

# Valve Springs: What you should know about them

Valve springs are a most important part of you valve train operation. Valve springs are responsible for properly controlling and seating the valves at varying RPM's and operation conditions. Proper installation of the recommended Crower valve springs is critical to achieving optimum performance and trouble free operation.

## STOCK SPRINGS

In most cases stock valve springs do a good job for stock camshafts. When changing to a high lift Crower performance camshaft, stock springs physically won't travel the distance your Crower high lift camshaft requires. The spring coils stack solid and the destructive condition called COIL BIND exists. Because the spring acts like a solid piece of metal in this condition, broken rocker arms, bent push rods, and worn lifters and camshaft can result.

Crower performance camshafts also deliver increased RPM capability. As RPM's increase, more valve spring pressure is required to control the reciprocating valve train mass as it opens and closes the valves (as RPM increase, valve train increase, similar to trying to hold onto a merry-go-round as it turns faster.) As stock springs reach their performance threshold, the condition called valve float occurs. The valve springs can no longer exert enough pressure to keep the lifters in contact with the camshaft lobes, and an out-of-control situation results. Valves begin bouncing off the valve seats, lifters slap precision cam lobes with devastating impacts, and pistons slam into valves that should be seated, etc. Massive and costly damage can result.

## HIGH PERFORMANCE VALVE SPRINGS

Crower valve springs in many cases resemble stock spring but have subtle changes in material, wire diameter, outside diameter, inside diameter, and coil count. Our engineers have taken extreme care to properly match spring travel and pressure to accommodate your camshaft action and lift. In order to avoid coil bind, valve float and extreme damage to your valve train, always install the recommended Crower engineered valve spring kit with your new Crower performance camshaft.

## A SIMPLE CHECK

At full valve lift, your valve springs should have, at the very least, .050" of clearance between the coil. The outer spring, inner spring, and damper spring should all be checked for proper clearance. This is simply accomplished by slipping .050" feeler gauge between the coils with the valve fully open.

## ACHIEVING CORRECT INSTALLED HEIGHT

Each set of Crower valve springs comes with an installation card that specifies the correct installed height for your springs. Installed height is the distance from the spring seat on the cylinder head to the outside spring land on the bottom of the valve spring retainer (this is the space the valve spring occupies). Achieving the recommended installed height is imperative if the springs are to exert the pressures they were designed to deliver and properly control the valves.

If the springs install too high, Crower has shims available to close the space up. Or you can install one of Crower's negative offset (domed) spring retainer sets that produce the same results. (pic. 2)

If the springs install too short, you can:

- a. Machine the cylinder head spring seat deeper (.050" to .075" max) with the appropriate Crower spring seat cutter.
- or... b. Install a set of Crower positive offset spring retainer set.
- or... c. Install a new set of .100" longer stemmed valves to correct the problem.

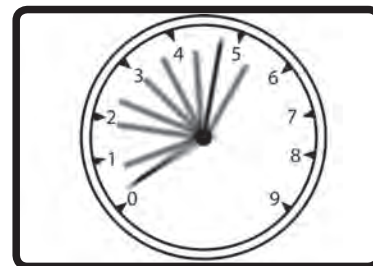
NOTE: If you don't find a retainer that corrects your problem listed in our catalog, our custom retainer service can make you a special set that will do the trick.

## PROPER SPRING SEATING

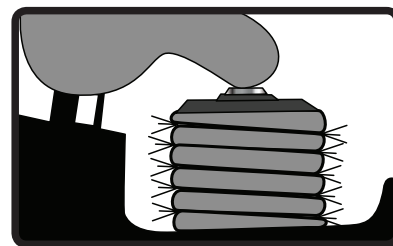
In some cases Crower performance valve springs do not seat properly on the stock spring seats. That is, they don't seat flush/square on your cylinder heads. This is especially true when going from stock single springs to high performance dual or triple spring designs. The usual problem is the spring O.D. is too large for the spring seat O.D. and/or the inner spring I.D. is too small for the stock valve guide O.D.

## VALVE STEM OIL SEAL TO SPRING CLEARANCE

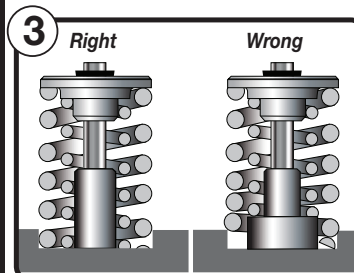
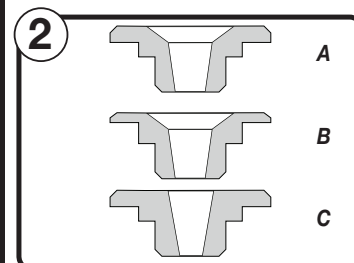
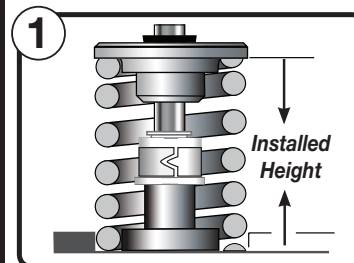
When switching from single springs it will be necessary to install smaller diameter Crower positive sealing valve stem oil seals for proper seal-to-spring clearance. Crower has the valve guide machining tools for installing these superior seals.



1. Stock springs can loose control of valves when hi-revving performance cam is installed.



2. Stock springs can coil bind when used with high lift performance cams.



<b>O.D./I.D. Outer</b>	.885/.610	.890/.620	.930/.660	.940/.580(top)	1.000/.630(top)	1.030/.630(top)	1.045/.745	1.055/.650 (top)
<b>O.D./I.D. Middle</b>	-	-	-	1.110/.745(bottom)	-	1.210/.805(bottom)	-	1.250/.845 (bottom)
<b>O.D./I.D. Inner</b>	-	-	-	-	1.065/.700(bottom)	-	-	-
<b>Installed Height</b>	1.975	1.350	1.400	1.470	1.700	1.900	1.400	1.750
<b>Rate</b>	212	120	-	321	-	.352	251	349
<b>Part #</b>	<b>68180</b>	<b>68160</b>	<b>68162</b>	<b>68194X2</b>	<b>68444</b>	<b>68435</b>	<b>68195</b>	<b>68155</b>
<b>Type</b>	Single	Single	Single	Single	Beehive	Beehive	Single	Single Conical
<b>Color Code</b>	None	None	Yellow	None	None	None	None	None
<b>Damper</b>	No	No	No	No	No	No	No	No
<b>Free Length</b>	2.310	1.825	1.685	1.775	2.065	2.255	1.690	2.069
<b>Wire Diameter</b>	.140	.134	.128	.144/.175 (ovate)	.139	Ovate	.146	.167/.202 (ovate)
<b>Material</b>	Silicone	Silicone	-	Silicone	-	-	Silicone	Silicone
<b>2.300</b>	-	-	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-	-	-
<b>2.000</b>	53 lbs	-	-	-	-	-	-	-
<b>1.950</b>	63 lbs	-	-	-	-	-	-	-
<b>1.900</b>	72 lbs	-	-	-	-	95 lbs	-	-
<b>1.850</b>	82 lbs	-	-	-	-	112 lbs	-	-
<b>1.800</b>	92 lbs	-	-	-	-	126 lbs	-	-
<b>1.750</b>	104 lbs	-	-	-	-	143 lbs	-	113 lbs
<b>1.720</b>	-	-	-	-	-	-	-	-
<b>1.700</b>	113lbs	-	-	-	90 lbs	158 lbs	-	128 lbs
<b>1.650</b>	123 lbs	-	-	-	103 lbs	174 lbs	-	142 lbs
<b>1.600</b>	133 lbs	-	-	-	115 lbs	191 lbs	-	159 lbs
<b>1.550</b>	144 lbs	-	-	-	128 lbs	207 lbs	-	174 lbs
<b>1.500</b>	154 lbs	-	-	77 lbs	141 lbs	224 lbs	42 lbs	193 lbs
<b>1.450</b>	165 lbs	-	-	-	155 lbs	241 lbs	54 lbs	210 lbs
<b>1.420</b>	-	-	-	103 lbs	-	-	-	-
<b>1.400</b>	175 lbs	34 lbs	49 lbs	108 lbs	169 lbs	261 lbs	66 lbs	228 lbs
<b>1.350</b>	-	39 lbs	58 lbs	122 lbs	184 lbs	280 lbs	79 lbs	247 lbs
<b>1.300</b>	-	46 lbs	67 lbs	137 lbs	197 lbs	299 lbs	90 lbs	266 lbs
<b>1.250</b>	-	51 lbs	76 lbs	154 lbs	212 lbs	318 lbs	104 lbs	285 lbs
<b>1.200</b>	-	56 lbs	86 lbs	169 lbs	226 lbs	337 lbs	115 lbs	302 lbs
<b>1.150</b>	-	62 lbs	100 lbs	187 lbs	240 lbs	356 lbs	126 lbs	-
<b>1.100</b>	-	68 lbs	112 lbs	202 lbs	255 lbs	-	139 lbs	-
<b>1.050</b>	-	74 lbs	126 lbs	220 lbs	-	-	149 lbs	-
<b>1.000</b>	-	81 lbs	140 lbs	238 lbs	-	-	161 lbs	-
<b>0.950</b>	-	87 lbs	156 lbs	256 lbs	-	-	174 lbs	-
<b>Coil Bind</b>	1.320	.815	.895	.870	-	1.080	0.860	1.100
<b>Retainers</b>	87096 (5.5mm)	87086 (5.5mm)	-	87020	87039T (.900-.630)	-	87085 (6mm)	-
<b>7° Titanium Retainer</b>	-	-	-	87020T	-	-	87082 (6mm)	87018T
<b>7° Titanium Retainer</b>	-	-	-	-	-	-	-	87029T
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-	-	-	-
<b>Titanium Ret 10°</b>	-	-	-	-	-	-	-	-
<b>Titanium Super 7°</b>	-	-	-	-	-	-	-	-
<b>7° Steel Retainer 5/16</b>	-	-	-	-	-	87015 (8mm)	-	87028
<b>7° Steel Retainer 11/32</b>	-	-	-	-	-	87029M	-	87029
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-	-	-
<b>Seat Cup</b>	-	-	-	-	-	-	-	-
<b>Seat Disc</b>	-	-	-	-	-	68949	-	-

