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ADJUSTING SPRING CROSSOVER (DUAL SPRING ONLY)

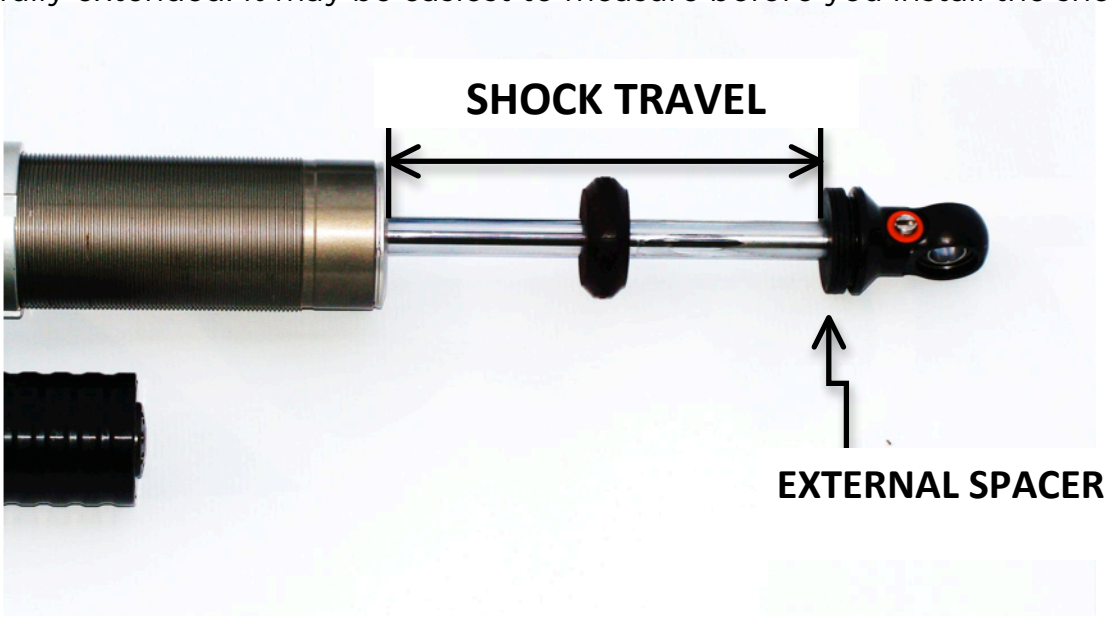
The spring crossover point is an important tuning parameter. A softer initial spring rate offers improved traction and hook-up while a higher spring rate deep into travel helps to resist bottoming on jump landings.

As a rough guideline, the spring crossover point should be as deep into travel as possible without experiencing excessive bottoming. The crossover point is defined as a percentage of the total shock travel. The factory setting for the spring crossover point is 55 percent. This means that a 5-inch travel shock would have the crossover point at 2.75 inches (5.0 inches x 0.55) into the shock travel.

In order to calculate your spring crossover ring placement, you need to know four important pieces of information:

1. Metal-to-metal shock travel in inches (measure before spring installation).
2. Main spring rate (lb-in) - marked on spring (see Reading the Spring Rate).
3. Tender spring rate (lb-in) - marked on spring (see Reading the Spring Rate).
4. Desired crossover point (as a percentage).

The shock travel is the exposed length of the shaft (including the bump stop) when the shock is fully extended. It may be easiest to measure before you install the shock.



SOME SHOCKS USE EXTERNAL SPACERS BELOW THE BUMP STOP TO LIMIT TRAVEL. DO NOT INCLUDE THE SPACER LENGTH AS PART OF THE TRAVEL.

THE CROSSOVER POINT IS A TUNABLE PARAMETER. IT SHOULD BE BETWEEN 45 AND 65 PERCENT.

SETTING THE CROSSOVER POINT (shock has been removed from vehicle for display purposes only)

STEP 1 Set spring preload as described in Adjusting Ride Height.

STEP 2 Once you have established the correct preload, jack up the UTV and place on a stand to keep the wheel off the ground. The shock should be fully extended.

