Changing The V-Star 1100 Stator

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This is my personnel attempt to document changing out the stator on a Yamaha V-Star 1100. This should be used as a guide only, I assume NO responsibility for any mistakes. When in doubt, refer to the manual. The bike I used is my own 2002 V-Star 1100. A lot of the info is per the Yamaha Service manual. Be sure to check the manual for your particular bike!

Here's what I tried to maintain:

Cautionary notes in bolded **RED** :	**[note and mark the alignment!]**
Torque values in bolded **BLUE** :	**7.2 ft-lb (86.4 inlb)**
Quantity of bolts, nuts or screws :	(3)
Wrench sizes in bolded **GREEN** :	**10mmx** **the 'x' = 'S' socket, 'B' boxed end, 'H' hex**
Personal comments in *italics* :	*Safety First*
Actions to perform in normal text.	Have fun and ride!

Items Needed:

New Left crankcase cover gasket
4 qts. Crankcase Oil (and filter)
Stator & Rectifier Replacement:

Tools Needed:

Torque Wrench
4mm hex driver tip
5mm hex driver tip
10mm socket
14mm socket
10mm boxed end wrench
17mm socket (oil drain plug) (a wrench may be used)
Threadlocker blue (Locktite 242)

When re-assembling, be sure to use the threadlocker!

Here are both the old stator (Left) and the new stator (Right).

bothstators.jpg

bikeleftside360.JPG

For removal of the Stator, you will need access to the LEFT side of the bike.

A bike stand is required, and will make the whole job safer and easier. Just be sure the bike is stable.

ALWAYS Remember, Safety First!

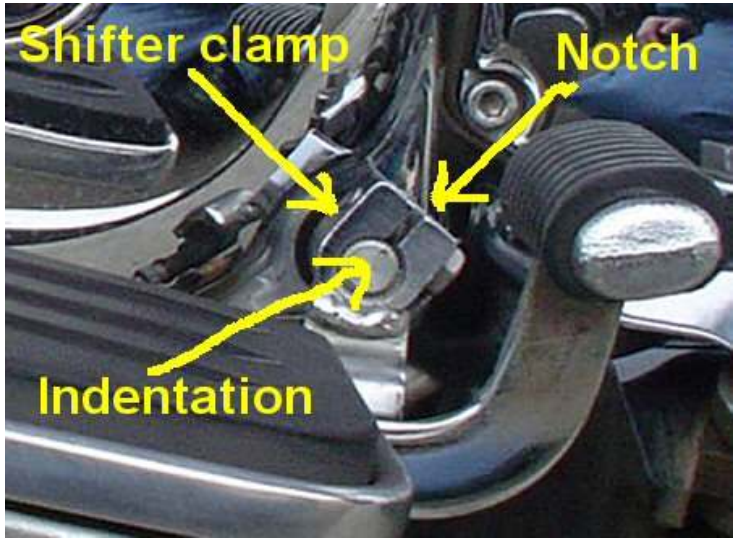

oildrain360.jpg

First, you need to drain the oil.
Place a container under the engine oil drain bolt.
Remove the engine oil fill cap and 'O'-ring.
Remove the engine oil drain bolt & gasket.
Let the oil drain completely.

Oil Drain Bolt **17mmB**

(be eco friendly – recycle!)

flbd_shifter360.jpg

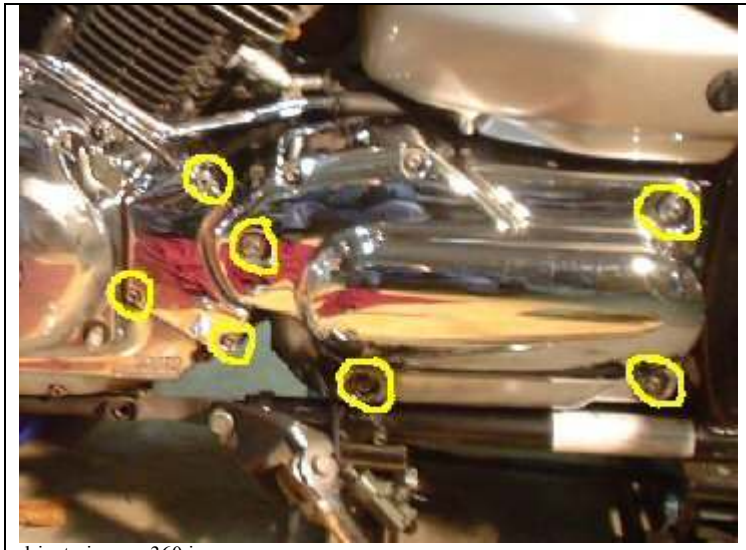


shifterclamp360.jpg

Remove the following from the left side of the bike:

floorboard and shifter (2)	**14mmS**
shifter linkage	**10mmB**

Note: The shifter linkage shaft has a small indentation on it. Be sure to get a good look how it aligns with the gap in the clamp.



