



# INSTRUCTIONS

J05484

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## SE120R SCREAMIN' EAGLE PRO RACE-USE CRATE ENGINE

### GENERAL

#### Kit Number

19290-12

#### Models

For model fitment information, see the P&A Retail Catalog or the Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com) (English only).

#### NOTE

*This engine is for race use only! Remove the emissions label and license plate from the factory chassis.*

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Table 1.

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### KIT CONTENTS

See Figure 7 through Figure 13 and Table 12 through Table 18.

### Installation Requirements

- Recommended synthetic engine oil, Screamin' Eagle SYN3<sup>®</sup> 20W50 (Part No. 99824-03/00QT).
- Touring models require replacement of Sprocket Shaft Spacer with Part No. 24008-03 for 2002-2005 models or Part No. 24009-06 for 2006 models.
- The cylinder heads in this kit are machined for use with symmetric intake flanges (original equipment since 2006). 1999-2005 models require separate purchase of symmetric intake seal flanges (Part No. 26993-06), quantity 2.
- Installation of compression releases is required. Refer to Screamin' Eagle Pro Catalog or contact a Harley-Davidson dealer.
- A clutch kit that supports a minimum of 190 N·m (140 ft·lbs) of torque. Harley-Davidson recommends installation of Screamin' Eagle pressure clutch (Part No. 37000121) and diaphragm spring (Part No. 37951-98). Drag racing applications use clutch kit (Part No. 37976-08A).

- SE throttle body, Air Cleaner and High Flow injectors. Refer to the Screamin' Eagle Pro Catalog or contact a Harley-Davidson dealer.
- SE exhaust gaskets kit (Part No. 17048-98).
- Oil cooler is recommended. See P&A Retail Catalog or the Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com).
- **EFI Models:** SE Pro Super Tuner - refer to Screamin' Eagle Pro Catalog or contact a Harley-Davidson dealer.
- See appropriate sections in service manual for the special tools required to install this kit.

#### ⚠ WARNING

**Rider and passenger safety depend upon the correct installation of this kit. Use the appropriate service manual procedures. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00333b)**

#### NOTE

*This instruction sheet references service manual information. A service manual for your model motorcycle is required for this installation. One is available from a Harley-Davidson dealer.*

### PREPARATION

#### NOTE

**For vehicles equipped with security siren:**

- Verify that the hands-free Fob is present.
- With security fob present, turn ignition switch ON.

### EFI Models:

#### ⚠ WARNING

**To prevent spray of fuel, purge system of high-pressure fuel before supply line is disconnected. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00275a)**

Purge and disconnect fuel supply line.

### For ALL Vehicles:

#### ⚠ WARNING

**To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect battery cables (negative (-) cable first) before proceeding. (00307a)**



### ⚠ WARNING

Disconnect negative (-) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00049a)

1. See the service manual to remove the seat. See the service manual to disconnect the battery cables, negative cable first. Retain all seat mounting hardware.

### For Carbureted Models:

### ⚠ WARNING

Gasoline can drain from the carburetor fuel line when disconnected from fuel valve fitting. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. Wipe up spilled fuel immediately and dispose of rags in a suitable manner. (00256a)

1. Turn the fuel supply valve to OFF. Remove the fuel line from the valve.

### REMOVAL

#### Remove OE Engine

1. Raise the motorcycle.

### ⚠ WARNING

When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00330a)

2. Remove the fuel tank according to the instructions in the service manual.
3. Refer to ENGINE section of the appropriate service manual for removal of engine from chassis.

### SE120R ENGINE INSTALLATION

1. Before installing the engine, make sure that there is no debris or contaminants in the oiling system. See service manual to flush-out the oil tank. Have the tank flush-out performed by an authorized dealer or qualified technician.
2. Remove the oil passage caps/plugs at the engine to transmission interface.
3. Refer to the ENGINE section of the appropriate service manual for installation of the engine to the chassis.
4. **For Touring Models:** Remove sprocket shaft spacer and replace with appropriate spacer listed in ADDITIONAL PARTS REQUIRED section.

### Final Assembly

1. Install the fuel tank according to the instructions in the service manual.
2. Install the seat according to the instructions in the service manual.

### ⚠ WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

### NOTICE

**You must recalibrate the ECM when installing this kit. Failure to properly recalibrate the ECM can result in severe engine damage. (00399b)**

3. Download the new ECM calibration when installing this kit. Refer to the Screamin' Eagle Pro Catalog or contact a Harley-Davidson dealer.
4. Start and run the engine. Repeat several times to verify proper operation.

### OPERATION

1. Refer to BREAK IN RIDING RULES in the owner's manual to break in the new engine.

### MAINTENANCE

1. Refer to the MAINTENANCE SCHEDULE in the appropriate service manual or owner's manual.
2. Refer to ENGINE section of service manual.

