

# Ultima Billet Rear Shocks

## Instruction Sheet

### Notes:

- Please read all instructions and understand them thoroughly before starting installation.
- Changes made to a motorcycle's suspension may cause the handling characteristics to change. Once shocks are installed allow yourself some time to get used to these new characteristics.
- Lowering a motorcycle reduces ground clearance and can limit cornering abilities
- Please wear eye protection when servicing your motorcycle.

It is recommended that a certified dealer install these shocks on your motorcycle.

Follow your motorcycle shop manual procedure for the removal process of your old shocks.

### Securing your motorcycle

Using a motorcycle lift; clamp the front wheel to secure the motorcycle. Use straps to further secure the front of the motorcycle. The lower triple is a recommended strap location to avoid any damage. This will be useful when you unload the rear suspension.

### Unloading the rear suspension

Use a jack under a flat part of the motorcycle and lift until the rear tire is barely resting on the surface. This ensures that the shocks are unloaded. They are now ready for removal.

### Remove the old shocks

Refer to the service manual specific to your motorcycle for this process. Unbolt the old shocks. Save the necessary hardware if you have not purchased new hardware.

### Installation

Shocks should be installed with the preload adjuster on top (see Preload Adjustment).

With the new shocks in hand; please go over the hardware configuration diagram (Figure 3) to decide which configuration best fits your application. Spacers are included to provide clearance between the shocks and your motorcycle (Figure 4). Typically start on which ever side the final drive is located. This side normally causes the clearance issues. Each eye and each side should be configured the same way. Make sure to use the proper hardware so that the shock-bushings fit the shock-bolts as snugly as possible. Shocks come with a 1/2" ID bushing installed. This is needed for all applications. An optional bushing is included and should be used in addition when 3/8" bolts are used instead of the larger 1/2" bolts.

Unless new hardware was purchased, you will use the stock bolts from your old shocks to install the new shocks. Use Red Locktite (or equivalent) and use a torque wrench to tighten as follows:

Models that use 1/2" bolts: 65ft-lbs

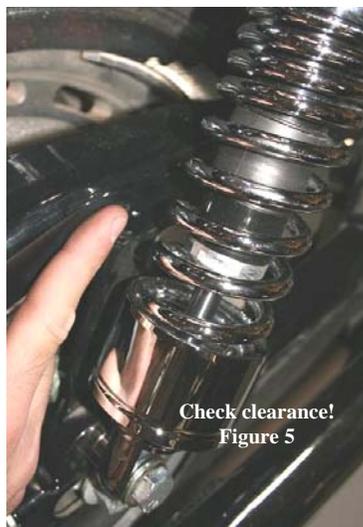
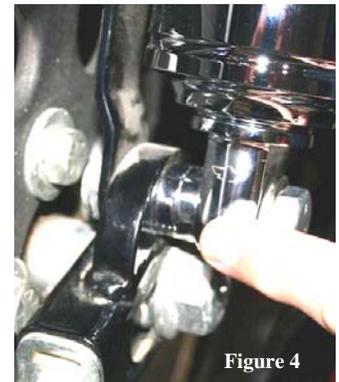
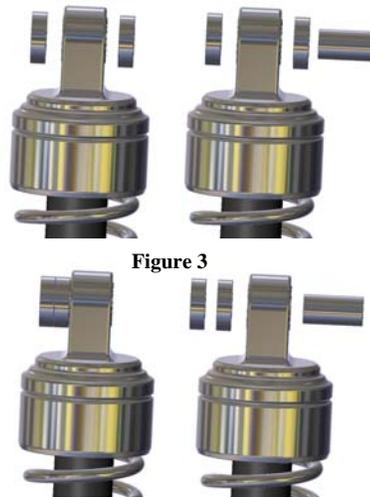
Models that use 3/8" bolts: 30ft-lbs

(Figures 1 & 2)

Be sure to check clearance between the shock and the belt-guard. If there is any contact you will need to alter your spacer arrangement to accommodate this. Check tire to fender clearance as well. This clearance will be reduced when lowering shocks are used.

### Preload Adjustment

Your new Ultima Billet Shocks are preload adjustable. Adjustment should be done once the shocks are installed. To adjust use a strap wrench and turn the top part of the shock (Figure 6) clock-wise to tighten or provide more preload (this stiffens the suspension), or counter-clockwise to loosen or subtract preload (this softens the suspension). Hand adjustments may be sufficient on models with smaller spring rates while the strap wrench will be required on the high spring rate shocks. You will see notches (Figure 6) that appear on the shock as the shock is preloaded. These should help you obtain the same preload for both sides of the motorcycle. Both shocks should be adjusted to the same level of preload.



