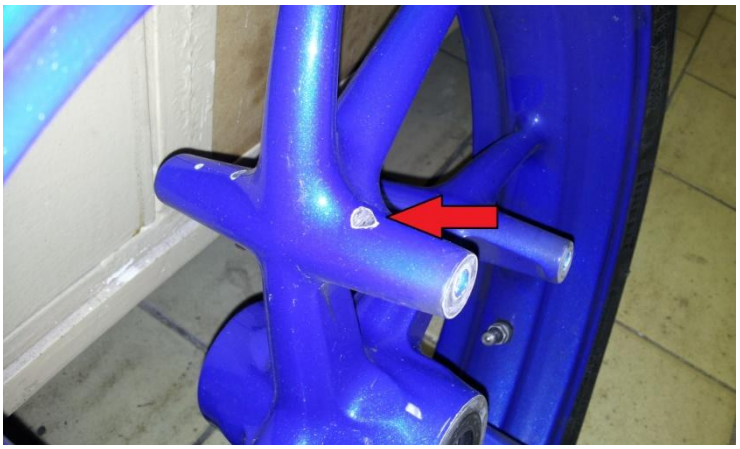

Figure 11

Note:	The above procedure does not need to be performed if an R1200R/RT/ST, K1200R/GT or K1300R/GT front wheel is being used.

b. Mount the brake discs in the orientation in which they were removed from the parent wheel, using the original BMW brake disc bolts, spacers (if applicable) and wave washers. Apply a small amount of thread-locking compound to the brake disc bolts before tightening them to the correct torque value.

Caution:	For T30 Torx screws used to secure 305mm front brake discs, do not use any more than a very small amount of thread-locking compound to secure the brake discs. If a later attempt is

	made to remove the Torx screws where excessive amounts of thread-locking compound have been applied, the Torx wrench used may be severely damaged and/or the wrench head may break off in the head of a screw.

13. Install the wheel-axle spacer to the left-hand grease-seal of the 17-inch front wheel. Ensure that the grease-seal contact portion of the spacer is fully seated against the wheel bearing.

14. Ensure that the wheel is oriented correctly in terms of rotation. Mount the front wheel between the fork stanchions.

15. Insert the front axle through the right-hand side of the fork, then the wheel hub, being careful not to displace the axle spacer.

16. Ensure that the axle threads are seated in the left-hand fork stanchion. Screw the axle into the stanchion threads until the axle bottoms. Ensure that the axle is tightened to approximately 5 N·M.

17. Using a T45 Torx wrench, tighten the axle clamp bolt to the correct torque value.

18. Re-install the front brake calipers over the brake discs. Tighten the four caliper mounting bolts to the correct torque value.

19. Pump the front brake lever until normal brake pressure is felt.

Increasing tyre-to-silencer clearance

Notes:	Due to variations in aftermarket exhaust manufacturing and mountings, a generic procedure for increasing tyre-to-silencer clearance is given in this section. The procedure has been compiled with reference to the standard BMW exhaust system equipped with catalytic convertor, fitted from 2004 to 2009. Note that 2010 to 2013-model motorcycles are also equipped with an exhaust-noise reduction valve which this section does not take into account. If necessary, some or all of the steps in this section can be used and adapted at the risk of individual owners.

If it is found that the exhaust silencer fouls the rear tyre and/or that tyre-to-silencer clearance is less than 8mm at any point of rear suspension travel, clearance between the tyre and silencer must be increased. This can be done using the following method:

1. Allow the exhaust system to cool.

2. Remove the fastener securing the exhaust silencer to the rear sub-frame.

3. Loosen the fastener(s) securing the header-pipe-to-silencer exhaust clamp until the silencer can be moved side-to-side with relative ease.

4. Estimate how much extra clearance in millimetres will be required between tyre and silencer. Add twice this figure to the length of a standard exhaust silencer main clamp eye bolt. i.e. if the standard bolt length is 35mm, and 10mm extra clearance is required, the length of the new bolt shank will be:
   35mm + *(10mm x 2) = 55mm bolt shank.*

5. Obtain a high-tensile stainless-steel Allen screw of the required dimensions.

6. Fabricate an 8mm inside-diameter tubular metal spacer which is the same length as the doubled 'extra clearance' figure (i.e. 20mm length in this example).

