

## BMW Boxer Data

R1100RT / R1100RS / R1100GS / R1100R / R850R

Designation	Data	Unit or Spec.
<b>Engine</b> (incl. filter)	4	qt
<b>Engine</b> (w/out filter)	3.7	qt.
<b>Gearbox</b> fresh fill	1.1	qt.
change	0.85	qt.
<b>Rear wheel drive</b>		
fresh fill	0.26	qt.
change	0.25	qt.
<b>Valve clearance</b>		
measured cold, max. 35-deg C.		
Intake	0.006	in.
Exhaust	0.012	in.
<b>Spark plugs</b>		
Bosch FR5DTC		
electrode gap	0.032	in.
limit of wear	0.04	in.
<b>Engine Idle Speed</b>	1000 +/- 150	rpm
<b>CO value</b>		
without catalytic converter	1.5 +/- 0.5	Vol %
<b>Cable adjustment</b> - for increased cold starting speed		
without cable junction	< 0.04	in. play
with cable junction		no backlash
<b>Throttle</b> (without cable junction)		
gas cable (one piece)	ca. 0.02	in. play
connecting cable		no backlash
<b>Throttle</b> (with cable junction)		
gas cable (one piece)	ca. 0.02	in. play
junction cable		no backlash
<b>Clutch cable</b> adjustment		
at lever	0.28	in.
wire cable at handle bar lever	0.48	in.

## BMW Boxer Data Metric

R1100RT / R1100RS / R1100GS / R1100R / R850R

Designation	Data	Unit or Spec.
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<b>Engine</b> (incl. filter)	3.75	liter
<b>Engine</b> (w/out filter)	3.5	liter

<b>Gearbox</b> fresh fill	1.0	liter
change	0.8	liter

### Rear wheel drive (Differential)

fresh fill	0.25	liter
change	0.23	liter

### Valve clearance

measured cold, max. 35-deg C.

Intake	0.15	mm
Exhaust	0.30	mm

### Spark plugs

Bosch FR5DTC

electrode gap	0.8	mm
limit of wear	1.0	mm

<b>Engine Idle Speed</b>	1000 +/- 150 rpm
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### CO value

without catalytic converter	1.5 +/- 0.5 Vol %
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### Cable adjustment - for increased cold starting speed

without cable junction	< 1 mm play
with cable junction	no backlash

### Throttle (without cable junction)

gas cable (one piece)	ca. 0.5 mm play
connecting cable	no backlash

### Throttle (with cable junction)

gas cable (one piece)	ca. 0.5 mm play
junction cable	no backlash

### Clutch cable adjustment

at lever	7.0	mm
wire cable at handle bar lever	12.0	mm

## Tightening torques

These have been converted from Nm (Newton meters) to the nearest 0.5 ft.lb. (foot pounds) by dividing Nm by 1.355.

Oil Filter	8	ft.lb.
Engine oil drain plug	23.5	ft.lb.
Gearbox oil drain plug	17	ft.lb.
Rear wheel drive oil drain plug	17	ft.lb.

Locknut valve adjust	6	ft.lb.
Cylinder head cover	6	ft.lb.
Generator to bracket	14.5	ft.lb.
Tension multiple ripped belt (Poly-V)	6	ft.lb.

Spark plugs	14.5	ft.lb.
Fuel tank to rear frame	16	ft.lb.
Fuel pump to tank	4.5	ft.lb.
Adjustable handle bars	14.5	ft.lb.

Quick release axle thread (axial)	22	ft.lb.
Quick release axle clamp	16	ft.lb.
Brake caliper—front / rear	29.5	ft.lb.
Bearing bolt swingarm to gearbox/rear axle (Loctite 2701)	110.5	ft.lb.

Idler bearing pinon on swinging arm on gearbox/rear wheel drive (Loctite 2701)	5	ft.lb.
Locknut (Loctite 2701)	77.5	ft.lb.
Rear wheel retaining studs	77.5	ft.lb.
Tube clips to air intake pipe	1.5	ft.lb.

Screw connect spring strut on control arm (RS with side bearing)	31.5	ft.lb.
M 10 Screw	29.5	ft.lb.

Tighten cylinder head -- done only at 600 miles,  
four nuts, do one nut at a time, loosen nut and  
torque to 15 ft. lb., then turn nut an additional  
180 degrees (called torsion angle)

## Tightening torques

### Metric

Oil filter	11	Nm
Engine oil drain plug	32	Nm
Gearbox oil drain plug	23	Nm
Rear wheel drive oil drain plug	23	Nm

Locknut valve adjust	8	Nm
Cylinder head cover	8	Nm
Generator to bracket	20	Nm
Tension multiple ripped belt (Poly-V)	8	Nm

Spark plugs	20	Nm
Fuel tank to rear frame	22	Nm
Fuel pump to tank	6	Nm
Adjustable handle bars	20	Nm

Quick release axle thread (axial)	30	Nm
Quick release axle clamp	22	Nm
Brake caliper -- front / rear	40	Nm
Bearing bolt swingarm to gearbox / rear axle (Locktite 2701 clean thread)	150	Nm

Idler bearing pinon on swinging arm on gearbox/rear wheel drive (Locktite 2701)	7	Nm
Locknut (Locktite 2701) clean thread	105	Nm
Rear wheel retaining studs	105	Nm
Tube clips to air intake pipe	2	Nm

Screw connect spring strut on control arm (RS with side bearing)		
8.8 screw	43	Nm
M 10 Screw	40	Nm
Tighten cylinder head -- done only at 600 miles, four nuts, do one nut at a time, loosen nut and torque to 20 Nm., then turn nut an additional 180 degrees (called torsion angle)		

## **Dali Meeow's additional data -- metric and English**

Gap between lower rocker arm bearing carrier  
and rocker arm  
(manual pp.11.40)                      0.05 - 0.40 mm

(Adjust to the minimum gap for  
much quieter engine)                      .002 - .016 in.

Torque for T45 torx screws on the lower  
rocker arm bearing carrier              18 Nm 13 ft.lb.