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.050/.650 (top)	1.080/.720	1.090/.650	1.090/.780	1.105/.820	1.105/.820
<b>O.D./I.D. Middle</b>	1.290/.885 (bottom)	-	-	-	-	-
<b>O.D./I.D. Inner</b>	-	-	1.450/1.005	-	.800/.627	.811/.608
<b>Installed Height</b>	1.750	1.420	1.900	1.550	1.350	1.350
<b>Rate</b>	308	330	334	289	234	314
<b>Part #</b>	<b>68878</b>	<b>68194</b>	<b>68152</b>	<b>68190</b>	<b>68181</b>	<b>68182</b>
<b>Type</b>	Single Conical	Single	Conical	Single	Dual	Dual
<b>Color Code</b>	Blue	None	None	None	Orange	Orange
<b>Damper</b>	No	No	No	No	No	No
<b>Free Length</b>	2.290	1.650	2.500	1.820	1.635	1.635
<b>Wire Diameter</b>	.168/.200	.181/.144 (ovate)	.214/.170 (ovate)	.160	.140/.085	.140/.104
<b>Material</b>	Silicone	Silicone	-	Silicone	Silicone	Silicone
<b>2.300</b>	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-
<b>2.000</b>	-	-	117 lbs	-	-	-
<b>1.950</b>	-	-	134 lbs	-	-	-
<b>1.900</b>	-	-	149 lbs	-	-	-
<b>1.850</b>	-	-	165 lbs	-	-	-
<b>1.800</b>	132 lbs	-	182 lbs	-	-	-
<b>1.750</b>	146 lbs	-	198 lbs	-	-	-
<b>1.720</b>	-	-	-	-	-	-
<b>1.700</b>	159 lbs	-	214 lbs	-	-	-
<b>1.650</b>	172 lbs	-	231 lbs	42 lbs	-	-
<b>1.600</b>	187 lbs	-	247 lbs	55 lbs	-	-
<b>1.550</b>	199 lbs	-	264 lbs	74 lbs	-	28 lbs
<b>1.500</b>	216 lbs	-	280 lbs	88 lbs	-	42 lbs
<b>1.450</b>	231 lbs	-	298 lbs	101 lbs	36 lbs	56 lbs
<b>1.420</b>	-	-	-	-	-	-
<b>1.400</b>	249 lbs	82 lbs	316 lbs	111 lbs	48 lbs	70 lbs
<b>1.350</b>	266 lbs	98 lbs	335 lbs	122 lbs	56 lbs	84 lbs
<b>1.300</b>	283 lbs	114 lbs	354 lbs	135 lbs	70 lbs	98 lbs
<b>1.250</b>	300 lbs	131 lbs	379 lbs	149 lbs	83 lbs	113 lbs
<b>1.200</b>	317 lbs	148 lbs	401 lbs	163 lbs	95 lbs	127 lbs
<b>1.150</b>	336 lbs	165 lbs	428 lbs	177 lbs	106 lbs	141 lbs
<b>1.100</b>	-	181 lbs	-	195 lbs	118 lbs	155 lbs
<b>1.050</b>	-	198 lbs	-	211 lbs	129 lbs	169 lbs
<b>1.000</b>	-	214 lbs	-	231 lbs	139 lbs	185 lbs
<b>0.950</b>	-	230 lbs	-	-	148 lbs	202 lbs
<b>Coil Bind</b>	1.080	.806	1.055	0.920	0.710	0.800
<b>Retainers</b>	-	87026 (7mm)	-	-	-	-
<b>7° Titanium Retainer</b>	87028T (LS1)	87026T (7mm)	87057+	87095 (6.5mm)	87092 (6.5mm)	87092 (6.5mm)
<b>7° Titanium Retainer</b>	87029	-	87029+	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-	-
<b>Titanium Ret 10°</b>	-	-	-	-	-	-
<b>Titanium Super 7°</b>	-	-	-	-	-	-
<b>7° Steel Retainer 5/16</b>	87018T	-	87057	-	-	-
<b>7° Steel Retainer 11/32</b>	87029	-	87029	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-
<b>Seat Cup</b>	-	-	68934	-	-	-
<b>Seat Disc</b>	-	-	-	-	Stock .108 step inner	Stock .108 step inner

<b>O.D./I.D. Outer</b>	1.130/.650(top)	1.160/.840	1.160/.870	1.160/.870	1.175/.875	1.180/.880
<b>O.D./I.D. Middle</b>	1.120/.750(bottom)	-	-	-	-	-
<b>O.D./I.D. Inner</b>	-	-	.860/.660	.865/.660	.820/.628	.870/.670
<b>Installed Height</b>	1.650	1.550	1.590	1.460	1.350	1.350
<b>Rate</b>	230	245	353	250	295	309
<b>Part #</b>	<b>68193</b>	<b>68183</b>	<b>68189</b>	<b>68184</b>	<b>68185</b>	<b>68188</b>
<b>Type</b>	Single	Single	Dual	Dual	Dual	Dual
<b>Color Code</b>	None	Purple	Yellow	Red	None	Red/White
<b>Damper</b>	No	No	No	No	No	No
<b>Free Length</b>	2.330	1.920	2.015	1.815	1.580	1.580
<b>Wire Diameter</b>	.146/ .148 (ovate)	.161	.149/.104	.148/.098	.146/.096	.154/.099
<b>Material</b>	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
<b>2.300</b>	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-
<b>2.000</b>	-	-	-	-	-	-
<b>1.950</b>	-	-	-	-	-	-
<b>1.900</b>	-	-	-	-	-	-
<b>1.850</b>	-	-	-	-	-	-
<b>1.800</b>	103 lbs	-	-	-	-	-
<b>1.750</b>	114 lbs	-	-	-	-	-
<b>1.720</b>	124 lbs	-	-	-	-	-
<b>1.700</b>	128 lbs	-	-	-	-	-
<b>1.650</b>	134 lbs	-	65 lbs	44 lbs	-	-
<b>1.600</b>	150 lbs	-	81 lbs	55 lbs	-	-
<b>1.550</b>	153 lbs	73 lbs	96 lbs	68 lbs	-	-
<b>1.500</b>	171 lbs	84 lbs	112 lbs	78 lbs	-	-
<b>1.450</b>	-	95 lbs	127 lbs	91 lbs	28 lbs	-
<b>1.420</b>	-	-	-	-	-	-
<b>1.400</b>	195 lbs	107 lbs	144 lbs	101 lbs	38 lbs	68 lbs
<b>1.350</b>	197 lbs	119 lbs	159 lbs	113 lbs	49 lbs	82 lbs
<b>1.300</b>	217 lbs	130 lbs	178 lbs	122 lbs	60 lbs	97 lbs
<b>1.250</b>	220 lbs	141 lbs	198 lbs	139 lbs	74 lbs	111 lbs
<b>1.200</b>	240 lbs	152 lbs	218 lbs	153 lbs	89 lbs	125 lbs
<b>1.150</b>	244 lbs	166 lbs	238 lbs	167 lbs	103 lbs	140 lbs
<b>1.100</b>	257 lbs	177 lbs	261 lbs	180 lbs	115 lbs	155 lbs
<b>1.050</b>	276 lbs	191 lbs	-	193 lbs	136 lbs	170 lbs
<b>1.000</b>	-	205 lbs	-	205 lbs	152 lbs	183 lbs
<b>0.950</b>	-	-	-	220 lbs	167 lbs	202 lbs
<b>Coil Bind</b>	1.035	0.895	1.030	0.790	0.805	0.765
<b>Retainers</b>	87024 (7mm steel)	-	-	-	-	-
<b>7° Titanium Retainer</b>	87024T	87097 (6mm)	87094 (5.5mm)	87093D (+.060")	87093 (5.5mm)	87093 (5.5mm)
<b>7° Titanium Retainer</b>	87025 +.060*	-	-	-	-	-
<b>7° Titanium Ret 3/8</b>	87023 3 valve	-	-	-	-	-
<b>Titanium Ret 10°</b>	87023T 3 valve	-	-	-	-	-
<b>Titanium Super 7°</b>	-	-	-	-	-	-
<b>7° Steel Retainer 5/16</b>	-	-	-	-	-	-
<b>7° Steel Retainer 11/32</b>	-	-	-	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-
<b>Seat Cup</b>	-	-	-	-	-	-
<b>Seat Disc</b>	-	87023T 3 valve	-	Stock .080 step inner	Stock .080 step inner	Stock .080 step inner
<b>Seat Disc</b>	-	-	-	-	Stock .108 step inner	-

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.240	1.250/.875	1.250/.940	1.250/.890	1.255/.780	1.255/.780	1.260/.760	1.265/.790
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	-	-	.910/.680	-	-	-	-	-
<b>Installed Height</b>	1.600	1.750	1.650	1.700	1.750	1.700	1.800	1.750
<b>Rate</b>	-	456	285	330	522	378	390	407
<b>Part #</b>	<b>68141</b>	<b>68301X4</b>	<b>68106X208</b>	<b>68301X3</b>	<b>68311X1</b>	<b>68301X1</b>	<b>68304</b>	<b>68301</b>
<b>Type</b>	Single	Single	Dual	Single	Single	Single	Single	Single
<b>Color Code</b>	-	None	None	None	None	None	None	None
<b>Damper</b>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
<b>Free Length</b>	-	2.050	2.225	2.050	1.995	1.980	2.100	2.020
<b>Wire Diameter</b>	-	.185	.155/.112	.182	0.198	0.185	0.190	0.192
<b>Material</b>	-	-	Silicone	Silicone	Super Clean Silicone	Silicone	Silicone	Silicone
<b>2.300</b>	-	-	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-	-	-
<b>2.000</b>	-	-	-	-	-	-	-	-
<b>1.950</b>	-	-	-	-	-	-	-	-
<b>1.900</b>	-	-	-	-	-	-	-	-
<b>1.850</b>	-	-	-	-	73 lbs	-	88 lbs	-
<b>1.800</b>	-	-	-	76 lbs	97 lbs	70 lbs	106 lbs	-
<b>1.750</b>	-	108 lbs	102 lbs	90 lbs	120 lbs	88 lbs	124 lbs	96 lbs
<b>1.720</b>	-	-	-	-	-	-	-	-
<b>1.700</b>	-	129 lbs	118 lbs	104 lbs	146 lbs	105 lbs	141 lbs	114 lbs
<b>1.650</b>	-	150 lbs	130 lbs	117 lbs	169 lbs	123 lbs	159 lbs	130 lbs
<b>1.600</b>	51 lbs	173 lbs	145 lbs	131 lbs	194 lbs	140 lbs	176 lbs	149 lbs
<b>1.550</b>	59 lbs	195 lbs	158 lbs	146 lbs	220 lbs	157 lbs	195 lbs	169 lbs
<b>1.500</b>	67 lbs	217 lbs	172 lbs	160 lbs	246 lbs	174 lbs	210 lbs	188 lbs
<b>1.450</b>	76 lbs	239 lbs	186 lbs	174 lbs	274 lbs	192 lbs	231 lbs	207 lbs
<b>1.420</b>	-	-	-	-	-	-	-	-
<b>1.400</b>	85 lbs	263 lbs	199 lbs	196 lbs	302 lbs	210 lbs	250 lbs	229 lbs
<b>1.350</b>	94 lbs	287 lbs	213 lbs	210 lbs	331 lbs	230 lbs	271 lbs	252 lbs
<b>1.300</b>	103 lbs	312 lbs	226 lbs	230 lbs	359 lbs	252 lbs	295 lbs	274 lbs
<b>1.250</b>	112 lbs	336 lbs	240 lbs	247 lbs	389 lbs	274 lbs	317 lbs	299 lbs
<b>1.200</b>	121 lbs	362 lbs	253 lbs	269 lbs	424 lbs	297 lbs	345 lbs	-
<b>1.150</b>	130 lbs	387 lbs	269 lbs	-	459 lbs	-	-	-
<b>1.100</b>	141 lbs	-	286 lbs	-	-	-	-	-
<b>1.050</b>	151 lbs	-	302 lbs	-	-	-	-	-
<b>1.000</b>	161 lbs	-	317 lbs	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-	-	-	-
<b>Coil Bind Retainers</b>	.895	1.050	0.910	1.125	1.070	1.130	1.090	1.170
<b>7° Titanium Retainer</b>	-	-	86046	86037T	86037T	86037T	86037T	-
<b>7° Titanium Retainer</b>	-	-	-	86031	86031	86031	86031	86031
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-	-	-	-
<b>Titanium Ret 10°</b>	-	-	-	-	-	-	-	-
<b>Titanium Super 7°</b>	-	-	86757S	-	-	-	-	-
<b>7° Steel Retainer 5/16</b>	87045	86106	87045	86037	86037	86037	86037	-
<b>7° Steel Retainer 11/32</b>	-	87036	-	86032 or 87036	86032 or 87036	86032 or 87036	86032	86032 or 87036
<b>7° Steel Retainer 3/8</b>	-	-	86032	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-	-	-
<b>Seat Cup</b>	-	-	68922	-	-	-	-	-
<b>Seat Disc</b>	-	-	68948	-	-	-	-	-

