



# Applications and Instructions Matched Spring and Retainer Kit

Part Numbers (See Below)

**For more information, see [www.cranecams.com](http://www.cranecams.com)**

## READ YOUR APPLICATION COMPLETELY BEFORE YOU BEGIN INSTALLATION

Find your specific application from the listing below. Read very carefully for any special installation instructions and familiarize yourself with the recommended installed spring pressure and height, open checking pressure and height, and maximum recommended valve lift and RPM for your application.

### American Motors V-8 66-91 290-304-343 -----PN 64308-1 -360-390-401 cu. in.

Valve Spring PN 99839-16 Steel Retainer PN 99957-16

- Recom'd installed spring pressure and height (valve closed)-----121 lbs. @ 1.800"
- Open checking pressure and height -----298 lbs. @ 1.300"
- Maximum recommended valve lift and RPM -----.580" - 6500 RPM

### Chevrolet V-8 67-87 262-267-283-302 -----PN 11308-1 -305-307-327-350-400 cu. in.

Valve Spring PN 99848-16 Steel Retainer PN 99915-16

- Recom'd installed spring pressure and height (valve closed)-----114 lbs. @ 1.700"
- Open checking pressure and height -----340 lbs. @ 1.200"
- Maximum recommended valve lift and RPM -----.510" - 6500 RPM

### Chevrolet V-8 67-87 262-267-283 -----PN 11309-1<sup>a</sup> -302-305-307-327-350-400 cu. in.

**(H-11 material, Saturday Night Special)**

Valve Spring PN 99846-16 Steel Retainer PN 99915-16  
Lock PN 99095-1

- Recom'd installed spring pressure and height (valve closed)-----125 lbs. @ 1.800"
- Open checking pressure and height -----383 lbs. @ 1.200"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

### Chevrolet 57-98 V-8 262-400 cu. in. -----PN 11310-1<sup>b</sup> (Requires cyl. head machining)

Valve Spring PN 99838-16 Steel Retainer PN 99944-16

- Recom'd installed spring pressure and height (valve closed)-----112 lbs. @ 1.650"
- Open checking pressure and height -----336 lbs. @ 1.100"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

### Chevrolet V-8 92-99 350 cu. in. LT1 -----PN 10308-1 (w/Aluminum cylinder heads)

Valve Spring PN 99893-16 Steel Retainer PN 99951-16  
Lock PN 99097-1 Shim PN 99050-1

The installed height using this kit on LT1 engines with factory aluminum heads should be set between 1.875" and 1.850". Make sure all valve springs are assembled at the same height. The springs will provide sufficient pressure when installed within this range. The hardened shims are used to replace the factory lower spring seats. Make sure there is clearance between the rocker arm and the retainer throughout the rocker arm travel. Clearance should be a minimum of .020".

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### For hydraulic, mechanical and hydraulic roller equipped engines

- Recom'd installed spring pressure and height (valve closed)-----130 lbs. @ 1.850"
- Open checking pressure and height -----402 lbs. @ 1.150"
- Maximum recommended valve lift and RPM -----.600" - 7000 RPM

### For mechanical street roller equipped engines

- Recom'd installed spring pressure and height (valve closed)-----145 lbs. @ 1.812"
- Open checking pressure and height -----426 lbs. @ 1.110"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

### For most other roller equipped engines

- Recom'd installed spring pressure and height (valve closed)-----167 lbs. @ 1.750"
- Open checking pressure and height -----426 lbs. @ 1.110"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

### Chevrolet V-8 94-99 350 LT1 (w/Iron cylinder heads)-----PN 10309-1 and Chevrolet V-8 95-96 Vortec 350 cu. in.

Valve Spring PN 99845-16 Steel Retainer PN 99914-16

This kit is specifically designed for 1994 and newer Chevrolet LT1 engines with cast iron cylinder heads and will also fit most 1996-1999 GM Vortec V-8 truck engines. Original equipment valve locks should be used to obtain the below specifications. Crane number 99097-1 valve locks can be used, however they will reduce the assembly height and travel by .020" when compared with stock valve locks.