drivetraincover360.jpg

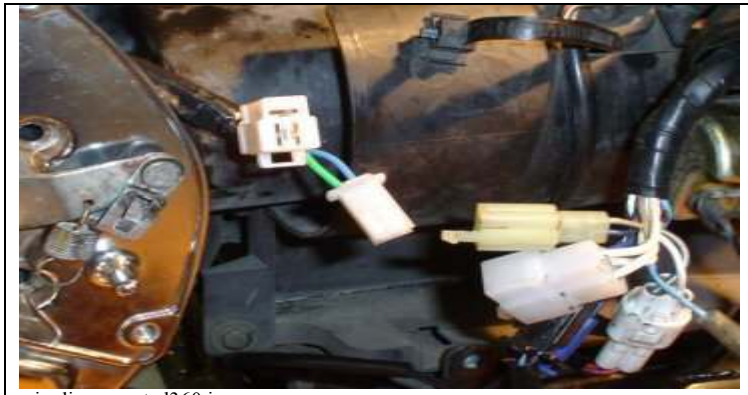
Remove the following from the left side:

Drive train cover (4)	**5mmH**
Clutch Linkage Cover (3)	**5mmH**
Kick Stand Bolts (2)	**14mmS**

Be careful, the kickstand sensor switch wire is very short!

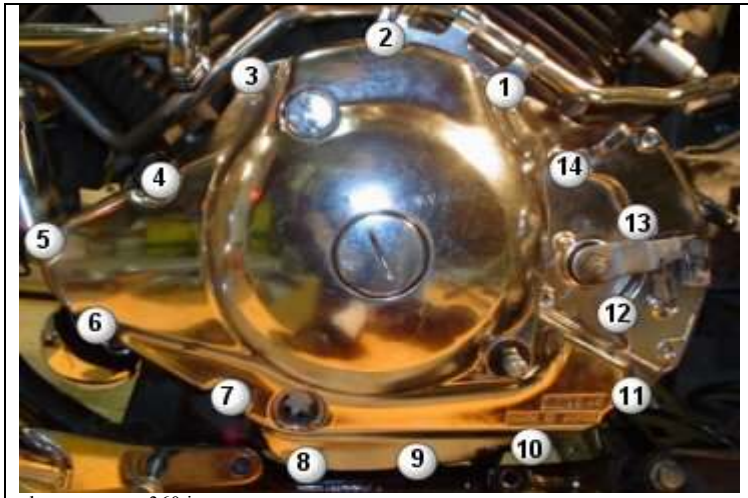
cableClutch1360.jpg

Disconnect the clutch cable by grabbing the lever with a pair of pliers, rotate counter clockwise until you can remove the cable end from the bracket.



wiredisconnected360.jpg

Disconnect the stator and speed sensor connectors.



alternatorcover360.jpg

Remove the Left crankcase cover.

Crankcase Cover Bolts (14) **5mmH**

There are different length bolts used, so you may want to number them as shown, this will make it easier to re-install them.

Note: when you remove the engine side cover, some oil will drain out, so be sure to use a drip pan or put down some plastic sheeting.

tywrap360.jpg

When the cover is removed, you may find the wires ty-wrapped. Carefully cut the ty-wrap.