<b>O.D./I.D. Outer</b>	1.270/.800	1.275/.925	1.285/.905	1.285/.940	1.290/.890	1.290/.890	1.290/.950
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	-	.913/.685	.900/.615	.935/.690	.890/.660	.890/.660	.690
<b>Installed Height</b>	1.750	1.600	2.050	1.800	1.900	1.900	1.800
<b>Rate</b>	477	388	524	350	382	382	369
<b>Part #</b>	<b>68311</b>	<b>68109X1</b>	<b>68852</b>	<b>68153</b>	<b>68156NP</b>	<b>68156</b>	<b>68441</b>
<b>Type</b>	Single	Dual	Dual	Dual	Dual	Dual	Dual
<b>Color Code</b>	None	Orange/Yellow	None	None	None	None	None
<b>Damper</b>	Yes	No	No	No	No	No	No
<b>Free Length</b>	2.030	1.830	2.400	2.225	-	-	2.400
<b>Wire Diameter</b>	.193	.175/.118	.186/.136	.171/.121	.163/.115	.163/.115	.126/.165
<b>Material</b>	Silicone	Silicone	-	-	-	-	-
<b>2.300</b>	-	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-	-
<b>2.050</b>	-	-	146 lbs	-	-	-	-
<b>2.000</b>	-	-	170 lbs	-	-	-	-
<b>1.950</b>	-	-	194 lbs	-	-	-	-
<b>1.900</b>	-	-	221 lbs	93 lbs	119 lbs	113 lbs	-
<b>1.850</b>	-	-	248 lbs	111 lbs	138 lbs	-	-
<b>1.800</b>	75 lbs	-	274 lbs	128 lbs	158 lbs	151 lbs	145 lbs
<b>1.750</b>	99 lbs	-	300 lbs	146 lbs	175 lbs	-	154 lbs
<b>1.720</b>	-	-	-	-	-	-	-
<b>1.700</b>	121 lbs	58 lbs	327 lbs	163 lbs	193 lbs	187 lbs	163 lbs
<b>1.650</b>	141 lbs	77 lbs	355 lbs	181 lbs	212 lbs	-	219 lbs
<b>1.600</b>	163 lbs	95 lbs	381 lbs	198 lbs	231 lbs	225 lbs	-
<b>1.550</b>	186 lbs	113 lbs	408 lbs	216 lbs	250 lbs	-	-
<b>1.500</b>	209 lbs	130 lbs	435 lbs	233 lbs	270 lbs	265 lbs	-
<b>1.450</b>	235 lbs	148 lbs	463 lbs	250 lbs	290 lbs	-	-
<b>1.420</b>	-	-	-	-	-	-	-
<b>1.400</b>	255 lbs	166 lbs	491 lbs	266 lbs	310 lbs	306 lbs	-
<b>1.350</b>	279 lbs	183 lbs	519 lbs	285 lbs	332 lbs	-	-
<b>1.300</b>	302 lbs	202 lbs	556 lbs	303 lbs	354 lbs	348 lbs	-
<b>1.250</b>	326 lbs	222 lbs	594 lbs	322 lbs	376 lbs	-	348 lbs
<b>1.200</b>	353 lbs	240 lbs	-	342 lbs	398 lbs	391 lbs	366 lbs
<b>1.150</b>	380 lbs	261 lbs	-	363 lbs	419 lbs	-	385 lbs
<b>1.100</b>	407 lbs	281 lbs	-	383 lbs	441 lbs	435 lbs	402 lbs
<b>1.050</b>	440 lbs	302 lbs	-	-	-	-	422 lbs
<b>1.000</b>	-	323 lbs	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-	-	-
<b>Coil Bind</b>	0.990	0.955	1.180	1.015	.995	.995	1.000
<b>Retainers</b>	-	-	-	-	-	-	-
<b>7° Titanium Retainer</b>	-	86046	86037+* or 87007	87006 (8mm)	86036T	86036T	87006 (8mm)
<b>7° Titanium Retainer</b>	86031	-	87078	-	86031	86031	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-	-	-
<b>Titanium Ret 10°</b>	-	-	-	-	-	-	-
<b>Titanium Super 7°</b>	-	86753 or 86753S	-	86757S	86753 or 86753S	86753 or 86753S	86757
<b>7° Steel Retainer 5/16</b>	-	87046	86037 +.050	86036 (8mm)	86036	86036	87006S (8mm)
<b>7° Steel Retainer 11/32</b>	86032-87036	-	87007	87036	86032	86032	87036
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-	-
<b>Seat Cup</b>	68935	68935	68935	68935	68923 or 68935	68923 or 68935	68923 or 68935
<b>Seat Disc</b>	-	68948	68947	68948	-	68948	68948

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.290/.950	1.290/1.055	1.290/.950	1.300/.900	1.300/.908	1.300/1.065	1.304/.950
<b>O.D./I.D. Middle</b>			-	.890/.695	-	-	-
<b>O.D./I.D. Inner</b>	.680	.890/.650	.945/.670	-	.906/.625	.880/.650	.694
<b>Installed Height</b>	1.800	1.850	1.800	1.900	-	1.900	1.800
<b>Rate</b>	409	302	371	375	-	342	433
<b>Part #</b>	<b>68436</b>	<b>68448</b>	<b>68157</b>	<b>68521</b>	<b>68432</b>	<b>68449</b>	<b>68447</b>
<b>Type</b>	Dual	Conical	Dual	Dual	Dual	Conical	Dual
<b>Color Code</b>	None	None	None	None	None	None	None
<b>Damper</b>	No	No	No	No	No	No	No
<b>Free Length</b>	2.390	2.380	2.280	2.275	2.250	2.375	2.300
<b>Wire Diameter</b>	.127/.165	.195/.160	.172/.134	.163/.115	.195/.134	.200/.160	.127/.171
<b>Material</b>	-	-	Silicone	-	-	-	-
<b>2.300</b>	-	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-	-
<b>2.000</b>	-	-	-	-	-	-	-
<b>1.950</b>	-	-	-	-	142 lbs	-	-
<b>1.900</b>	-	115 lbs	-	123 lbs	178 lbs	120 lbs	-
<b>1.850</b>	-	129 lbs	128 lbs	141 lbs	212 lbs	137 lbs	-
<b>1.800</b>	145 lbs	142 lbs	144 lbs	159 lbs	247 lbs	152 lbs	155 lbs
<b>1.750</b>	165 lbs	155 lbs	161 lbs	177 lbs	283 lbs	168 lbs	176 lbs
<b>1.720</b>	-	-	-	-	-	-	-
<b>1.700</b>	186 lbs	168 lbs	178 lbs	195 lbs	317 lbs	185 lbs	198 lbs
<b>1.650</b>	206 lbs	182 lbs	196 lbs	213 lbs	353 lbs	202 lbs	232 lbs
<b>1.600</b>	-	197 lbs	212 lbs	231 lbs	383 lbs	219 lbs	-
<b>1.550</b>	-	212 lbs	229 lbs	251 lbs	427 lbs	237 lbs	-
<b>1.500</b>	-	227 lbs	247 lbs	271 lbs	463 lbs	255 lbs	-
<b>1.450</b>	-	244 lbs	265 lbs	290 lbs	500lbs	272 lbs	-
<b>1.420</b>	-	-	-	-	-	-	-
<b>1.400</b>	-	260 lbs	284 lbs	310 lbs	539lbs	291 lbs	-
<b>1.350</b>	-	276 lbs	303 lbs	331 lbs	581 lbs	310 lbs	-
<b>1.300</b>	-	293 lbs	324 lbs	351 lbs	622 lbs	327 lbs	-
<b>1.250</b>	369 lbs	310 lbs	345 lbs	372 lbs	665 lbs	346 lbs	393 lbs
<b>1.200</b>	389 lbs	326 lbs	367 lbs	393 lbs	705lbs	364 lbs	414 lbs
<b>1.150</b>	411 lbs	345 lbs	389 lbs	414 lbs	750lbs	386 lbs	436 lbs
<b>1.100</b>	432 lbs	-	415 lbs	435 lbs	-	-	458 lbs
<b>1.050</b>	-	-	-	-	-	-	-
<b>1.000</b>	-	-	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-	-	-
<b>Coil Bind</b>	1.000	1.070	1.040 w/.050 step	.990	.970	1.100	1.000
<b>Retainers</b>							
<b>7° Titanium Retainer</b>	87006 (8mm)	87057+*	86030 / 86046	-	86036T	87057+*	87006 (8mm)
<b>7° Titanium Retainer</b>	-	87029+*	86031	-	-	87029+*	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-	-	-
<b>Titanium Ret 10°</b>	-	-	-	-	-	-	-
<b>Titanium Super 7°</b>	86757 or 86757S	-	-	86753 or 86753S	-	-	86757-86757S
<b>7° Steel Retainer 5/16</b>	87006S	87057	87045	-	-	87057	87006S (8mm)
<b>7° Steel Retainer 11/32</b>	87036	87029	86032D	87036	-	87029	87036
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-	-
<b>Seat Cup</b>	68935 or 68923	68923	-	68923	-	68923	68923
<b>Seat Disc</b>	68948	-	-	68941	-	-	68948