### SE120R ENGINE SPECIFICATIONS

#### NOTE

The following sections provide unique information not available in the service manual ENGINE section for the appropriate Twin Cam 96™ alpha engines from Touring or Dyna platforms.

**Table 2. Engine: SE Twin Cam 120R**

| Item                           | Specification                           |            |
|--------------------------------|---|------------|
| Compression Ratio              | 10.5:1                                  |            |
| Bore                           | 4.060 in                                | 103.12 mm  |
| Stroke                         | 4.625 in                                | 117.48 mm  |
| Displacement                   | 119.75 cu in                            | 1962.39 cc |
| Lubrication system             | Pressurized dry sump<br>with oil cooler |            |
| Maximum sustained engine speed | 6200 RPM                                |            |

### MANUFACTURING TOLERANCES

Refer to the Twin-Cam 96™ specifications in the service manual for any specification not shown in the following tables.

**Table 3. Cylinder Heads**

| ITEM                               | IN.           | MM          |
|------------------------------------|---------------|-------------|
| Valve guide in head (tight)        | 0.0020-0.0033 | 0.051-0.084 |
| Intake valve seat in head (tight)  | 0.004-0.0055  | 0.102-0.140 |
| Exhaust valve seat in head (tight) | 0.004-0.0055  | 0.102-0.140 |

**Table 4. Valves**

| ITEM                                    | IN.           | MM          |
|---|---------------|-------------|
| Fit in guide (intake and exhaust)       | 0.0011-0.0029 | 0.028-0.074 |
| Seat width                              | 0.034-0.062   | 0.86-1.57   |
| Stem protrusion from cylinder head boss | 1.990-2.024   | 50.55-51.41 |

**Table 5. Valve Springs Specifications**

| ITEM        | PRESSURE         | DIMENSION           |
|-------------|------------------|---------------------|
| Closed      | 180 lbs (79 kg)  | 1.800 in. (45.7 mm) |
| Open        | 500 lbs (196 kg) | 1.177 in. (29.9 mm) |
| Free length | n/a              | 2.210 in. (56.1 mm) |

**Table 6. Pistons**

| Piston Clearance:               | IN.           | MM          |
|---------------------------------|---------------|-------------|
| Piston-to-cylinder fit (Loose)  | 0.0026-0.0036 | 0.066-0.091 |
| Piston pin fit (Loose)          | 0.0003-0.0008 | 0.007-0.020 |
| Top Ring End Gap                | 0.012-0.020   | 0.304-0.505 |
| Second Ring End Gap             | 0.016-0.024   | 0.406-0.609 |
| Oil Control Ring Rail Gap       | 0.008-0.028   | 0.203-0.711 |
| Top Ring Side Clearance         | 0.0010-0.0022 | 0.025-0.055 |
| Second Ring Side Clearance      | 0.0010-0.0022 | 0.025-0.055 |
| Oil Control Ring Side Clearance | 0.0003-0.0072 | 0.007-0.182 |

**Table 7. Cam Specifications - SE266E**

| Intake  | Specification        |
|---|----------------------|
| Opens   | 24 BTDC              |
| Closes  | 58 ABDC              |
| Duration  | 262°                 |
| Max. Valve Lift   | 0.658 in (16.713 mm) |
| Valve Lift @ TDC  | 0.208 in (5.283 mm)  |
| Exhaust   | Specification        |
| Opens   | 69 BBDC              |
| Closes  | 17 ATDC              |
| Duration  | 266°                 |
| Max. Valve Lift   | 0.658 in (16.713 mm) |
| Valve Lift @ TDC  | 0.178 in (4.521 mm)  |
| Cam Timing @ 0.053 in (1.346 mm) of Tappet Lift in Crankshaft Degrees |                      |

**SERVICE WEAR LIMITS**

Use wear limits as guide to part replacement.

*NOTE*

Refer to the Twin-Cam 96 specifications in the service manual for any specification not shown in the following tables

**Table 8. Cylinders**

| ITEM                                       | REPLACE IF WEAR EXCEEDS |       |
|--|-------------------------|-------|
|  | IN.                     | MM    |
| Taper                                      | 0.002                   | 0.051 |
| Out of round                               | 0.002                   | 0.051 |
| Warpage of gasket or O-ring surfaces: top  | 0.006                   | 0.152 |
| Warpage of gasket or O-ring surfaces: base | 0.004                   | 0.102 |

**Table 9. Cylinder Bore**

| ITEM               | REPLACE IF WEAR EXCEEDS |        |
|--------------------|-------------------------|--------|
|                    | IN.                     | MM     |
| Standard           | 4.062                   | 103.17 |
| 0.010 in. oversize | 4.072                   | 103.43 |