7. Pivot the silencer away from the rear frame until enough clearance exists to insert the tubular spacer between the exhaust silencer main clamp eye and rear frame. Insert the spacer.

8. Insert the new high-tensile stainless-steel Allen screw into the mounting eye, and fasten the screw to the rear sub-frame.

Caution:	It is not recommended that more than 10mm extra clearance between the exhaust silencer main clamp eye and rear frame be obtained using this method. Beyond this limit, there is an increasing risk of undue stress being placed on the exhaust tubing, which may result in stress fractures.

If more clearance is needed than can be provided by this method, it is recommended that front and rear wheel replacement be performed first, then that a suitable custom exhaust be fabricated around the new rear wheel and substituted for the original exhaust.

Alternatively, the standard silencer's link pipe may be cut away and exchanged for a link pipe of more suitable dimensions and routing.

Basic suspension setup for non-ESA-equipped motorcycles

When a 17-inch front wheel is mounted to an R1200GS or GS Adventure, there has been a 1-inch reduction in static front ride height, and thus, a fundamental change to the motorcycle's suspension geometry.

Assuming the following conditions:
1. A 'one-up' situation (i.e. single rider) with the rider weighing 80 Kg,
2. Average confidence and motorcycle-control skills,
3. A fairly conservative tyre-size configuration (as per tyre combinations A, B or C as listed in this document),

then a basic starting point for medium- to high-speed road riding is:

Front preload: maximum (use the sprocket wrench supplied in the motorcycle's tool kit to raise the static ride-height adjuster to notch 5 of 5). Do not reduce front preload by more than one notch at a time thereafter before test-riding the motorcycle to ensure that the change is satisfactory.

Rear preload: midway (You will be able to see the current preload setting on the adjustment shaft as you turn the knob).

Rear rebound damping: midway
1. Turn the damping adjustment screw anti-clockwise until you reach the stop detent.
2. Turn the screw fully clockwise, counting the number of turns until the screw reaches the clockwise stop detent.
3. Divide the number of turns the screw has now made by two. Turn the screw anti-clockwise by the halved number of turns.

Troubleshooting handling problems
If the steering feels unresponsive:

1. Reduce front preload by no more than one notch at a time.

2. Set the front and rear tyre pressures to a baseline of 2.4 Bar front and 2.8 Bar rear.

If the steering feels nervous and/or the motorcycle has a tendency to tank-slap or turn in too quickly at low speeds:

1. Reduce the front tyre pressure by no more than 0.1 Bar from baseline each time to a minimum of 1.9 Bar until the tendency to tank-slap diminishes.

Warning:	Running the front tyre below 1.9 Bar is not recommended for high-speed road use or prolonged periods of time, as this may result in tyre overheating and failure.

2. Increase front preload to maximum, reducing it by no more than one notch at a time thereafter.

Basic suspension setup for ESA-equipped motorcycles

On Electronic Suspension Adjustment (ESA)-equipped GSs and GS Adventures, front and rear preload and rebound damping cannot be adjusted independently as on non-ESA motorcycles. Instead, the front and rear suspensions are adjusted homogenously.
Five different preload pre-sets are multiplied by three different damping pre-sets to give a total of fifteen possible suspension pre-sets.

Assuming the following conditions:

4. A 'one-up' situation (i.e. single rider) with the rider weighing 80 Kg,
5. Average confidence and motorcycle-control skills,
6. A fairly conservative tyre-size configuration (as per tyre combinations A, B or C as listed in this document),

then a basic starting point for medium- to high-speed road riding is:

- Suspension preload at setting 1 of 5 (helmet only on digital display).
- Damping at 'Comfort' setting ('COMF' on digital display).

Note:	To adjust ESA suspension preload, the motorcycle must be stationary with it's engine running. ESA suspension damping can be adjusted whilst stationary or on the move.

Notes for ASC-equipped motorcycles

Should your Automatic Stability Control (ASC)-equipped GS or GS Adventure be fitted with a shorter-ratio gearbox and/or final drive than standard, you may experience issues with the ASC (traction control) cutting in above certain throttle settings even when the rear wheel is obviously not spinning.
If present, these symptoms will manifest as what seems to be an engine misfire and loss of power under acceleration, and possibly at steady throttle settings.

Setting the ASC to reduced-function mode ( symbol on digital display) will result in the misfire greatly diminishing.

Disabling the ASC ( symbol on digital display) will eliminate the misfire.