<b>O.D./I.D. Outer</b>	1.304/.950	1.315/.915	1.324/.950	1.324/.950	1.354/.940	1.360/1.000	1.380/1.00
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	.694	-	.680	.694	-	-	.980/.710
<b>Installed Height</b>	1.800	1.800	1.800	1.800	1.850	1.550	1.950
<b>Rate</b>	392	356	500	460	415	228	402
<b>Part #</b>	<b>68446</b>	<b>68438</b>	<b>68442</b>	<b>68440</b>	<b>68143</b>	<b>68147</b>	<b>68851</b>
<b>Type</b>	Dual	Single	Dual	Dual	Single	Single	Dual
<b>Color Code</b>	None	None	None	None	None	None	None
<b>Damper</b>	No	No	No	No	Yes	No	No
<b>Free Length</b>	2.330	2.195	2.280	2.250	2.075	1.925	2.440
<b>Wire Diameter</b>	.125/.171	.213/.168	.127/.181	.127/.183	.208	0.177	.180/.135
<b>Material</b>	-	-	-	-	Silicone	Silicone	-
<b>2.300</b>	-	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-	-
<b>2.000</b>	-	-	-	-	-	-	116 lbs
<b>1.950</b>	-	-	-	-	-	-	136 lbs
<b>1.900</b>	-	-	-	-	72 lbs	-	155 lbs
<b>1.850</b>	-	-	-	-	92 lbs	-	175 lbs
<b>1.800</b>	155 lbs	106 lbs	160 lbs	180 lbs	113 lbs	-	194 lbs
<b>1.750</b>	164 lbs	120 lbs	185 lbs	193 lbs	134 lbs	-	214 lbs
<b>1.720</b>	-	-	-	206 lbs	-	-	-
<b>1.700</b>	174 lbs	137 lbs	210 lbs	229 lbs	155 lbs	-	233 lbs
<b>1.650</b>	194 lbs	154 lbs	235 lbs	-	175 lbs	57 lbs	253 lbs
<b>1.600</b>	-	170 lbs	-	-	196 lbs	67 lbs	273 lbs
<b>1.550</b>	-	190 lbs	-	-	217 lbs	78 lbs	294 lbs
<b>1.500</b>	-	207 lbs	-	-	238 lbs	89 lbs	315 lbs
<b>1.450</b>	-	226 lbs	-	-	258 lbs	100 lbs	337 lbs
<b>1.420</b>	-	-	-	-	-	-	-
<b>1.400</b>	-	245 lbs	-	-	279 lbs	110 lbs	359 lbs
<b>1.350</b>	-	264 lbs	-	-	300 lbs	120 lbs	382 lbs
<b>1.300</b>	-	284 lbs	-	-	-	130 lbs	406 lbs
<b>1.250</b>	370 lbs	305 lbs	435 lbs	413 lbs	-	141 lbs	431 lbs
<b>1.200</b>	390 lbs	329 lbs	466 lbs	436 lbs	-	153 lbs	456 lbs
<b>1.150</b>	409 lbs	364 lbs	485 lbs	459 lbs	-	165 lbs	-
<b>1.100</b>	429 lbs	-	510 lbs	485 lbs	-	177 lbs	-
<b>1.050</b>	-	-	-	-	-	-	-
<b>1.000</b>	-	-	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-	-	-
<b>Coil Bind</b>	1.000	1.120	1.000	1.000	1.280	1.000	1.130
<b>Retainers</b>	-	-	-	-	-	-	-
<b>7° Titanium Retainer</b>	87006 (8mm)	87034+*	87006 (8mm)	87006 (8mm)	-	-	87040 +.050*
<b>7° Titanium Retainer</b>	-	-	-	-	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-	-	-
<b>Titanium Ret 10°</b>	-	-	-	-	-	-	-
<b>Titanium Super 7°</b>	86757	86753 or 86753S	86757 or 86757S	86757	-	-	86757
<b>7° Steel Retainer 5/16</b>	87006S (8mm)	87046	87006S (8mm)	87006S (8mm)	-	87044	87047 +.050*
<b>7° Steel Retainer 11/32</b>	87036 or 86757S	-	87036	87036	-	-	87050 or 86757S
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-	87021 Buick 11°	-
<b>Steel Retainer 10°</b>	-	-	-	-	-	-	-
<b>Seat Cup</b>	68923	68923	-	-	-	-	-
<b>Seat Disc</b>	68948	-	68948	68948	-	-	68941A



**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.385/1.060	1.400/1.045	1.405/1.055	1.430/1.040	1.440/1.050	1.440/1.070
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	1.050/800	1.040/770	1.045/780	-	.975/700	1.085/811
<b>Installed Height</b>	1.650	1.700	1.600	1.650	1.800	1.800
<b>Rate</b>	258	382	338	367	450	324
<b>Part #</b>	<b>68324</b>	<b>68405</b>	<b>68404</b>	<b>68305X1</b>	<b>68390X3</b>	<b>68100X200</b>
<b>Type</b>	Dual	Dual	Dual	Single	Dual	Dual
<b>Color Code</b>	Orange/Green	Orange/White	Blue/Grey	Grey	Yellow/White	None
<b>Damper</b>	No	No	No	Yes	Yes	No
<b>Free Length</b>	2.150	1.975	1.920	1.900	2.100	2.370
<b>Wire Diameter</b>	.160/.127	.176/.133	.175/.134	0.200	.190/.133	.179/.133
<b>Material</b>	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
<b>2.300</b>	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-
<b>2.000</b>	-	-	-	-	-	-
<b>1.950</b>	-	-	-	-	-	-
<b>1.900</b>	-	-	-	-	76 lbs	83 lbs
<b>1.850</b>	-	-	-	-	96 lbs	94 lbs
<b>1.800</b>	-	76 lbs	-	-	116 lbs	107 lbs
<b>1.750</b>	86 lbs	92 lbs	-	51 lbs	136 lbs	121 lbs
<b>1.720</b>	-	-	-	-	-	-
<b>1.700</b>	96 lbs	110 lbs	82 lbs	68 lbs	156 lbs	134 lbs
<b>1.650</b>	108 lbs	129 lbs	96 lbs	84 lbs	175 lbs	147 lbs
<b>1.600</b>	118 lbs	146 lbs	113 lbs	101 lbs	194 lbs	161 lbs
<b>1.550</b>	129 lbs	165 lbs	128 lbs	116 lbs	215 lbs	175 lbs
<b>1.500</b>	146 lbs	184 lbs	143 lbs	138 lbs	238 lbs	190 lbs
<b>1.450</b>	161 lbs	204 lbs	157 lbs	156 lbs	261 lbs	205 lbs
<b>1.420</b>	-	-	-	-	-	-
<b>1.400</b>	172 lbs	221 lbs	177 lbs	174 lbs	284 lbs	221 lbs
<b>1.350</b>	186 lbs	240 lbs	192 lbs	191 lbs	307 lbs	238 lbs
<b>1.300</b>	197 lbs	258 lbs	208 lbs	210 lbs	331 lbs	255 lbs
<b>1.250</b>	211 lbs	278 lbs	225 lbs	229 lbs	355 lbs	274 lbs
<b>1.200</b>	227 lbs	297 lbs	244 lbs	250 lbs	389 lbs	291 lbs
<b>1.150</b>	240 lbs	316 lbs	263 lbs	268 lbs	-	309 lbs
<b>1.100</b>	254 lbs	338 lbs	282 lbs	-	-	330 lbs
<b>1.050</b>	269 lbs	360 lbs	302 lbs	-	-	-
<b>1.000</b>	283 lbs	380 lbs	319 lbs	-	-	-
<b>0.950</b>	-	-	-	-	-	-
<b>Coil Bind</b>	0.910	0.980	0.950	1.050	1.110	1.030
<b>Retainers</b>	-	-	-	-	-	-
<b>7° Titanium Retainer</b>	86033	87040	87040	87040	86033	86033
<b>7° Titanium Retainer</b>	87041	-	-	-	87041	87041
<b>7° Titanium Ret 3/8</b>	87042	87042	87042	87042	87042	87042
<b>Titanium Ret 10°</b>	86067M	-	-	86067C	86067M	87065
<b>Titanium Super 7°</b>	-	-	86771	-	86767M	86767M
<b>7° Steel Retainer 5/16</b>	87044	87044	87044	87044	87047	87047
<b>7° Steel Retainer 11/32</b>	87050	87050	87050	87050	87048	87062
<b>7° Steel Retainer 3/8</b>	87049	87049	87049	87049	87049	87063
<b>Steel Retainer 10°</b>	87060M	-	87060M	-	87060M	87060
<b>Seat Cup</b>	-	68930	68930	68930 or 68951	68931	68931
<b>Seat Disc</b>	68943	68938 or 68940	68938 or 68940	-	68941A or 68941	68943

<b>O.D./I.D. Outer</b>	1.440/1.085	1.440/1.190	1.450/1.065	1.455/.975	1.455/1.050	1.460/1.070	1.460/1.060
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	1.075/.795	.995/.745	.975/.705	-	-	.975/.710	.975/.710
<b>Installed Height</b>	1.850	2.050	1.900	1.850	1.700	1.800	1.800
<b>Rate</b>	340	382	463	300	350	483	456
<b>Part #</b>	<b>68100X209</b>	<b>68439</b>	<b>68382</b>	<b>68313</b>	<b>68314</b>	<b>68390X2</b>	<b>68380X2</b>
<b>Type</b>	Dual	Conical	Dual	Single	Single	Dual	Dual
<b>Color Code</b>	None	None	Purple/Orange	None	None	2 Yellow	Blue/Yellow
<b>Damper</b>	No	No	Yes	Yes	Yes	Yes	Yes
<b>Free Length</b>	2.360	2.540	2.220	2.250	2.050	2.100	2.220
<b>Wire Diameter</b>	.178/.140	.219/.179	.198/.133	.193	-	.198/.133	.200/.130
<b>Material</b>	Silicone	-	Silicone	-	-	Silicone	Silicone
<b>2.300</b>	-	-	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-
<b>2.100</b>	-	-	-	-	-	-	-
<b>2.050</b>	-	-	-	-	-	-	-
<b>2.000</b>	-	151 lbs	91 lbs	-	-	-	-
<b>1.950</b>	135 lbs	169 lbs	110 lbs	-	-	48 lbs	-
<b>1.900</b>	150 lbs	188 lbs	137 lbs	-	-	69 lbs	152 lbs
<b>1.850</b>	166 lbs	206 lbs	159 lbs	104 lbs	-	90 lbs	173 lbs
<b>1.800</b>	182 lbs	224 lbs	179 lbs	118 lbs	67 lbs	113 lbs	197 lbs
<b>1.750</b>	197 lbs	244 lbs	201 lbs	132 lbs	86 lbs	134 lbs	218 lbs
<b>1.720</b>	-	-	-	-	-	-	-
<b>1.700</b>	212 lbs	263 lbs	221 lbs	147 lbs	101 lbs	156 lbs	241 lbs
<b>1.650</b>	229 lbs	284 lbs	246 lbs	162 lbs	118 lbs	187 lbs	263 lbs
<b>1.600</b>	245 lbs	303 lbs	269 lbs	176 lbs	136 lbs	208 lbs	283 lbs
<b>1.550</b>	262 lbs	324 lbs	292 lbs	190 lbs	151 lbs	231 lbs	308 lbs
<b>1.500</b>	279 lbs	344 lbs	315 lbs	207 lbs	168 lbs	254 lbs	328 lbs
<b>1.450</b>	296 lbs	368 lbs	341 lbs	222 lbs	185 lbs	278 lbs	353 lbs
<b>1.420</b>	-	-	-	-	-	-	-
<b>1.400</b>	314 lbs	392 lbs	364 lbs	238 lbs	203 lbs	302 lbs	377 lbs
<b>1.350</b>	331 lbs	416 lbs	391 lbs	254 lbs	220 lbs	325 lbs	399 lbs
<b>1.300</b>	349 lbs	440 lbs	415 lbs	271 lbs	238 lbs	349 lbs	424 lbs
<b>1.250</b>	368 lbs	465 lbs	443 lbs	288 lbs	257 lbs	377 lbs	446 lbs
<b>1.200</b>	388 lbs	-	477 lbs	305 lbs	276 lbs	408 lbs	470 lbs
<b>1.150</b>	-	-	-	322 lbs	298 lbs	439 lbs	-
<b>1.100</b>	-	-	-	-	318 lbs	-	-
<b>1.050</b>	-	-	-	-	-	-	-
<b>1.000</b>	-	-	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-	-	-
<b>Coil Bind</b>	1.110	1.180	1.115	1.085	1.030	1.070	1.110
<b>Retainers</b>	-	-	-	-	-	-	-
<b>7° Titanium Retainer</b>	86033	-	86033	87040	87040	86033	86033
<b>7° Titanium Retainer</b>	87041	-	87041	-	-	87041	87041
<b>7° Titanium Ret 3/8</b>	-	-	87042	87042	87042	87042	87042
<b>Titanium Ret 10°</b>	87065	-	86067M	86067A	86067C	86067M	86067M
<b>Titanium Super 7°</b>	86767M	-	86767M	-	-	86767M	86767M
<b>7° Steel Retainer 5/16</b>	-	-	87047	87044	87044	87047	87047
<b>7° Steel Retainer 11/32</b>	87062	-	87048	87050	87050	87050	87050
<b>7° Steel Retainer 3/8</b>	87063	-	87049	87049	87039	87049	87049
<b>Steel Retainer 10°</b>	87060	-	87060M	-	-	87060M	87060M
<b>Seat Cup</b>	68931	68934	68934	68931	-	68931	68931
<b>Seat Disc</b>	68938 or 68940	-	68941A	-	-	68941A	68941A