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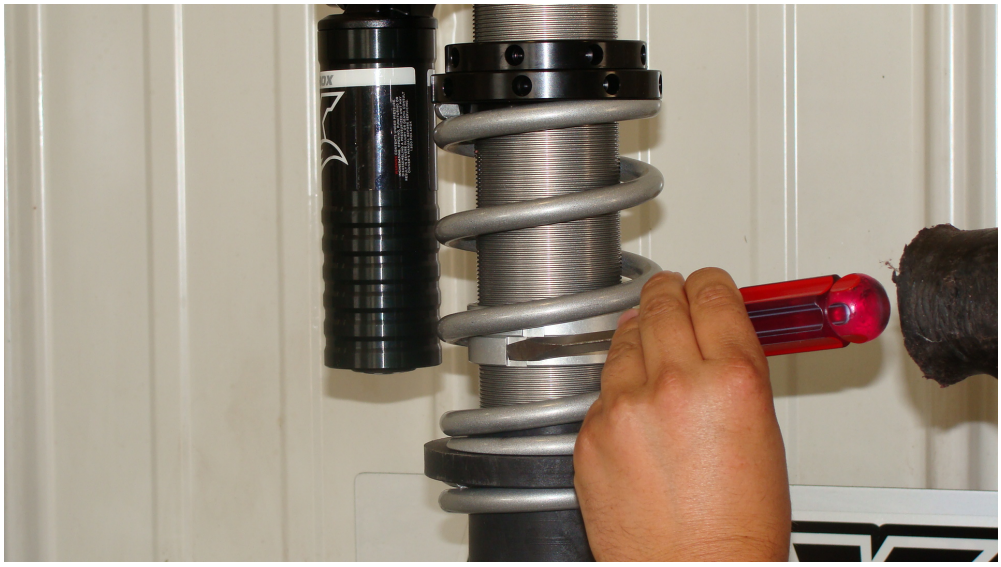
STEP 3 Using a hammer and flat blade screwdriver, loosen the crossover rings.

Always wear eye protection when working with shock absorber.



STEP 4 Determine the Spring Correction Factor using the following table:

Spring Correction Factor		Main Spring Rate(lb/in)														
		150	175	200	225	250	275	300	325	350	375	400	425	450	475	500
Tender Spring Rate(lb/in)	300	0.333	0.368	0.400	0.429	0.455	0.478	0.500	0.520	0.538	0.556	0.571	0.586	0.600	0.613	0.625
	350	0.300	0.333	0.364	0.391	0.417	0.440	0.462	0.481	0.500	0.517	0.533	0.548	0.563	0.576	0.588
	400	0.273	0.304	0.333	0.360	0.385	0.407	0.429	0.448	0.467	0.484	0.500	0.515	0.529	0.543	0.556
	450	0.250	0.280	0.308	0.333	0.357	0.379	0.400	0.419	0.438	0.455	0.471	0.486	0.500	0.514	0.526
	500	0.231	0.259	0.286	0.310	0.333	0.355	0.375	0.394	0.412	0.429	0.444	0.459	0.474	0.487	0.500
	550	0.214	0.241	0.267	0.290	0.313	0.333	0.353	0.371	0.389	0.405	0.421	0.436	0.450	0.463	0.476
	600	0.200	0.226	0.250	0.273	0.294	0.314	0.333	0.351	0.368	0.385	0.400	0.415	0.429	0.442	0.455
	650	0.188	0.212	0.235	0.257	0.278	0.297	0.316	0.333	0.350	0.366	0.381	0.395	0.409	0.422	0.435
	700	0.176	0.200	0.222	0.243	0.263	0.282	0.300	0.317	0.333	0.349	0.364	0.378	0.391	0.404	0.417
	750	0.167	0.189	0.211	0.231	0.250	0.268	0.286	0.302	0.318	0.333	0.348	0.362	0.375	0.388	0.400
	800	0.158	0.179	0.200	0.220	0.238	0.256	0.273	0.289	0.304	0.319	0.333	0.347	0.360	0.373	0.385
	850	0.150	0.171	0.190	0.209	0.227	0.244	0.261	0.277	0.292	0.306	0.320	0.333	0.346	0.358	0.370
	900	0.143	0.163	0.182	0.200	0.217	0.234	0.250	0.265	0.280	0.294	0.308	0.321	0.333	0.345	0.357
	950	0.136	0.156	0.174	0.191	0.208	0.224	0.240	0.255	0.269	0.283	0.296	0.309	0.321	0.333	0.345
	1000	0.130	0.149	0.167	0.184	0.200	0.216	0.231	0.245	0.259	0.273	0.286	0.298	0.310	0.322	0.333
	1100	0.120	0.137	0.154	0.170	0.185	0.200	0.214	0.228	0.241	0.254	0.267	0.279	0.290	0.302	0.313
	1200	0.111	0.127	0.143	0.158	0.172	0.186	0.200	0.213	0.226	0.238	0.250	0.262	0.273	0.284	0.294
	1300	0.103	0.119	0.133	0.148	0.161	0.175	0.188	0.200	0.212	0.224	0.235	0.246	0.257	0.268	0.278
	1400	0.097	0.111	0.125	0.138	0.152	0.164	0.176	0.188	0.200	0.211	0.222	0.233	0.243	0.253	0.263

STEP 5 Use the following formula to calculate crossover ring placement:

Crossover Ring Placement = Shaft Travel (in.) x Crossover Point x Spring Correction Factor

EXAMPLE

- A 5.2-inch travel shock with a 375 lb-in main spring and an 800 lb-in tender spring.
- The crossover point is set at 55 percent.
- From the table above, the spring correction factor is 0.319.
- From the above formula, the crossover ring placement value is 5.2 x 0.55 x 0.319 = 0.912 inches.