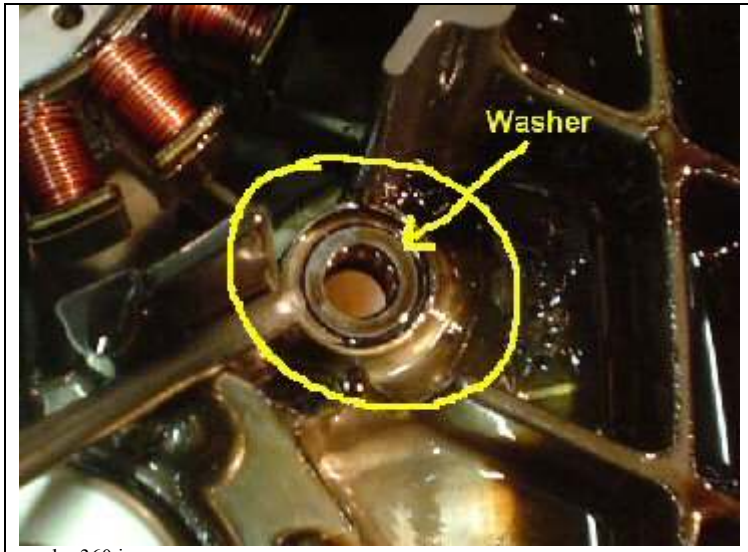
startergears360.jpg

starterGears1360.jpg

Once the cover is removed, take a look at the starter gears. Note here in the top photo, the gears have slipped out of place. If this happens, (and it probably will) you will need to move them back in place, then push the center pin back in. It's kind of tricky, but you can do it. Basically, push the gears UP while pushing the pin in, also turning the flywheel clockwise will help a lot.

Top photo show the gears dropped, the bottom photo shows them in place.

When the gears are in their proper place, the center pin sticks out about ½ inch (0.480).



washer360.jpg

washer1360.jpg

Look at the inside of the left cover plate. Look at the hole that the shifter shaft goes thru. There is a washer that goes here. If the washer is stuck to the cover, remove it a put it on the shifter shaft.

LeftSidecoverRemoved360.jpg

This is the inside of the left cover. Note the location of the Guide Pins. These may be either in the cover, or still on the engine. If possible put them both into the appropriate holes <u>on the engine</u>.

They can be loose, so don't lose them!

The stator is that thing in the middle. Above the stator is the pickup coil.

The stator is bolted to the cover, so this is the last item that needs to be removed from the engine at this time.


statorbolts360.jpg

Now, remove the 6 bolts indicated. There are 3 on the stator, 2 on the speed sensor, and 1 on the bracket.

Stator bolts	**5mmH**
Pickup Coil bolts	**4mmH**
Bracket bolt	**4mmH**

Once the bolts are removed, lift out the stator and pickup coil.

Note that the pickup coil may need a little persuasion to get it free.

oldgasket360.jpg

Clean off any remaining gasket material from both the engine and the cover.

Be careful not the scratch the surfaces.
Also be sure to clean the gasket surfaces thoroughly when your done removing the old gasket material.


intialinstall.jpg

Install the new stator into the left engine cover. Put the 2 wires BEHIND the post (shown at arrow), put the smaller of the 2 wire down first, then the larger one.

Stator bolts (3)	**5mmH, 7.2 ft-lb (86.4 inlb)**
Pickup Coil bolts (2)	**4mmH, 5.1 ft-lb (61.2 inlb)**

Be sure to run the stator wires as shown. The rubber grommets should be positioned so the flat edge is face up.

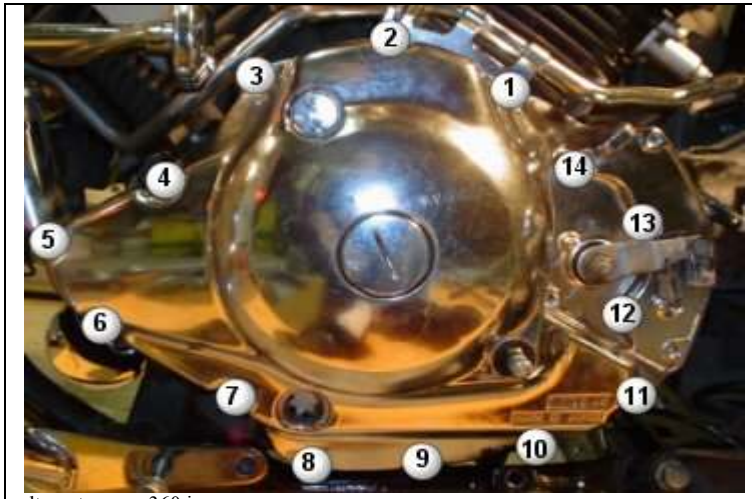

bracketinstalled.jpg

Now install the bracket. Be careful not to pinch the wires.