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.475/1.075	1.490/1.120
<b>O.D./I.D. Middle</b>	-	-
<b>O.D./I.D. Inner</b>	1.070/.750	-
<b>Installed Height</b>	1.800	1.850
<b>Rate</b>	538	250
<b>Part #</b>	<b>68501</b>	<b>68140</b>
<b>Type</b>	Dual	Single
<b>Color Code</b>	Lavender/Yellow	Green
<b>Damper</b>	No	Yes
<b>Free Length</b>	2.225	2.300
<b>Wire Diameter</b>	.200/.155	0.190
<b>Material</b>	H11 Vasco	Silicone
<b>2.300</b>	-	-
<b>2.250</b>	-	-
<b>2.200</b>	-	-
<b>2.150</b>	-	-
<b>2.100</b>	-	-
<b>2.050</b>	-	-
<b>2.000</b>	-	-
<b>1.950</b>	-	79 lbs
<b>1.900</b>	171 lbs	90 lbs
<b>1.850</b>	204 lbs	102 lbs
<b>1.800</b>	230 lbs	113 lbs
<b>1.750</b>	254 lbs	126 lbs
<b>1.720</b>	-	-
<b>1.700</b>	280 lbs	139 lbs
<b>1.650</b>	308 lbs	151 lbs
<b>1.600</b>	334 lbs	162 lbs
<b>1.550</b>	362 lbs	175 lbs
<b>1.500</b>	390 lbs	187 lbs
<b>1.450</b>	417 lbs	199 lbs
<b>1.420</b>	-	-
<b>1.400</b>	443 lbs	212 lbs
<b>1.350</b>	472 lbs	227 lbs
<b>1.300</b>	499 lbs	242 lbs
<b>1.250</b>	525 lbs	257 lbs
<b>1.200</b>	-	274 lbs
<b>1.150</b>	-	-
<b>1.100</b>	-	-
<b>1.050</b>	-	-
<b>1.000</b>	-	-
<b>0.950</b>	-	-
<b>Coil Bind</b>	1.180	1.100
<b>Retainers</b>	-	-
<b>7° Titanium Retainer</b>	86033	-
<b>7° Titanium Retainer</b>	87041	-
<b>7° Titanium Ret 3/8</b>	-	-
<b>Titanium Ret 10°</b>	86067M	86067
<b>Titanium Super 7°</b>	86767M	86754
<b>7° Steel Retainer 5/16</b>	87044	-
<b>7° Steel Retainer 11/32</b>	87062	87054
<b>7° Steel Retainer 3/8</b>	87053	87053
<b>Steel Retainer 10°</b>	87060M	87055
<b>Seat Cup</b>	68957	68957
<b>Seat Disc</b>	68938 • 940 • 942	-

<b>O.D./I.D. Outer</b>	1.500/1.050	1.500/1.050	1.500/1.050
<b>O.D./I.D. Middle</b>	-	-	-
<b>O.D./I.D. Inner</b>	.726	.726	.726
<b>Installed Height</b>	2.175	2.100	2.150
<b>Rate</b>	780	780	780
<b>Part #</b>	<b>68855</b>	<b>68856</b>	<b>68857</b>
<b>Type</b>	Dual	Dual	Dual
<b>Color Code</b>	-	-	-
<b>Damper</b>	Yes	Yes	Yes
<b>Free Length</b>	-	-	-
<b>Wire Diameter</b>	-	-	-
<b>Material</b>	Super Clean Silicone	Super Clean Silicone	Super Clean Silicone
<b>2.175</b>	420 lbs	-	-
<b>2.150</b>	-	-	375 lbs
<b>2.100</b>	-	300 lbs	-
<b>2.050</b>	-	-	-
<b>2.000</b>	-	-	-
<b>1.950</b>	-	-	-
<b>1.900</b>	-	-	-
<b>1.850</b>	-	-	-
<b>1.800</b>	-	-	-
<b>1.750</b>	-	-	-
<b>1.720</b>	-	-	-
<b>1.700</b>	-	-	-
<b>1.675</b>	810 lbs	-	-
<b>1.650</b>	-	650 lbs	765 lbs
<b>1.600</b>	-	-	-
<b>1.550</b>	-	-	-
<b>1.500</b>	-	-	-
<b>1.450</b>	-	-	-
<b>1.420</b>	1005 lbs	-	-
<b>1.400</b>	-	885 lbs	960 lbs
<b>1.350</b>	-	-	-
<b>1.300</b>	-	-	-
<b>1.250</b>	-	-	-
<b>1.200</b>	-	1080 lbs	1116 lbs
<b>1.175</b>	1200 lbs	-	-
<b>1.150</b>	-	-	-
<b>1.100</b>	-	-	-
<b>1.050</b>	-	-	-
<b>1.000</b>	-	-	-
<b>0.950</b>	-	-	-
<b>Coil Bind</b>	1.130	1.130	1.130
<b>Retainers</b>	-	-	-
<b>7° Titanium Retainer</b>	-	-	-
<b>7° Titanium Retainer</b>	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-
<b>Titanium Ret 10°</b>	-	-	-
<b>Titanium Super 7°</b>	86784 or 86785	86784 or 86785	86784 or 86785
<b>7° Steel Retainer 5/16</b>	-	-	-
<b>7° Steel Retainer 11/32</b>	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-
<b>Steel Retainer 10°</b>	-	-	-
<b>Seat Cup</b>	68941A-16	68941A-16	68941A-16
<b>Seat Disc</b>	-	-	-

<b>O.D./I.D. Outer</b>	1.500/1.120	1.505/.990	1.505/1.130	1.525/1.120	1.525/1.125
<b>O.D./I.D. Middle</b>	-	-	-	-	-
<b>O.D./I.D. Inner</b>	1.030/.755	-	1.085/.805	1.015/.745	1.030/.750
<b>Installed Height</b>	1.900	1.850	1.900	1.950	1.900
<b>Rate</b>	452	342	353	500	432
<b>Part #</b>	<b>68340</b>	<b>68302X2</b>	<b>68101X202</b>	<b>68725</b>	<b>68385X2</b>
<b>Type</b>	Dual	Single	Dual	Dual	Dual
<b>Color Code</b>	Green	Green/White	None	Gold/White	Purple
<b>Damper</b>	Yes	Yes	No	Yes	Yes
<b>Free Length</b>	2.270	2.170	2.390	2.370	2.330
<b>Wire Diameter</b>	.191/.141	0.204	.192/.148	.205/.133	.198/.141
<b>Material</b>	Silicone	Silicone	Silicone	Super Clean Silicone	Silicone
<b>2.175</b>	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-
<b>2.100</b>	-	-	-	129 lbs	-
<b>2.050</b>	-	-	-	151 lbs	-
<b>2.000</b>	-	-	116 lbs	168 lbs	123 lbs
<b>1.950</b>	100 lbs	61 lbs	131 lbs	194 lbs	144 lbs
<b>1.900</b>	118 lbs	77 lbs	146 lbs	215 lbs	166 lbs
<b>1.850</b>	143 lbs	91 lbs	162 lbs	242 lbs	187 lbs
<b>1.800</b>	165 lbs	107 lbs	178 lbs	264 lbs	207 lbs
<b>1.750</b>	184 lbs	121 lbs	194 lbs	287 lbs	228 lbs
<b>1.720</b>	-	-	-	-	-
<b>1.700</b>	206 lbs	136 lbs	211 lbs	311 lbs	249 lbs
<b>1.675</b>	-	-	-	-	-
<b>1.650</b>	228 lbs	150 lbs	229 lbs	334 lbs	269 lbs
<b>1.600</b>	249 lbs	164 lbs	249 lbs	359 lbs	291 lbs
<b>1.550</b>	271 lbs	179 lbs	268 lbs	385 lbs	310 lbs
<b>1.500</b>	293 lbs	194 lbs	287 lbs	408 lbs	333 lbs
<b>1.450</b>	313 lbs	211 lbs	304 lbs	444 lbs	353 lbs
<b>1.420</b>	-	-	-	-	-
<b>1.400</b>	336 lbs	229 lbs	323 lbs	463 lbs	375 lbs
<b>1.350</b>	359 lbs	250 lbs	342 lbs	498 lbs	398 lbs
<b>1.300</b>	384 lbs	270 lbs	363 lbs	525 lbs	422 lbs
<b>1.250</b>	407 lbs	292 lbs	383 lbs	556 lbs	445 lbs
<b>1.200</b>	437 lbs	-	-	-	469 lbs
<b>1.175</b>	-	-	-	-	-
<b>1.150</b>	477 lbs	-	-	-	-
<b>1.100</b>	-	-	-	-	-
<b>1.050</b>	-	-	-	-	-
<b>1.000</b>	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-
<b>Coil Bind</b>	1.080	1.150	1.140	1.150	1.100
<b>Retainers</b>	-	-	-	-	-
<b>7° Titanium Retainer</b>	-	86033	-	-	-
<b>7° Titanium Retainer</b>	-	87041	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-
<b>Titanium Ret 10°</b>	86067	86067M	86067B	86067D	86067B
<b>Titanium Super 7°</b>	86767	86767M	86781	86767	-
<b>7° Steel Retainer 5/16</b>	87044	87047	-	-	-
<b>7° Steel Retainer 11/32</b>	87062	87062	87054	-	-
<b>7° Steel Retainer 3/8</b>	87053	87063	87053	-	87053
<b>Steel Retainer 10°</b>	87055	87060	87055	87055M	87055
<b>Seat Cup</b>	68936	68936	68936	68933	68933
<b>Seat Disc</b>	68938 or 68940	-	68943	68938 or 68940	68938 or 68940