**Table 10. Pistons**

| Piston-to-cylinder Fit Wear Limit (Loose) | IN.    | MM    |
|---|--------|-------|
| Fit in cylinder (Loose)                   | 0.0061 | 0.155 |
| Piston Pin Fit (Loose)                    | 0.0011 | 0.028 |
| Top Ring End Gap                          | 0.030  | 0.762 |
| Second Ring End Gap                       | 0.034  | 0.863 |
| Oil Control Ring Rail Gap                 | 0.038  | 0.965 |
| Top Ring Side Clearance                   | 0.0030 | 0.076 |
| Second Ring Side Clearance                | 0.0030 | 0.076 |
| Oil Control Ring Side Clearance           | 0.0079 | 0.200 |

**SE120R CYLINDERS**

1. Raise the motorcycle.

*NOTE*

Disarm security system.

2. Remove seat according to the instructions in the service manual.

**▲ WARNING**

When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00330a)

3. Remove main fuse. Refer to service manual for your motorcycle.
4. Remove fuel tank according to the instructions in the service manual.

**Remove Engine Components**

1. Refer to service manual to remove existing air cleaner assembly.
2. Remove the existing exhaust system following service manual procedures.
3. Disassemble the engine top end. Refer to the appropriate engine sections in the service manual.

**Install Engine Top End Components**

*NOTE*

Figure 1. The 4.060 in cylinder base gasket (1) and cylinder head gasket (2) eliminate the need for O-rings. Do not use O-rings on cylinder dowels or cylinder spigots.

When installing new base gasket (1), install with the embossed side down and the concave side up.

1. Refer to the appropriate service manual and assemble the engine with the following changes:
  - a. Assemble the top end of the engine using the base gaskets and head gaskets provided in the kit. Refer to the appropriate engine section in the service manual.

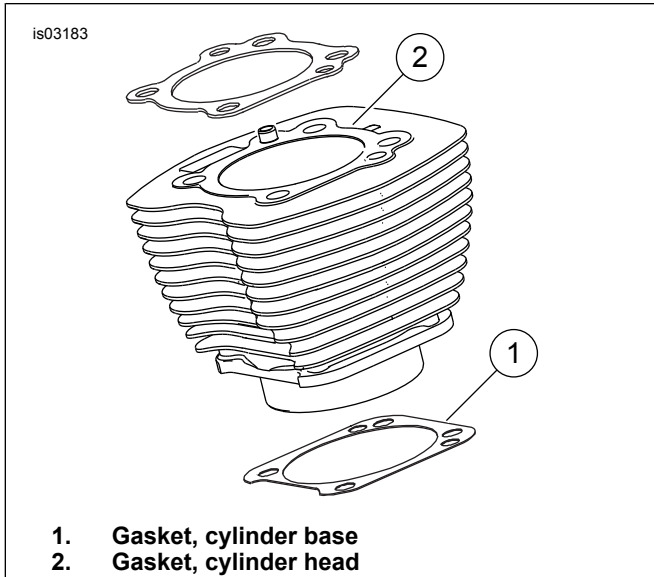


Figure 1. Cylinder Gaskets

## Final Assembly

1. Install the fuel tank according to the instructions in the service manual.
2. Refer to the service manual to install the main fuse.

### ⚠ WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

3. Install the seat according to the instructions in the service manual.

## SE120R PISTON

1. Refer to ENGINE section of service manual.

## INSTALLATION

### ⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect battery cables (negative (-) cable first) before proceeding. (00307a)

### ⚠ WARNING

Disconnect negative (-) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00049a)

1. See the service manual to remove the seat. See the service manual to disconnect the battery cables, negative cable first.

### ⚠ WARNING

When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00330a)

2. Refer to the ENGINE: STRIPPING MOTORCYCLE FOR SERVICE and TOP END OVERHAUL, DISASSEMBLY sections of the service manual for cylinder head, cylinder and piston removal procedures.
3. Follow the procedures in the ENGINE: SUB-ASSEMBLY SERVICE AND REPAIR, TOP END/ CYLINDER/ UPPER CONNECTING ROD sections of the service manual for inspection of parts.
4. See the ENGINE: SUB-ASSEMBLY SERVICE AND REPAIR, CYLINDER section of the service manual for boring and honing instructions.

### NOTE

Install the top ring (barrel-faced) and second ring (taper-faced Napier) with the "N" marking facing up. Oil ring rails can be installed either side up.

The 4.060 in cylinder base gaskets and cylinder head gaskets included in the kit eliminate the need for O-rings (11273). **Do not** use O-rings on cylinder dowels or cylinder spigots.

When installing new base gasket, install with the embossed side down and the concave side up.

### NOTE

Checking piston-to-cylinder fit at this location per Table 6 for reference.