Bracket bolt (1) **4mmH, 5.1 ft-lb (61.2 inlb)**


gasket.jpg

Put the NEW crankcase cover gasket in place on the engine.



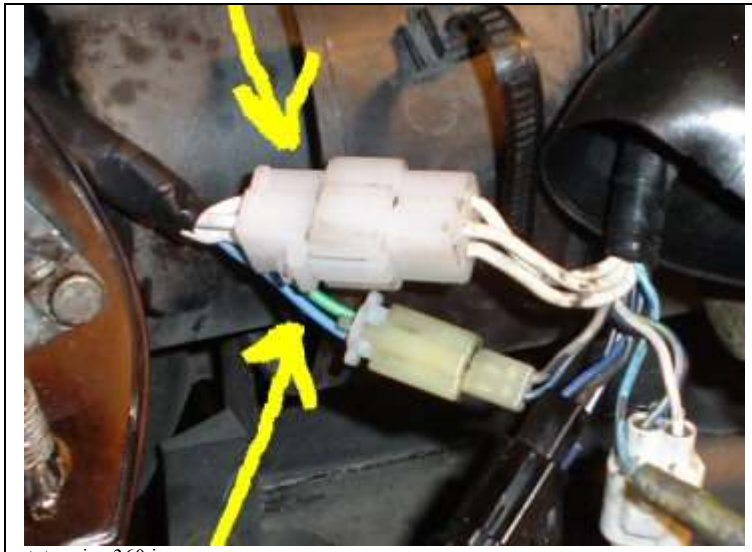
alternatorcover360.jpg

Install the Left crankcase cover.

Torque the bolts (14) **5mmH**, **7.2 ft-lb (86.4 inlb)**

Be sure to torque the bolts evenly!

I typically use the same method as when you replace a car tire. Do one bolt, then the opposite bolt, going in a clockwise direction.


statorwires360.jpg

Connect the new stator connector and the new speed sensor connectors. Pull protective boot down over the connectors and re-attach.

(note: your cables should be about 4-5 inches long than shown. This photo was taken using the prototype which had shorter wires.)

At this point you can start the engine and make sure everything works. Do not run for more than a few seconds, (remember no oil yet!).

IF THE ENGINE IS ROUGH RUNNING, OR BACKFIRES, SWAP THE GREEN AND BLUE WIRES FROM THE PICKUP COIL.

Kickstand360.JPG

Re-install the following on the LEFT side of the bike:

clutch cable

clutch adjusting cover (3)
Torque the bolts **5mmH**, **7.2 ft-lb (86.4 inlb)**

Drive train Cover (4)
5mmH, **5.1 ft-lb (61.2 inlb)**

kickstand (2)
Torque the bolts **14mmS**, **46 ft-lb**

flbd_shifter360.jpg

Also install the following on the LEFT side of the bike:

shifter linkage **[note the alignment!]**
Torque the bolt **10mmB, 7.2 ft-lb (86.4 inlb)**

floorboard w/shifter (2)
Torque the bolts **14mmS**, **46 ft-lb**


oildrain360.jpg

Verify installed or install the engine oil drain bolt and gasket.

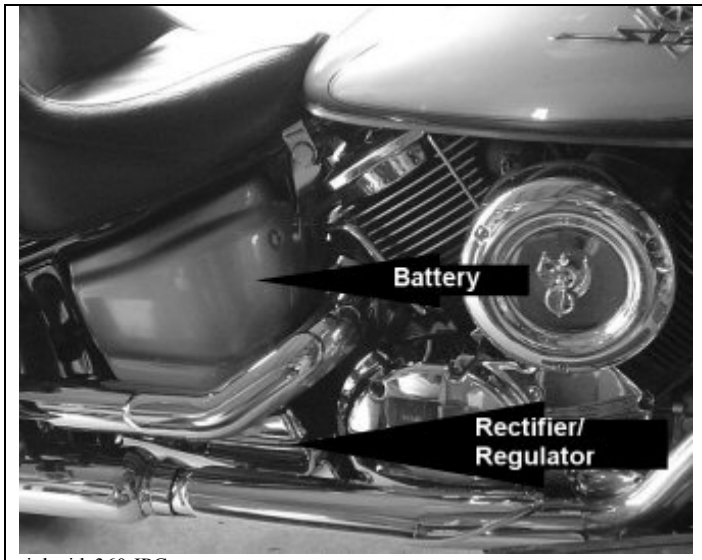
Torque the bolt **17mmS**, **31 ft-lb**

Fill the crankcase with oil:

Without filter replacement:	approx. 3.2 US qts
With filter replacement std filter:	approx. 3.3 US qts
With relocation filter replacement:	approx. 4.3 US qts

[Be sure to check the engine oil level as your filling the crankcase.]