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.530/1.125	1.540/1.100	1.550/1.130	1.550/1.135	1.550/1.140	1.550/1.050	1.555/1.155
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	1.000/.745	.990/.720	1.025/.735	.812	1.035/.755	0.790	0.726
<b>Installed Height</b>	1.950	1.900	1.900	1.850	1.950	1.900	2.300
<b>Rate</b>	501	671	502	550	473	459	1015
<b>Part #</b>	<b>68705</b>	<b>68670S</b>	<b>68804H</b>	<b>68543</b>	<b>68369</b>	<b>68363</b>	<b>68854</b>
<b>Type</b>	Dual	Dual	Dual	Dual	Dual	Dual	Dual
<b>Color Code</b>	Gold/Pink	Lt. Purple	None	None	Yellow/Purple	Blue/Purple	-
<b>Damper</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
<b>Free Length</b>	2.360	2.180	2.500	-	2.460	2.430	-
<b>Wire Diameter</b>	.205/.134	.220/.136	.202/.140	-	.207/.140	.206/.133	-
<b>Material</b>	Super Clean Silicone	H11 Vasco	Super Clean Silicone	-	Silicone	Silicone	Super Clean Silicone
<b>2.300</b>	-	-	-	-	-	-	425
<b>2.250</b>	-	-	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-	-	-
<b>2.100</b>	95 lbs	-	-	-	-	-	-
<b>2.050</b>	115 lbs	-	-	-	173 lbs	-	-
<b>2.000</b>	134 lbs	129 lbs	-	-	192 lbs	172 lbs	-
<b>1.950</b>	160 lbs	164 lbs	-	-	215 lbs	194 lbs	-
<b>1.900</b>	183 lbs	196 lbs	246 lbs	240 lbs	236 lbs	212 lbs	-
<b>1.850</b>	205 lbs	227 lbs	270 lbs	262 lbs	260 lbs	233 lbs	-
<b>1.800</b>	227 lbs	262 lbs	293 lbs	295 lbs	281 lbs	254 lbs	932 lbs
<b>1.750</b>	250 lbs	292 lbs	317 lbs	314 lbs	301 lbs	273 lbs	-
<b>1.700</b>	273 lbs	324 lbs	340 lbs	337 lbs	322 lbs	294 lbs	-
<b>1.650</b>	297 lbs	354 lbs	364 lbs	363 lbs	345 lbs	315 lbs	-
<b>1.600</b>	320 lbs	385 lbs	387 lbs	386 lbs	366 lbs	335 lbs	-
<b>1.550</b>	345 lbs	418 lbs	416 lbs	414 lbs	390 lbs	356 lbs	1186 lbs
<b>1.500</b>	370 lbs	451 lbs	442 lbs	442 lbs	413 lbs	380 lbs	-
<b>1.450</b>	396 lbs	482 lbs	470 lbs	472 lbs	437 lbs	403 lbs	-
<b>1.400</b>	422 lbs	517 lbs	497 lbs	502 lbs	462 lbs	429 lbs	-
<b>1.350</b>	451 lbs	549 lbs	526 lbs	532 lbs	489 lbs	457 lbs	-
<b>1.300</b>	479 lbs	582 lbs	554 lbs	570 lbs	515 lbs	484 lbs	1440 lbs
<b>1.250</b>	511 lbs	617 lbs	583 lbs	-	546 lbs	515 lbs	-
<b>1.200</b>	548 lbs	654 lbs	611 lbs	625 lbs	584 lbs	560 lbs	-
<b>1.150</b>	-	694 lbs	641 lbs	651 lbs	-	-	-
<b>1.100</b>	-	734 lbs	-	-	-	-	-
<b>1.050</b>	-	-	-	-	-	-	-
<b>1.000</b>	-	-	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-	-	-
<b>Coil Bind</b>	1.125	1.010	1.095	1.100	1.100	1.100	1.230
<b>Retainers</b>	-	-	-	-	-	-	-
<b>7° Titanium Retainer</b>	-	-	-	-	-	-	-
<b>7° Titanium Retainer</b>	-	-	-	-	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	87063M	-	-	-	-
<b>Titanium Ret 10°</b>	86067D	86067	86067D	-	86067B	86067C	-
<b>Titanium Super 7°</b>	86767	86767	86781	86781	86781	86784	86784 or 86785
<b>7° Steel Retainer 5/16</b>	-	-	-	-	-	-	-
<b>7° Steel Retainer 11/32</b>	-	-	-	-	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-	-	87053	87053	-
<b>Steel Retainer 10°</b>	87055M	87055	87055	-	87055M	87055M	-
<b>Seat Cup</b>	68933	68953X1	68953X1	-	68953X1	68953X1	68941A-16
<b>Seat Disc</b>	68938 or 68940	68939 or 68941A	68938/68940	68943	68938 or 68940	68938 or 68940	-

<b>O.D./I.D. Outer</b>	1.560/1.115	1.560/1.140	1.560/1.150	1.560/1.145	1.560/1.145	1.560/1.145	1.565/1.140
<b>O.D./I.D. Middle</b>	-	-	-	-	-	-	-
<b>O.D./I.D. Inner</b>	1.000/.725	1.140/.830	1.040/.745	1.040/.745	1.040/.745	1.040/.745	1.035/.740
<b>Installed Height</b>	2.100	2.000	2.000	2.000	2.000	2.000	2.000
<b>Rate</b>	600	489	516	508	521	546	640
<b>Part #</b>	<b>68803H</b>	<b>68735</b>	<b>68765</b>	<b>68775</b>	<b>68785</b>	<b>68795</b>	<b>68671</b>
<b>Type</b>	Dual	Dual	Dual	Dual	Dual	Dual	Dual
<b>Color Code</b>	-	Gold	Gold/Green	Gold/Orange	Gold/Lt. Blue	Gold/Yellow	None
<b>Damper</b>	Yes	No	Yes	Yes	Yes	Yes	Yes
<b>Free Length</b>	2.560	2.540	2.550	2.520	2.620	2.620	2.440
<b>Wire Diameter</b>	.221/.138	.205/.162	.206/.148	.206/.147	.206/.147	.210/.147	.219/.148
<b>Material</b>		Super Clean Silicone	Super Clean Silicone	Super Clean Silicone	Super Clean Silicone	Super Clean Silicone	H11 Vasco
<b>2.300</b>		-	-	-	-	-	-
<b>2.250</b>		-	-	-	-	-	-
<b>2.200</b>		-	-	-	-	-	-
<b>2.150</b>		-	-	-	-	-	-
<b>2.100</b>	248 lbs	178 lbs	182 lbs	196 lbs	203 lbs	237 lbs	174 lbs
<b>2.050</b>	279 lbs	199 lbs	208 lbs	217 lbs	226 lbs	262 lbs	205 lbs
<b>2.000</b>	307 lbs	220 lbs	229 lbs	237 lbs	244 lbs	284 lbs	233 lbs
<b>1.950</b>	340 lbs	244 lbs	253 lbs	262 lbs	274 lbs	310 lbs	263 lbs
<b>1.900</b>	371 lbs	267 lbs	277 lbs	284 lbs	298 lbs	335 lbs	291 lbs
<b>1.850</b>	399 lbs	291 lbs	302 lbs	310 lbs	322 lbs	359 lbs	322 lbs
<b>1.800</b>	429 lbs	314 lbs	326 lbs	333 lbs	352 lbs	381 lbs	351 lbs
<b>1.750</b>	460 lbs	337 lbs	352 lbs	359 lbs	376 lbs	408 lbs	379 lbs
<b>1.700</b>	490 lbs	361 lbs	375 lbs	381 lbs	399 lbs	431 lbs	411 lbs
<b>1.650</b>	515 lbs	384 lbs	400 lbs	406 lbs	423 lbs	457 lbs	441 lbs
<b>1.600</b>	548 lbs	407 lbs	426 lbs	431 lbs	448 lbs	485 lbs	475 lbs
<b>1.550</b>	584 lbs	438 lbs	453 lbs	456 lbs	469 lbs	510 lbs	507 lbs
<b>1.500</b>	618 lbs	464 lbs	481 lbs	481 lbs	494 lbs	538 lbs	537 lbs
<b>1.450</b>	652 lbs	490 lbs	508 lbs	508 lbs	532 lbs	567 lbs	577 lbs
<b>1.400</b>	688 lbs	516 lbs	535 lbs	536 lbs	560 lbs	595 lbs	610 lbs
<b>1.350</b>	726 lbs	543 lbs	568 lbs	565 lbs	589 lbs	627 lbs	648 lbs
<b>1.300</b>	765 lbs	568 lbs	595 lbs	593 lbs	621 lbs	660 lbs	678 lbs
<b>1.250</b>	807 lbs	595 lbs	634 lbs	628 lbs	654 lbs	699 lbs	718 lbs
<b>1.200</b>	871 lbs	-	-	-	-	-	752 lbs
<b>1.150</b>		-	-	-	-	-	-
<b>1.100</b>		-	-	-	-	-	-
<b>1.050</b>		-	-	-	-	-	-
<b>1.000</b>		-	-	-	-	-	-
<b>0.950</b>		-	-	-	-	-	-
<b>Coil Bind</b>	1.140	1.150	1.150	1.160	1.160	1.160	1.110
<b>Retainers</b>		-	-	-	-	-	-
<b>7° Titanium Retainer</b>		-	-	-	-	-	-
<b>7° Titanium Retainer</b>		-	-	-	-	-	-
<b>7° Titanium Ret 3/8</b>		-	-	-	-	-	-
<b>Titanium Ret 10°</b>	86067D	-	86067D	86067D	86067D	86067D	86067
<b>Titanium Super 7°</b>	86785	86781	86781	86781	86781	86781	86781
<b>7° Steel Retainer 5/16</b>		-	-	-	-	-	-
<b>7° Steel Retainer 11/32</b>		-	-	-	-	-	-
<b>7° Steel Retainer 3/8</b>		-	-	-	-	-	-
<b>Steel Retainer 10°</b>	87055M	-	87064	87064	87064	87064	87055
<b>Seat Cup</b>	68953X1	68953X1	68953X1	68953X1	68953X1	68953X1	-
<b>Seat Disc</b>	68941A	68943	68938 or 68940	68938 or 68940	68938 or 68940	68938 or 68940	68938, 68940, 68942