- Recom'd installed spring pressure and height (valve closed)-----124 lbs. @ 1.750"
- Open checking pressure and height -----374 lbs. @ 1.150"
- Maximum recommended valve lift and RPM -----.550" - 6500 RPM

### Chevrolet V-8 65-98 396-402-427-454-502 cu. in. -----PN 13308-1 (Except 80-Up Truck Engine)

Valve Spring PN 99839-16 Steel Retainer PN 99948-16

- Recom'd installed spring pressure and height (valve closed)-----121 lbs. @ 1.800"
- Open checking pressure and height -----298 lbs. @ 1.300"
- Maximum recommended valve lift and RPM -----.580" - 6500 RPM

**a** Standard diameter valve springs for 1967-87 cylinder heads with 1.700" assembly height. Check valve guide to lock/retainer clearance at maximum valve lift, valve guide machining may be required.

**b** Must machine cylinder heads. Check valve guide to lock/retainer clearance at maximum valve lift, valve guide machining may be required.

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**Chevrolet V-8 80-95 Truck 366-396-402-427-454 cu. in. ---PN 13309-1 (w/Short valve spring assembly height)**

Valve Spring PN 96801-16 Steel Retainer PN 99957-16

Most 1981 and newer Chevrolet and GMC Truck 454 cu. in. engines are designed with a valve spring assembly height of 1.800". This kit is designed specifically for those truck applications. Engines designed with the taller assembly height of 1.880" should use Crane Spring and Retainer Kit 13308-1.

- Recom'd installed spring pressure and height (valve closed)-----114 lbs. @ 1.800"
- Open checking pressure and height -----287 lbs. @ 1.250"
- Maximum recommended valve lift and RPM -----.550" - 6500 RPM

**Chrysler-Dodge-Plymouth V-8 64-91 "LA" V-8 273 -----PN 69308-1 -340-360 and 67-91 318 cu. in.**

Valve Spring PN 99835-16 Steel Retainer PN 99948-16

- Recom'd installed spring pressure and height (valve closed)-----113 lbs. @ 1.600"
- Open checking pressure and height -----280 lbs. @ 1.150"
- Maximum recommended valve lift and RPM -----.494" - 6500 RPM

**Chrysler-Dodge-Plymouth V-8 58-78 "B" 350-361-383 ----PN 64308-1 -400-413-426-440 cu. in.**

Valve Spring PN 99839-16 Steel Retainer PN 99957-16

- Recom'd installed spring pressure and height (valve closed)-----121 lbs. @ 1.800"
- Open checking pressure and height ----- 298 lbs. @ 1.300"
- Maximum recommended valve lift and RPM -----.580" -6500 RPM

**Ford V-8 62-87 221-302 cu. in. -----PN 36308-1**

Valve Spring PN 96803-16 Steel Retainer PN 99946-16

- Recom'd installed spring pressure and height (valve closed)-----107 lbs. @ 1.700"
- Open checking pressure and height -----317 lbs. @ 1.150"
- Maximum recommended valve lift and RPM -----.527" - 6500 RPM

**Ford V-8 62-98 221-302 and 69-97 351W cu. in. -----PN 11310-1<sup>b</sup> (Requires cylinder head machining)**

Valve Spring PN 99838-16 Steel Retainer PN 99944-16

- Recom'd installed spring pressure and height (valve closed)-----112 lbs. @ 1.650"
- Open checking pressure and height -----336 lbs. @ 1.100"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

**Ford V-8 85-00 302-302 H.O. -----PN 44308-1<sup>C</sup> w/Hydraulic Roller Camshafts (Conical design, for stock cylinder heads)**

Valve Spring PN 99841-16 Steel Retainer PN 99942-16  
Lock PNs 99094-1 and 99097-1

This valve spring, retainer and lock set is especially designed for Ford cylinder heads with standard valves. These valves have different keeper groove locations between the intake and exhaust valves. The enclosed components must be installed as outlined below.