Ok, now let's do the other side (the rectifier)



rightside360.JPG

regulator360.JPG

The regulator is located on the lower RIGHT side of the engine, below the battery.

The top photo shows the location of both the battery and rectifier.

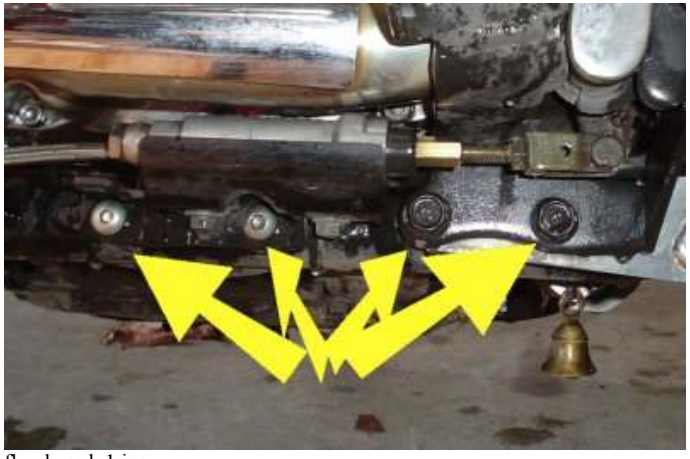
The bottom photo shows the battery & rectifier with covers removed.

At this time, remove the battery cover.

Battery Cover (1) **10mmH**

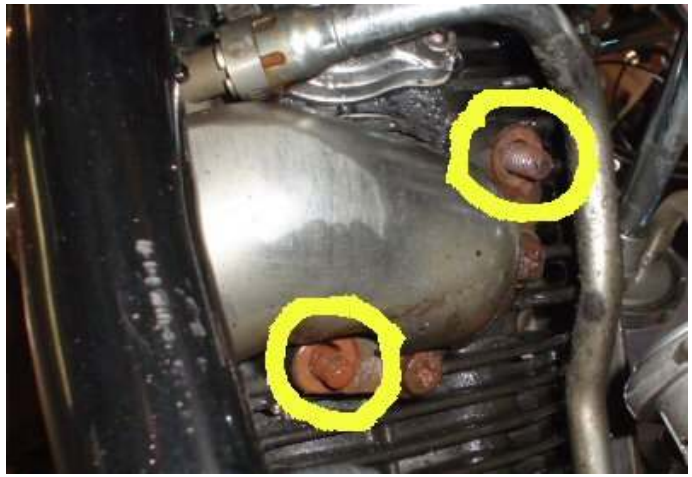

exhaust_2.jpg

Depending on what exhaust configuration you have, you may or may not have to remove the slip-ons.
I chose not to. And due to the many configurations of exhausts, I won't get into the details.


floorboard_1.jpg

Remove the floorboard and Master Cylinder. There may be a ty-wrap that you will need to cut to prevent any stress. Carefully lower both. You do not need to disconnect anything from either at this point.

Master Cylinder bolts (2)	**10mmH**
Floorboard Bolts (2)	**14mmS**


exhaust_1.jpg

Remove the front (lower) exhaust pipe nuts. Then remove any support holding the exhaust at the tail end. (You want the exhaust assembly to be free.)