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.590/1.145	1.600/1.170	1.600/1.170	1.600/1.175	1.610/1.215
<b>O.D./I.D. Middle</b>	-	-	-	-	1.205/.890
<b>O.D./I.D. Inner</b>	1.025/.735	1.060/.765	1.055/.760	1.160/.850	.890/.665
<b>Installed Height</b>	2.050	2.050	2.050	2.100	1.850
<b>Rate</b>	617	547	604	552	514
<b>Part #</b>	<b>68808</b>	<b>68805</b>	<b>68806</b>	<b>68844</b>	<b>68694</b>
<b>Type</b>	Dual	Dual	Dual	Dual	Triple
<b>Color Code</b>	Red/Purple	Red/Blue	Red/Purple	Yellow	None
<b>Damper</b>	Yes	Yes	Yes	No	No
<b>Free Length</b>	2.515	2.630	2.552	2.554	2.440
<b>Wire Diameter</b>	.219/.148	.218/.148	.225/.147	.221/.155	.199/.155/.112
<b>Material</b>	Super Clean Silicone	Super Clean Silicone	Super Clean Silicone	Super Clean Silicone	Silicone
<b>2.300</b>	-	-	-	-	-
<b>2.250</b>	-	-	-	-	-
<b>2.200</b>	-	-	-	-	-
<b>2.150</b>	-	-	-	-	-
<b>2.100</b>	228 lbs	233 lbs	227 lbs	229 lbs	-
<b>2.050</b>	261 lbs	258 lbs	255 lbs	253 lbs	-
<b>2.000</b>	295 lbs	280 lbs	279 lbs	276 lbs	-
<b>1.950</b>	315 lbs	305 lbs	306 lbs	305 lbs	161 lbs
<b>1.900</b>	347 lbs	329 lbs	331 lbs	331 lbs	181 lbs
<b>1.850</b>	375 lbs	353 lbs	356 lbs	357 lbs	203 lbs
<b>1.800</b>	403 lbs	379 lbs	382 lbs	384 lbs	226 lbs
<b>1.750</b>	433 lbs	406 lbs	410 lbs	409 lbs	250 lbs
<b>1.700</b>	465 lbs	431 lbs	440 lbs	435 lbs	273 lbs
<b>1.650</b>	493 lbs	461 lbs	469 lbs	462 lbs	305 lbs
<b>1.600</b>	525 lbs	489 lbs	498 lbs	489 lbs	329 lbs
<b>1.550</b>	553 lbs	516 lbs	529 lbs	516 lbs	355 lbs
<b>1.500</b>	583 lbs	544 lbs	559 lbs	544 lbs	380 lbs
<b>1.450</b>	615 lbs	574 lbs	593 lbs	572 lbs	404 lbs
<b>1.400</b>	650 lbs	603 lbs	626 lbs	601 lbs	431 lbs
<b>1.350</b>	684 lbs	633 lbs	661 lbs	626 lbs	456 lbs
<b>1.300</b>	720 lbs	663 lbs	696 lbs	660 lbs	494 lbs
<b>1.250</b>	755 lbs	695 lbs	733 lbs	-	519 lbs
<b>1.200</b>	-	-	-	-	545 lbs
<b>1.150</b>	-	-	-	-	572 lbs
<b>1.100</b>	-	-	-	-	-
<b>1.050</b>	-	-	-	-	-
<b>1.000</b>	-	-	-	-	-
<b>0.950</b>	-	-	-	-	-
<b>Coil Bind</b>	1.170	1.180	1.160	1.210	1.050
<b>RETAINERS</b>	-	-	-	-	-
<b>7° Titanium Retainer</b>	-	-	-	-	-
<b>7° Titanium Retainer</b>	-	-	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-	-
<b>Titanium Ret 10°</b>	86067	86068	86068	86068	86069
<b>Titanium Super 7°</b>	86781	86780	86780	86780	-
<b>7° Steel Retainer 5/16</b>	-	-	-	-	-
<b>7° Steel Retainer 11/32</b>	-	-	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-	-	-
<b>Steel Retainer 10°</b>	-	87056	87056	-	87056
<b>Seat Cup</b>	68955	68955	68955	68955	68955
<b>Seat Disc</b>	68938/68940	68938/68940	68938/68940	68943	68939 or 68941



<b>O.D./I.D. Outer</b>	1.615/1.175	1.625/1.175	1.630/1.190	1.630/1.180
<b>O.D./I.D. Middle</b>	-	-	-	-
<b>O.D./I.D. Inner</b>	1.060/.775	1.075/.770	1.050/.760	1.050/.750
<b>Installed Height</b>	2.100	2.000	1.900	2.000
<b>Rate</b>	530	595	704	666
<b>Part #</b>	<b>68755</b>	<b>68745</b>	<b>68555X2</b>	<b>68555X1</b>
<b>Type</b>	Dual	Dual	Dual	Dual
<b>Color Code</b>	Gold	Gold/White	Pink/Red	Red
<b>Damper</b>	Yes	Yes	Yes	Yes
<b>Free Length</b>	2.665	2.520	2.240	2.400
<b>Wire Diameter</b>	.225/.147	.225/.147	.227/.147	.226/.149
<b>Material</b>	Super Clean Silicone	Super Clean Silicone	H11 Vasco	H11 Vasco
<b>2.300</b>	-	-	-	-
<b>2.250</b>	-	-	-	-
<b>2.200</b>	234 lbs	-	-	-
<b>2.150</b>	261 lbs	-	-	-
<b>2.100</b>	287 lbs	203 lbs	-	176 lbs
<b>2.050</b>	312 lbs	227 lbs	-	206 lbs
<b>2.000</b>	336 lbs	253 lbs	155 lbs	239 lbs
<b>1.950</b>	361 lbs	282 lbs	188 lbs	273 lbs
<b>1.900</b>	388 lbs	307 lbs	219 lbs	305 lbs
<b>1.850</b>	414 lbs	333 lbs	254 lbs	336 lbs
<b>1.800</b>	442 lbs	361 lbs	285 lbs	371 lbs
<b>1.750</b>	466 lbs	389 lbs	318 lbs	409 lbs
<b>1.700</b>	491 lbs	423 lbs	348 lbs	441 lbs
<b>1.650</b>	521 lbs	452 lbs	380 lbs	474 lbs
<b>1.600</b>	548 lbs	481 lbs	410 lbs	510 lbs
<b>1.550</b>	578 lbs	510 lbs	442 lbs	542 lbs
<b>1.500</b>	610 lbs	542 lbs	477 lbs	571 lbs
<b>1.450</b>	640 lbs	575 lbs	513 lbs	605 lbs
<b>1.400</b>	671 lbs	609 lbs	551 lbs	640 lbs
<b>1.350</b>	706 lbs	643 lbs	590 lbs	674 lbs
<b>1.300</b>	738 lbs	680 lbs	630 lbs	705 lbs
<b>1.250</b>	-	713 lbs	670 lbs	745 lbs
<b>1.200</b>	-	-	712 lbs	770 lbs
<b>1.150</b>	-	-	765 lbs	817 lbs
<b>1.100</b>	-	-	807 lbs	870 lbs
<b>1.050</b>	-	-	-	-
<b>1.000</b>	-	-	-	-
<b>0.950</b>	-	-	-	-
<b>Coil Bind</b>	1.190	1.150	1.020	1.020
<b>RETAINERS</b>	-	-	-	-
<b>7° Titanium Retainer</b>	-	-	-	-
<b>7° Titanium Retainer</b>	-	-	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-	-
<b>Titanium Ret 10°</b>	86068	86068	86068	-
<b>Titanium Super 7°</b>	86780	86780	86780	86780
<b>7° Steel Retainer 5/16</b>	-	-	-	-
<b>7° Steel Retainer 11/32</b>	-	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-	-
<b>Steel Retainer 10°</b>	-	87056	87056	87056
<b>Seat Cup</b>	68955	68955	68955	68955
<b>Seat Disc</b>	68938 or 68940	68938 or 68940	68938 or 68940	68938 or 68940

**VALVE SPRING SPECIFICATIONS –  
Listed According to O.D.**

# Valve Springs

<b>O.D./I.D. Outer</b>	1.635/1.190	1.650/1.205	1.650/1.205
<b>O.D./I.D. Middle</b>	-	1.195/.880	1.200/.880
<b>O.D./I.D. Inner</b>	1.185/.874	.880/.640	.875/.640
<b>Installed Height</b>	2.050	2.100	2.200
<b>Rate</b>	646	687	692
<b>Part #</b>	<b>68860</b>	<b>68547</b>	<b>68548</b>
<b>Type</b>	Dual	Triple	Triple
<b>Color Code</b>	Blue	Red/Purple	Red/Purple
<b>Damper</b>	No	No	No
<b>Free Length</b>	2.470	2.520	2.620
<b>Wire Diameter</b>	.223/.162	.215/.162/.119	.215/.162/.119
<b>Material</b>	Super Clean Silicone	Super Clean Silicone	Super Clean Silicone
<b>2.300</b>	-	-	-
<b>2.250</b>	-	-	-
<b>2.200</b>	-	-	279 lbs
<b>2.150</b>	-	255 lbs	312 lbs
<b>2.100</b>	206 lbs	287 lbs	343 lbs
<b>2.050</b>	236 lbs	321 lbs	375 lbs
<b>2.000</b>	257 lbs	351 lbs	405 lbs
<b>1.950</b>	287 lbs	380 lbs	439 lbs
<b>1.900</b>	316 lbs	416 lbs	470 lbs
<b>1.850</b>	350 lbs	448 lbs	502 lbs
<b>1.800</b>	381 lbs	480 lbs	534 lbs
<b>1.750</b>	411 lbs	512 lbs	570 lbs
<b>1.700</b>	442 lbs	541 lbs	602 lbs
<b>1.650</b>	472 lbs	580 lbs	636 lbs
<b>1.600</b>	504 lbs	610 lbs	667 lbs
<b>1.550</b>	537 lbs	645 lbs	705 lbs
<b>1.500</b>	567 lbs	679 lbs	740 lbs
<b>1.450</b>	599 lbs	715 lbs	772 lbs
<b>1.400</b>	633 lbs	750 lbs	810 lbs
<b>1.350</b>	667 lbs	790 lbs	850 lbs
<b>1.300</b>	702 lbs	825 lbs	890 lbs
<b>1.250</b>	741 lbs	863 lbs	927 lbs
<b>1.200</b>	771 lbs	905 lbs	966 lbs
<b>1.150</b>	818 lbs	947 lbs	1006 lbs
<b>1.100</b>	864 lbs	-	-
<b>1.050</b>	-	-	-
<b>1.000</b>	-	-	-
<b>0.950</b>	-	-	-
<b>Coil Bind</b>	1.010	1.085	1.080
<b>RETAINERS</b>	-	-	-
<b>7° Titanium Retainer</b>	-	-	-
<b>7° Titanium Retainer</b>	86044	-	-
<b>7° Titanium Ret 3/8</b>	-	-	-
<b>Titanium Ret 10°</b>	86068	86069	86069
<b>Titanium Super 7°</b>	86780	86769	86769
<b>7° Steel Retainer 5/16</b>	-	-	-
<b>7° Steel Retainer 11/32</b>	-	-	-
<b>7° Steel Retainer 3/8</b>	-	-	-
<b>Steel Retainer 10°</b>	87056	87056	87056
<b>Seat Cup</b>	68955	68955	68955
<b>Seat Disc</b>	-	-	-



# Valve Spring Accessories



## VALVE STEM SEALS

Crower valve stem seals provide correct oil control at the valve guide. The spring loaded wiper design prevents unwanted oil contamination on the cylinder. Heavy-duty steel and teflon construction.