Following the installed height and pressure shown on your camshaft specification card, we recommend that you install all 8 intake springs before installing the 8 exhaust springs. If your cam card recommends a different valve spring, installing this kit at 1.950" will yield 118 lbs. closed pressure. The maximum recommended lift is .550". **The larger end of the valve spring must be installed towards the cylinder head surface.**

**Using the red locks**, install the intake valve springs and retainers. Make sure the locks are seated in the valve's groove. Repeat this step with the remaining intake valves.

**Using the black locks**, install the exhaust valve springs and retainers. Make sure the locks are seated in the valve's groove. Repeat this step with the remaining exhaust valves.

- Recom'd installed spring pressure and height (valve closed)-----118 lbs. @ 1.950"
- Open checking pressure and height -----375 lbs. @ 1.380"
- Maximum recommended valve lift and RPM -----.560" - 6500 RPM

**Ford V-8 70-77 Boss 351-351C-351M-400 cu. in. -----PN 52308-1**

Valve Spring PN 96801-16 Steel Retainer PN 99948-16

- Recom'd installed spring pressure and height (valve closed)-----114 lbs. @ 1.800"
- Open checking pressure and height -----287 lbs. @ 1.250"
- Maximum recommended valve lift and RPM -----.550" - 6500 RPM

**Ford V-8 71-72 Boss 351, 79-82 351M-400 -----PN 35308-1 and V-8 68-97 370-429-460 cu. in.**

Valve Spring PN 96801-16 Steel Retainer PN 99944-16

- Recom'd installed spring pressure and height (valve closed)-----108 lbs. @ 1.828"
- Open checking pressure and height -----287 lbs. @ 1.250"
- Maximum recommended valve lift and RPM -----.550" - 6500 RPM

**Ford V-8 63-76 352-360-390-406-410-427-428 cu. in. -----PN 13309-1**

Valve Spring PN 96801-16 Steel Retainer PN 99957-16

- Recom'd installed spring pressure and height (valve closed)-----114 lbs. @ 1.800"
- Open checking pressure and height -----287 lbs. @ 1.250"
- Maximum recommended valve lift and RPM -----.550" - 6500 RPM

**Oldsmobile V-8 67-84 39° 260-307-350-400-403 -----PN 36308-1 -425-455 and 64-67 45° 330-400-425 cu. in.**

Valve Spring PN 96803-16 Steel Retainer PN 99946-16

- Recom'd installed spring pressure and height (valve closed)-----107 lbs. @ 1.700"
- Open checking pressure and height -----317 lbs. @ 1.150"
- Maximum recommended valve lift and RPM -----.520" - 6500 RPM

**Oldsmobile V-8 67-84 39° 260-307-350 -----PN 11310-1<sup>b</sup> -400-403-425-455 and 64-67 45° 330-400-425 cu. in. (Requires cylinder head machining)**

Valve Spring PN 99838-16 Steel Retainer PN 99944-16

- Recom'd installed spring pressure and height (valve closed)-----112 lbs. @ 1.150"
- Open checking pressure and height -----336 lbs. @ 1.100"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

**Pontiac V-8 55-81 265-287-301-316-326-347-350 -----PN 28308-1 -370-389-400-421-428-455 cu. in.**

Valve Spring PN 99840-16 Steel Retainer PN 99944-16

- Recom'd installed spring pressure and height (valve closed)-----110 lbs. @ 1.550"
- Open checking pressure and height -----303 lbs. @ 1.100"
- Maximum recommended valve lift and RPM -----.510" - 6500 RPM

**Pontiac V-8 55-81 265-287-301-316-326-347-350 -----PN 11310-1<sup>b</sup> -370-389-400-421-428-455 cu. in. (Requires cylinder head machining)**

Valve Spring PN 99838-16 Steel Retainer PN 99944-16

- Recom'd installed spring pressure and height (valve closed)-----112 lbs. @ 1.650"
- Open checking pressure and height -----336 lbs. @ 1.100"
- Maximum recommended valve lift and RPM -----.600" - 7500 RPM

**b** Must machine cylinder heads. Check valve guide to lock/retainer clearance at maximum valve lift, valve guide machining may be required.  
**c** Optional kit for 79-98 302, 302 H.O., and 351W engines to provide increased valve spring travel when using stock cylinder heads.

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