Engine Exhaust Nuts (2) **XmmS or B**

exhaust_3.jpg

Carefully lower the exhaust. You do not have to completely remove the exhaust. You will need to make sure you don't put any stress on the exhaust bolts. So take it easy.


cover.jpg

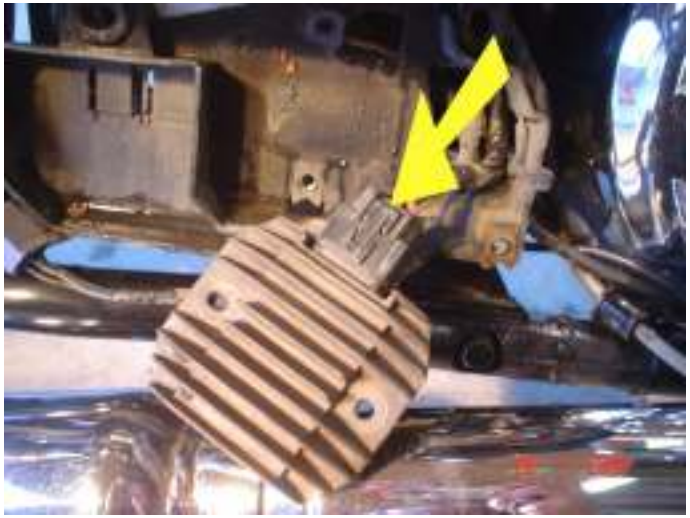
Remove the rectifier cover bolt. Then remove the cover, note the other end (top) of the cover just snaps in place.

cover (1) **10mmH**


regulator_2.jpg

Remove the rectifier, There are 2 fiber washers that go behind the regulator.

rectifier bolts (2) **XmmS**

 regulator_3.jpg	Unplug the cable by pressing on the tab and pulling.
 regulator_5.jpg	Old rectifier, bolts, and fiber washers.

	New rectifier, bolts, and fiber washers.

	Attach the cable to the New rectifier, and install on the housing. Torque Rectifier bolts (2) **Snug**, **xx ft-lb** ***NOTE: I can't find the torque spec for the regulator bolts, the bolts go into a metal clip which isn't very strong, so just make the bolts snug.***

	Re-Install the rectifier cover. Torque cover bolts (1) **10mmH**, **5.1 ft-lb**

With the lower exhaust pipe removed at this point, you may want to change the oil filter, or install an oil filter relocation kit!

	Re-Install the exhaust pipe system. Stock: Torque Pipe and Muffler bolts (2) **10mmH**, **14 ft-lb** Torque Muffler Bracket Bolts (2) **xxmmH**, **18 ft-lb** Torque Engine Exhaust Nuts (2) **xxmmS**, **14 ft-lb**

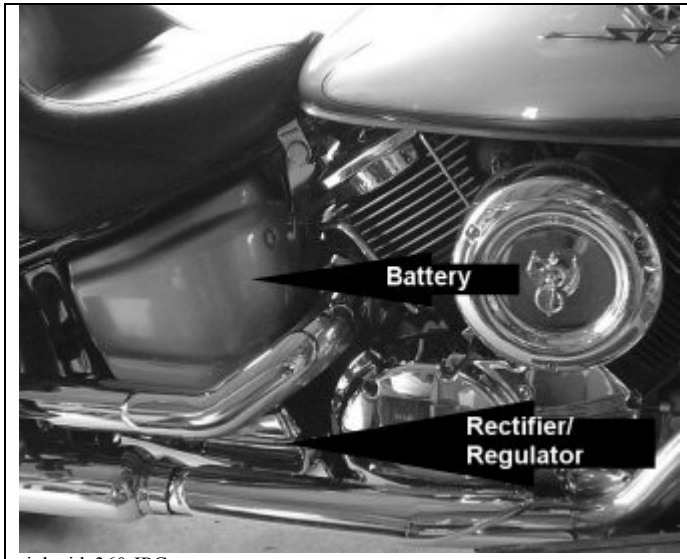
	Re-Install the Master Cylinder and Floorboard. Torque Master Cylinder Bolts (2) **10mmH**, **17 ft-lb** Torque Floorboard Bolts (2) **14mmS**, **46 ft-lb**

Now let's test it.

batteryvolts.jpg

With the engine OFF, Measure the voltage (DC) across the battery.
It should read *about* 12.4 – 12.9 volts.

Start the bike.
Measure the voltage across the battery, but this time, rev the engine.
The voltage should be between 14.1 and 14.9 volts.



rightside360.JPG

If all is well, then re-Install the battery cover.