IN THE ABOVE EXAMPLE, 55 PERCENT IS WRITTEN AS 0.55.

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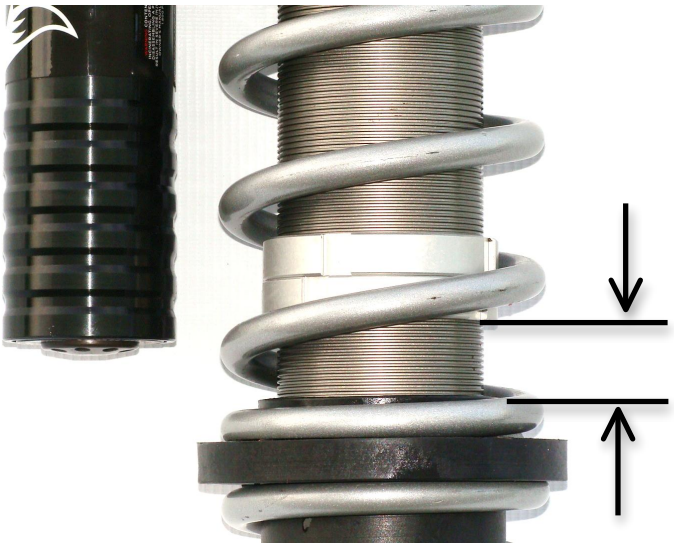
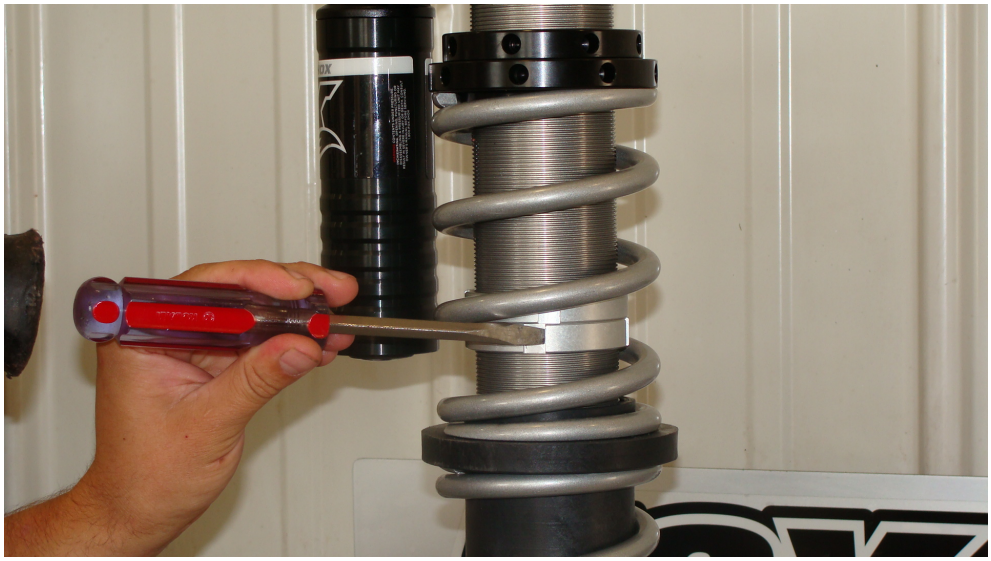


Crossover ring placement value should match the distance from the top of the spring coupler to the bottom of the crossover ring. Example .912 inches

YOU MAY NEED A SMALL, FLEXIBLE RULER OR MEASURING DEVICE TO ACCURATELY DETERMINE THE CROSSOVER RING LOCATION. ANOTHER USEFUL WAY OF MEASURING IS TO COUNT THE THREADS ON THE BODY (THE THREAD PITCH ON THE BODY IS 14 THREADS PER INCH). IF YOU KNOW THE CROSSOVER RING LOCATION, MULTIPLY BY 14 TO GET THE NUMBER OF THREADS BETWEEN THE SPRING COUPLER AND CROSSOVER RING. IN THE EXAMPLE ABOVE, 0.912 INCHES = 0.912 X 14 = 12.8 THREADS.

CHANGING THE SPRING PRELOAD, TENDER OR MAIN SPRING FREE-LENGTH OR RATE WILL MEAN THAT YOU NEED TO RESET THE CROSSOVER RING PLACEMENT.



STEP 6 Adjust the crossover ring (as shown previous page) so that its distance from the spring coupler is equal to the crossover ring placement value calculated in Step 5. Lock the crossover rings together once complete with a flat-bladed screwdriver and hammer.

STEP 7 Remove the UTV from the stand.