Part No.	Description	Stem Dia.	I.D.
86070-16	Standard	5/16	.530"
86070T-16	Smaller O.D. (triple spring)	5/16	.500"
86071-16	Standard	3/8	.530"
86071T-16	Smaller O.D. (triple spring)	3/8	.500"
86072-16	Standard	11/32	.530"
86072T-16	Smaller O.D. (triple spring)	11/32	.500"
86072S-16	.5500D Steel/Rubber	11/32	.500"
86080-16	.600 OD Steel/Rubber	8mm	.500"

Also available in singles by replacing -16 with -1.



## LASH CAPS

Crower lash caps protect the ends of your valves from excessive wear and help to correct rocker geometry by increasing rocker arm to retainer clearance. Machined from high grade chromoly steel and heat-treated for added strength, Crower lash caps give your valves an added .080" margin of protection. Highly recommended for performance applications, and a must for costly stainless steel or titanium valves.

Part No.	Description	Depth
86120-16	5/16 valve stem (Set/16)	.090"
86120S-16	5/16 valve stem (Set/16)	.060"
86121-16	11/32 valve stem (Set/16)	.090"
86121D-16	11/32 valve stem (Set/16)	.120"
86121S-16	11/32 valve stem (Set/16)	.060"
86122-16	3/8 valve stem (Set/16)	.090"
86122D-16	3/8 valve stem (Set/16)	.120"
86122S-16	3/8 valve stem (Set/16)	.060"
86123-8	5/16 valve stem VW (Set/8)	.090"
86125-24	6mm valve stem Toyota (Set/24)	.050"
86127-8	11/32 2300cc (Set/8)	.100"
86128-16	7mm Ford 4.6/5.4L (Set/16)	.120"

Also available in singles by replacing -16 with -1.



## BILLET PERFORMANCE 7° VALVE STEM KEEPERS

Crower billet performance valve stem keepers are precision machined from premium billet bar stock chromoly steel. Heat-treated for maximum strength to insure against shoulder shearing (common with stock and lesser quality keepers). In addition to our standard height, we also offer .050" higher and .050" lower to achieve the correct installed spring height. Each variation is color coded for identification. Serious engine builders should have a complete selection on hand at all times.

Color Coded By Installed Height

BLACK (B) = STANDARD • SILVER (S) = +.050" • GOLD (G) = -.050"

Part No.	Stem Dia.	Color Code	Inst. Height
86106-16	5/16	B	Standard
86107-16	11/32	B	Standard
86107X1-16	11/32	S	+.050"
86107X2-16	11/32	G	-.050"
86108-16	3/8	B	Standard
86108X1-16	3/8	S	+.050"
86108X2-16	3/8	G	-.050"
86115-16	5.5mm	N/A	Standard
86115X1-16	5.5mm	N/A	+.050"
86118-16	LS1 8mm Bead lock	N/A	Standard
86118X1-16	LS1 8mm Bead lock	N/A	+.050"
86118X2-16	LS1 8mm Bead lock	N/A	-.050"

## SUPER 7° KEEPERS

Part No.	Stem Dia.	Color Code	Inst. Height
86709-16	5/16	B	Standard
86709X1-16	5/16	S	+.050"
86709X2-16	5/16	G	-.050"
86710-16	11/32	B	Standard
86710X1-16	11/32	S	+.050"
86710X2-16	11/32	G	-.050"

Also available in pairs by replacing -16 with -PR.



## STAMPED STEEL 7° VALVE STEM KEEPERS

Crower valve stem keepers are stamped from the finest grade steel alloy and heat-treated for added strength and wear resistance. Out performs stock keepers.

Part No.	Stem Dia.	Inst. Height
86100-16	11/32	Standard
86102-16	3/8	Standard

Also available in pairs by replacing -16 with -PR.

## TITANIUM KEEPERS

For the ultimate in lightweight performance, Crower billet titanium keepers are CNC machined to insure the best possible keeper.

Part No.	Stem Dia.	Inst. Height	Lock Type	Groove
86115T-16	5.5mm	STD	Std	Square
86117T-16	7mm	STD	Std	Bead
86117X1T-16	7mm	+.050	Std	Bead
86117X2T-16	7mm	-.050	Std	Bead
86117T-16	7mm	STD	Super 7	Bead
86117X1T-16	7mm	+.050	Super 7	Bead
86117X2T-16	7mm	-.050	Super 7	Bead
86109T2-16	5/16	-.050	10 Degree	Square
86709T-16	5/16	STD	Super 7	Square
86709T1-16	5/16	+.050	Super 7	Square
86709T2-16	5/16	-.050	Super 7	Square
86110T2-16	11/32	-.050	10 Degree	Square
86710T-16	11/32	STD	Super 7	Square
86710T2-16	11/32	-.050	Super 7	Square
86710T3-16	11/32	-.100	Super 7	Square



## JUMBO SPLIT-LOCK 10° VALVE STEM KEEPERS

Crower Jumbo valve stem keepers are designed with a 10° taper (twice the strength of the conventional 7° taper). Jumbo keepers are machined from premium chromoly steel and heat-treated for maximum strength. Crower Jumbo keepers are available in standard height, .050" higher or .050" lower positions for added flexibility in achieving the correct installed spring height. Each variation is color coded for easy identification.

Part No.	Stem Dia.	Color Code	Inst. Height
86109-16	5/16	B	Standard
86110-16	11/32	B	Standard
86110X1-16	11/32	S	+.050"
86110X2-16	11/32	G	-.050"
86111-16	3/8	B	Standard
86111X1-16	3/8	S	+.050"
86111X2-16	3/8	G	-.050"

Also available in pairs by replacing -16 with -PR.

## Crower Keepers

GOLD (G) = -.050"  
SILVER (S) = +.050"  
BLACK (B) = STANDARD



# Valve Spring Accessories



## CALIBRATION SPRINGS

Crower's calibration springs help calibrate your spring tester with accurate seat and nose open spring pressures based on a plotted graph included with the spring. Available in low or high pressure design. A must for any engine shop.

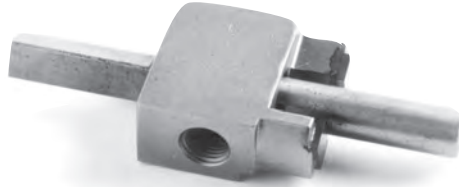
Part No.	Description
68000-1	Low Pressure Calibration Spring (Single)
68001-1	High Pressure Calibration Spring (Dual)



## COPPER PLATED SPRING SHIMS

Crower copper plated spring shims are case hardened .005" to .010" deep to a surface hardness of 45RC. Available in single or assorted thickness sets and bulk.

Part No.	Description	O.D. x I.D.	Size
85056	Shim	1.509 x 1.310	.030
85060-16	Set/16 pcs	1.525 x 0.735	.015
85060B	Bulk/80 pcs (1 size)	1.525 x 0.735	.015
85061-16	Set/16 pcs	1.525 x 0.735	.030
85061B	Bulk/80 pcs (1 size)	1.525 x 0.735	.030
85062-16	Set/16 pcs	1.525 x 0.735	.060
85062B	Bulk/80 pcs (1 size)	1.525 x 0.735	.060
85063A	Asst/16 ea (015,030,060)	1.525 x 0.735	Asst
85065-16	Set/16 pcs	1.625 x 0.635	.015
85065	Bulk/80 pcs (1 size)	1.625 x 0.635	.015
85066-16	Set/16 pcs	1.625 x 0.635	.030
85066B	Bulk/80 pcs (1 size)	1.625 x 0.635	.030
85067-16	Set/16 pcs	1.625 x 0.635	.060
85067B	Bulk/80 pcs (1 size)	1.625 x 0.635	.060
85068A	Asst/16 ea (015,030,060)	1.625 x 0.635	Asst



## VALVE SEAL CUTTERS

Crower valve seal/valve guide cutter includes cutting tool. Must order pilot separately when ordering.

Part No.	I.D.
86079	.530"
86079T	.500"

**Note:** Must order pilot separately. See pilots listed on the left.

## CUTTER PILOTS

Pilots available for spring seat and valve seal cutters.

Part No.	Stem Dia.
68970	5/16
68971	3/8
68972	11/32



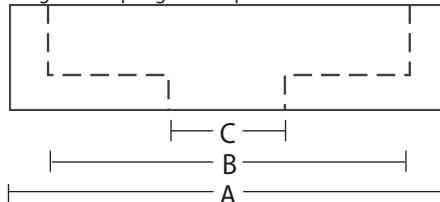
## SPRING SEAT CUPS & SEAT DISCS

Crower valve spring seat cups eliminate the need for seat cutting in some instances and shimming in others. Designed to keep springs from wandering, seat cups also protect aluminum heads from "galling." Spring seat discs also available.

### SEAT CUPS

Part No.	"A"	"B"	"C"	Cutter
68920-16	1.410	1.310	0.780	
68922-16	1.365	1.265	0.570	-
68935-16	1.410	1.285	0.565	-
68923-16	1.410	1.310	0.570	-
68934-16	1.550	1.450	0.575	68981
68930-16	1.550	1.440	0.635	68979
68951-16	1.550	1.455	1.000	-
68931-16	1.550	1.475	0.635	68979
68957-16	1.590	1.490	0.675	68984
68952-16	1.620	1.515	0.635	-
68936-16	1.625	1.540	0.635	-
68933-16	1.685	1.565	0.635	68989
68953X1-16	1.695	1.565	0.635	68989
68955-16	1.745	1.650	0.635	68996
68959-16	1.740	1.700	0.635	68996
68956-16	1.795	1.700	0.635	-
68958-16	Rotation Eliminators (396-454 Chevy)			

Diagram 1. Spring Seat Cup



## SPRING SEAT CUTTERS

Designed to accurately machine cylinder heads for aftermarket spring applications using a drill press or hand drill. Cutter blades are carbide tipped and valve guide pilots are interchangeable. Special spring seat cutters in custom sizes are available. Call for pricing and availability.

Part No.	O.D. x I.D.	Part No.	O.D. x I.D.
68986	1.515 x 0.750	68984	1.630 x 0.670
68979	1.555 x 0.630	68995	1.630 x 0.770
68977	1.570 x 0.545	68989	1.705 x 0.630
68981	1.575 x 0.610	68996	1.750 x 0.630

**Note:** Must order pilot separately. See pilots listed on the left.

### SEAT DISCS

Part No.	"A"	"B"	"C"	"D"
68924-16	1.400	0.970	-	0.527
68925-16	1.400	0.780	-	0.527
68926-16	.842	0.635	-	0.495
68928-16	1.250	0.635	-	0.515
68929-16	1.100	0.970	0.600	0.482
68938-16	1.560	0.740	-	0.505
68939-16	1.565	0.660	-	0.505
68940-16	1.560	0.740	-	0.562
68940A-16	1.560	0.750	-	0.570
68941-16	1.565	0.660	-	0.562
68941A-16	1.570	0.690	0.570	0.590
68942-16	1.535	0.730	-	0.635
68943-16	1.545	0.805	-	0.565
68948-16	1.300	0.680	0.510	0.510
68947-16	1.270	0.615	0.505	0.505
68949-16	1.300	0.800	0.570	0.570

Note: All cups/discs are approximately .060" thick.

Diagram 2. Spring Seat Disc