Bolt (1) **5mmH**, **5.1 ft-lb**

And finally, GO RIDING!

xx Nm m/kg ft.lbs Conversion Table

m/kg	ft.lb.	m/kg	ft.lb.	m/kg	ft.lb.	m/kg	ft.lb.	m/kg	ft.lb.	m/kg	ft.lb.	m/kg	ft.lb.
1.0	7.2	4.0	28.9	7.0	50.6	10.0	72.3	13.0	94.0	16.0	115.7	19.0	137.4
1.1	8.0	4.1	29.7	7.1	51.4	10.1	73.1	13.1	94.8	16.1	116.5	19.1	138.2
1.2	8.7	4.2	30.4	7.2	52.1	10.2	73.8	13.2	95.5	16.2	117.2	19.2	138.9
1.3	9.4	4.3	31.1	7.3	52.8	10.3	74.5	13.3	96.2	16.3	117.9	19.3	139.6
1.4	10.1	4.4	31.8	7.4	53.5	10.4	75.2	13.4	96.9	16.4	118.6	19.4	140.3
1.5	10.8	4.5	32.5	7.5	54.2	10.5	75.9	13.5	97.6	16.5	119.3	19.5	141.0
1.6	11.6	4.6	33.3	7.6	55.0	10.6	76.7	13.6	98.4	16.6	120.1	19.6	141.8
1.7	12.3	4.7	34.0	7.7	55.7	10.7	77.4	13.7	99.1	16.7	120.8	19.7	142.5
1.8	13.0	4.8	34.7	7.8	56.4	10.8	78.1	13.8	99.8	16.8	121.5	19.8	143.2
1.9	13.7	4.9	35.4	7.9	57.1	10.9	78.8	13.9	100.5	16.9	122.2	19.9	143.9
2.0	14.5	5.0	36.2	8.0	57.9	11.0	79.6	14.0	101.3	17.0	123.0	20.0	144.7
2.1	15.2	5.1	36.9	8.1	58.6	11.1	80.3	14.1	102.0	17.1	123.7	20.1	145.4
2.2	15.9	5.2	37.6	8.2	59.3	11.2	81.0	14.2	102.7	17.2	124.4	20.2	146.1
2.3	16.6	5.3	38.3	8.3	60.0	11.3	81.7	14.3	103.4	17.3	125.1	20.3	146.8
2.4	17.4	5.4	39.1	8.4	60.8	11.4	82.5	14.4	104.2	17.4	125.9	20.4	147.6
2.5	18.1	5.5	39.8	8.5	61.5	11.5	83.2	14.5	104.9	17.5	126.6	20.5	148.3
2.6	18.8	5.6	40.5	8.6	62.2	11.6	83.9	14.6	105.6	17.6	127.3	20.6	149.0
2.7	19.5	5.7	41.2	8.7	62.9	11.7	84.6	14.7	106.3	17.7	128.0	20.7	149.7
2.8	20.3	5.8	42.0	8.8	63.7	11.8	85.3	14.8	107.0	17.8	128.7	20.8	150.4
2.9	21.0	5.9	42.7	8.9	64.4	11.9	86.1	14.9	107.8	17.9	129.5	20.9	151.2
3.0	21.7	6.0	43.4	9.0	65.1	12.0	86.8	15.0	108.5	18.0	130.2	21.0	151.9
3.1	22.4	6.1	44.1	9.1	65.8	12.1	87.5	15.1	109.2	18.1	130.9	21.1	152.6
3.2	23.1	6.2	44.8	9.2	66.5	12.2	88.2	15.2	109.9	18.2	131.6	21.2	153.3
3.3	23.9	6.3	45.6	9.3	67.3	12.3	89.0	15.3	110.7	18.3	132.4	21.3	154.1
3.4	24.6	6.4	46.3	9.4	68.0	12.4	89.7	15.4	111.4	18.4	133.1	21.4	154.8
3.5	25.3	6.5	47.0	9.5	68.7	12.5	90.4	15.5	112.1	18.5	133.8	21.5	155.5
3.6	26.0	6.6	47.7	9.6	69.4	12.6	91.1	15.6	112.8	18.6	134.5	21.6	156.2
3.7	26.8	6.7	48.5	9.7	70.2	12.7	91.9	15.7	113.6	18.7	135.3	21.7	157.0
3.8	27.5	6.8	49.2	9.8	70.9	12.8	92.6	15.8	114.3	18.8	136.0	21.8	157.7
3.9	28.2	6.9	49.9	9.9	71.6	12.9	93.3	15.9	115.0	18.9	136.7	21.9	158.4