If present, this issue is caused by a conflict between overall physical gearing and the ASC software pre-sets, causing the ZFE-High (the control computer responsible for all secondary electronics on the motorcycle) to interpret the higher rear-wheel speeds resulting from the shorter ratios, at and above given throttle settings, as wheelspin, and thus cut power.

An effective temporary solution to the problem is to disable the ASC system (with ignition on, press the ASC or ASC/ABS button and release it within two seconds. Repeat this step until the ASC Disabled symbol above appears on the digital display).

It is strongly recommended that the issue be permanently cured by reverting to standard gearbox and final drive ratios. If this solution is not practically possible, the issue can be cured by removing the 180/55-17 or 190/50-17 rear tyre in use and replacing it with a 180/60-17 tyre (5,5-inch and 6-inch rear rims) or 190/55-17 (6-inch rear rims only). This adds enough effective rolling circumference to bring the rear wheel-speed reading within the 'acceptable' range prescribed by the ASC software.

Basic tyre-pressure recommendations

Standard cold-pressure recommendations for the R1200GS and GS Adventure are 2.2 Bar front, 2.5 Bar rear (one-up) and 2.5 Bar front, 2.9 Bar rear (one-up with luggage, and two-up with or without luggage). These pressures seem to be overly comfort-biased and too low for sporting road riding, as they allow too much latitudinal tyre-sidewall flex.

'Perfect' tyre pressures are and always will be the subject of personal preference and individual experimentation, but good starting points for 'one-up' riding are:

- Road: 2.4 Bar front, 2.8 Bar rear.
- Track: 2.0 Bar front, 2.4 Bar rear (track-day and race-compound tyres only).

These recommendations are generic and may need alteration depending on rider mass, tyre dimensions, tyre compounds, riding styles and environments, and other factors.

To generate maximum grip, especially from softer tyre compounds, you may want to use these values as a 'base line', lowering tyre pressures by no more than 0.1 Bar (10 kPa) each time before testing the end result.
As a rule of thumb, lower pressures equal more grip, and higher pressures equal more responsive steering.

Note:	The RDC tyre-pressure monitoring system (if fitted) displays temperature-corrected pressure values which may not accurately reflect the true tyre pressures. Where an RDC sensor detects a corrected value of 1.7 Bar or lower, the RDC display will flash, and the Master Caution light will rapidly flash red. To obtain true tyre pressure values, use a high-quality tyre-pressure gauge and check the tyre pressures only when the tyres are cold.

Notes for RDC-equipped motorcycles

For any BMW equipped with *Renn-Druck Control* (RDC – in English, 'tyre-pressure monitoring') sensors and display, the tyre pressures seen on the digital display (Figure 12 below) are compensated using a reference temperature of 20°C. This means that if pressures are being read while the ambient temperature is *not* 20°C, the display will under- or over-read the *actual* tyre pressures.

Figure 12

As a rule of thumb, at an ambient temperature of 15°C, the tyre-pressure display will under-read the actual tyre pressures by 0.2 Bar.

Rider's seat modification

With the lowered front end brought about by this conversion, you may find that the rider's seat is now angled too far 'downwards', pitching you toward the fuel tank.
There are two methods of solving this problem. Both can be used in concert if desired:

1. Adjusting the pitch angle of the rider's seat:
    i. Remove the rider's seat from the motorcycle.
    ii. Turn the seat over. Note the position of the seat-height adjustment rails.
    iii. Adjust the rear rail to it's 'upper' position (lowering the rear portion of the seat) and adjust the front rail to it's 'lower' position (raising the front portion of the seat). This will compensate by making the seat surface more parallel to the ground.
    iv. Re-install the rider's seat.
2. If the method above does not reduce the forward pitch to an acceptable degree, the front of the seat can be further raised by spacing the front seat catches upward, using the method below:
    i. Remove the rider's seat.
    ii. Remove the left- and right-front seat-rail catches by removing the four 5mm nuts and washers, then pulling the catches upward.
    iii. Space the two catches further upward by the same amount, using the same thickness of 5mm spacers or washers on all four of the mounting studs, to a maximum of 3mm.
    iv. Re-install the front catches and re-tighten the four 5mm nuts.

Additional adjustments

With the conversion successfully completed, it will now be necessary to:

1. Re-adjust the vertical alignment of the headlight cluster (it will now be aimed too low).
2. Re-adjust the rear-view mirrors (their field of view will now be too high).