# Ultima Billet Rear Shocks

MidWest Part Number	Shock length (eye to eye)	Spring Rate (lbs/in)	Total Travel (inches)	Preload range (lbs)	Application Information
116-150	11"	130 (soft)	2"	110-175	Specs are closest to OEM Sportster shocks, sport/stiffer ride for Sportster models, softer/plush ride for Dyna models. Use for low stance.
116-151	12"	130 (soft)	2.5"	70-135	Specs are closest to OEM Sportster shocks, sport ride for Sportster models offering a little more comfort and travel. Use for stock stance.
116-152	11"	230 (medium)	1.2"	140-255	Specs are closest to OEM Dyna shocks, sport ride for Dyna models, Stiff ride for Sportster models, Soft ride for FX/FL/FLH models. Low ride, Low travel.
116-153	12"	230 (medium)	1.9"	130-245	Specs are closest to OEM Dyna shocks, sport ride for Dyna models, Stiff ride for Sportster models, Soft ride for FX/FL/FLH models.
116-154	11"	300 (hard)	1.2"	110-260	Specs are closest to OEM FX/FL/FLH shocks. Offers a super low ride that is slightly stiffer than stock yet still comfortable. Use to upgrade stiffness for Dyna.
116-155	12"	300 (hard)	1.9"	80-230	Specs are closest to OEM FX/FL/FLH shocks. Offers a ride that is slightly stiffer than stock yet still comfortable. Use to upgrade stiffness for Dyna.

## Shock Selection:

**Spring Rate:** This is the force required to compress the spring one inch. The force required to compress the spring two inches would require twice the force required to compress the same spring one inch.

**Shock Length:** This represents the distance from eye to eye of the shock. The ULTIMA shocks are lowering shocks for most models. See the included chart to compare with OEM shock lengths.

**Total Travel:** This is the total distance of motion that the shock can move. When selecting your shock please check tire clearance to avoid unwanted contact. This can be done by disconnecting the shocks from your bike and letting the bike rest on the tire. Then you can measure the distance from the lower mount to the upper mount and comparing this value to the shock length minus the total travel of the considered shock.

**Preload:** This is the preset force applied to the spring within the shock and controls the initial load required to move the shock. For example, if a shock has 80lbs of preload it will take at least 80lbs to see some movement. You could rest 70lbs on top of this shock and there would not be any movement. If you have that same preload on a shock with a 130lbs/in spring rate and a 300lbs/in spring rate the initial feel would be similar but the ride using the 300lbs/in spring rate would be stiffer.

**Selection Notes:** When making a selection for your motorcycle please take everything provided into account to help choose the best shock for your application.

Early Sportster and FL/FLH/FX models that use 5/8" diameter studs would require the use of the 1/2" diameter stud kit, use MW# 5-128 for Sportster models.

Midwest Shocks fit all the following				
Bikes	Models	Years	Stock Shock Length (Inches)	Standard Spring Rates (lbs/in)
<b>Sportster</b>				
	all	79-87	12.50	75-120
	XR1000	83-84	12.50	75-120
	XLCR	77-78	12.50	75-120
	XLH 833 Hugger	88-91	12.50	75-120
	XLH 883/1200	88-93	13.50	75-120
	XLH 883/1200 Std., Dix	94-95	13.50	75-120
	XLH 883/1200 Std.	96-03	13.50	75-120
	XL, XLH 883/1200C/Hug	92-03	11.75	75-120
	XL 883/R/1200R	04-07	13.00	75-120
	XL 883C/1200C	04-07	11.50	90-130
	XL 883L/1200L	04-07	11.50	75-120
<b>Dyna</b>				
	FX	73-83	12.00	300-350
	FX	84-86	12.00	300-350
	FXWG	80-86	12.00	300-350
	FXD/B/C	91-92	12.00	230-275
	FXD/C	95-05	12.63	230-275
	FXDBI/LI	06-07	12.00	230-275
	FXDI/CI/WGI/35	06-07	12.00	210-250
	FXDL	93-00	12.63	210-250
	FXDL	01-05	12.00	210-250
	FXDS-Conv.	94-00	12.00	210-250
	FXDWG	93-05	12.63	210-250
	FXDX	99-99	13.00	210-250
	FXDX/T	00-05	13.00	210-250
	FXLR	87-94	13.00	75-120
	FXR/FXRS	82-86	13.00	75-120
	FXR/FXRS	87-87	13.00	75-120
	FXR/FXRS	88-94	13.00	75-120
	FXR-SP/Conv.	87-94	13.50	75-120
	FXRT	83-84	13.00	75-120
	FXRT	85-87	13.00	75-120
	FXRT	88-92	13.00	75-120
<b>Touring</b>				
	FL/FLH	73-77	12.00	300-350
	FL/FLH (4-speed)	78-86	12.00	300-350
	FLH/FLT (5-speed)	80-01	13.00	90-130
	FLH/FLT (5-speed)	02-05	13.00	90-130
	FLH/FLT (5-speed)	06-07	13.00	90-130
<b>V-Rod</b>				
	VRSCA,B,D	02-06	13.00	120-170

## WARNING

Serious injury, death and property damage can result from the improper use, control, alteration, or maintenance of motorcycles. The dealer and dealer's customers must exercise good judgment in the use, control, alteration, part selection and installation, and maintenance of motorcycles and motorcycle parts. Midwest Motorcycle Supply assumes no responsibility or liability of any nature for the failure of others to use good judgment.