Sidestand modification

Any wheel, tyre or suspension modification that raises the motorcycle overall will cause it to lean further over to the left when on it's sidestand. Conversely, any modification which lowers the motorcycle overall will cause it to sit further upright.

Ideally, you should be able to get the motorcycle upright with no issues when getting into the saddle, without the motorcycle resting so far upright that there is a danger of it toppling to the right. (This is more critical on the GS Adventure, which possesses greater suspension travel and is capable of carrying more than twice the fuel load of the GS.)

Earlier GSs without ESA will have fewer problems, since their owners tend to find one suspension setting that works, and stick with it. On the other hand, an ESA-equipped motorcycle may sit comfortably upright with it's suspension preload at setting 1, but be tipping precariously to the left with the preload at setting 5.

GS and GS Adventure sidestands can be modified accordingly using either of the following methods:

1. The stand can either be carefully straightened (to achieve a more upright attitude) or bent further at it's existing 'bend point' (to tilt the motorcycle further to the left). This is best accomplished by removing the sidestand from the motorcycle and working on it while it is held securely in a bench vice.

2. For motorcycles leaning too far to the left, the sidestand can be 'spaced' upward by securing an aluminium plate or hard rubber spacer of appropriate thickness to the sidestand 'foot'.

Tip:	An ice-hockey puck works well as a sidestand spacer.

It is recommended that the sidestand height be 'tweaked' in this fashion *only* when the owner is satisfied with the wheel/tyre combination and suspension preload settings in use. All else being equal, a higher-profile rear tyre will cause further lean to the left, and exchanging a 19-inch front wheel for a 17-inch wheel and/or using a 120/60-17 tyre in lieu of a 120/70-17 will sit the motorcycle further upright.

Centre stand modification

If the centre stand is present on the motorcycle, the stand's left-hand foot may have to be modified in order to safely clear the wider rear tyre. This issue tends to arise where rear tyre width exceeds 180mm.

Warning:	This is a safety-critical modification, since tyre abrasion by the centre stand could easily develop into a situation where the tyre is cut and punctured.

The recommended course of action is to remove the centre stand and it's mounting hardware altogether, using a suitable single-sided paddock stand for workshop maintenance. An alternative is to keep the sidestand as a workshop tool, installing it temporarily whenever needed. For temporary use, the centre stand springs do not need to be installed.

If it is not practically possible to remove the centre stand:

1. With the wider rim and tyre mounted to the motorcycle, inspect the areas around the left- and right-hand centre stand feet with the centre stand raised. Clearance between the centre stand feet and the tyre sidewalls should be at least 5mm on both sides.

2. Get a person weighing at least 80 Kg to sit on the rider's seat and hold the motorcycle upright. As the rear suspension is compressed, clearance between the centre stand feet and the tyre sidewall should remain at least 5mm.

3. Should the foot-to-sidewall clearance be less than 5mm at any point, remove the centre stand from the motorcycle. Trim the conflicting sidestand feet to the appropriate clearance, using a hacksaw equipped with a fine-toothed alloy-steel blade. Treat the cut area(s) with an appropriate anti-rust treatment, and re-mount the centre stand.

Steering damper fitment (optional)

The most effective method of fitting a steering damper, should the correct parts be economically available, is to use the lower Telelever A-arm, fork-leg bottom triple clamp and steering damper from an R1200S or R1200R. The procedures required to exchange these components are not covered in this document.

Alternatively, the existing Telelever A-arm and bottom triple clamp can be drilled and tapped to accept mounting hardware for an appropriate steering damper as per the R1200S or R1200R pattern.

...And now, what do I call the motorcycle?

It's now a *Supermoto*.

Supermoto is an invention for which the French have been credited, and the definitions associated with it rely on the nuances of the parent language. In French, *'Moto'* is slang for 'motorcycle'. The *'Super'* precursor came about through the motorcycles looking and performing like nothing else under short-circuit racing conditions (a bit of French hype that isn't really hype at all – watch a Supermoto race sometime to get an idea).

The upshot is that it's important (especially if you're talking with someone who knows their motorsport) not to embarrass yourself by calling your motorcycle a Supermotard.
Remember: a *'Supermoto'* is the actual motorcycle.
A *'Supermotard'* is the man or woman who rides it.