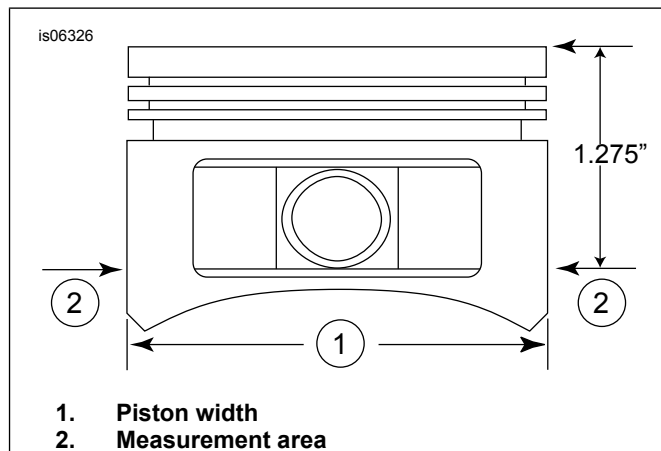


Figure 2. Piston Measurements

5. See Figure 2. Measure the piston width (1), 90 degrees horizontally from both sides of the piston pin hole and 1.275 in down from the deck surface (top) of the piston (2). See Table 6 for piston-to-cylinder fit at this location.

- The pistons in this kit are front and rear specific. Install the piston marked "FRONT" in the front cylinder with the arrow pointing towards the **front** of the engine. Install the piston marked "REAR" in the rear cylinder with the arrow pointing towards the **front** of the engine.
- Refer to the ENGINE: TOP END OVERHAUL, ASSEMBLY section of the service manual for piston, cylinder and cylinder head installation procedures.

## Piston Pin Retaining Ring (Circlip) Installation

### NOTE

Circlip gap must be at 12:00 or 6:00 position when installed.

- See Figure 3. Insert the open end of the circlip (1) into the notch (2) on the groove (3) around the piston pin boss so the gap is at the 12:00 or 6:00 o'clock position when installed.

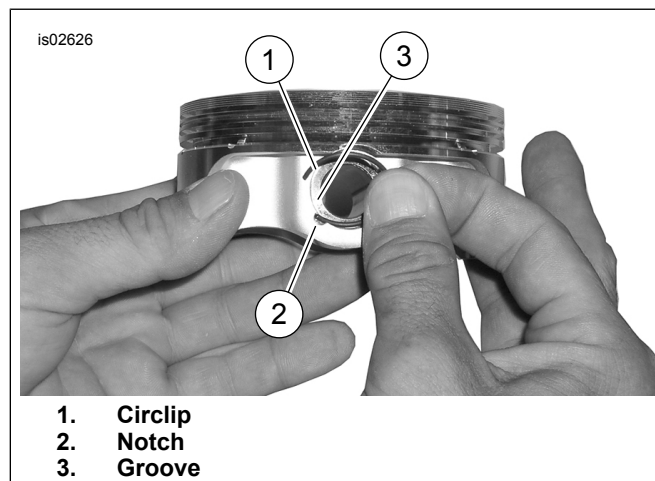


Figure 3. Circlip and Piston

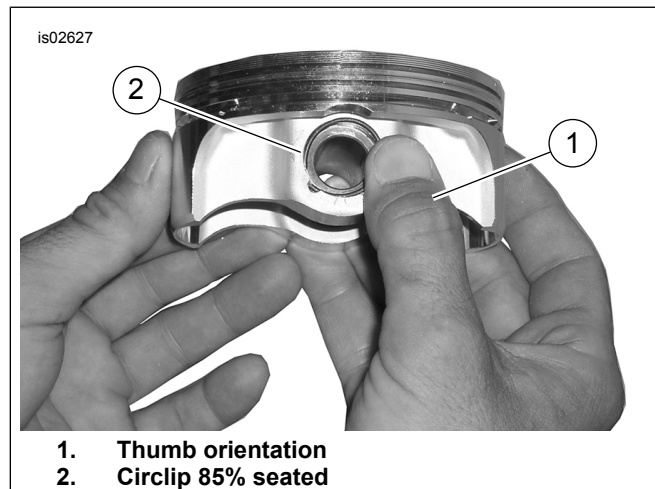


Figure 4. Install Circlip

- See Figure 4. Position your thumb (1) as shown. Press firmly until approximately 85% of the circlip (2) is seated in the groove.

- Do not scratch or mar the piston, use a small-bladed screwdriver to wedge the circlip into the remainder of the groove. Repeat for the remaining circlips.

### NOTE

Make sure that the piston circlip is fully seated, or ENGINE DAMAGE WILL OCCUR.

- Refer to the ENGINE: ASSEMBLING MOTORCYCLE AFTER STRIPPING section of the service manual for final reassembly procedures.

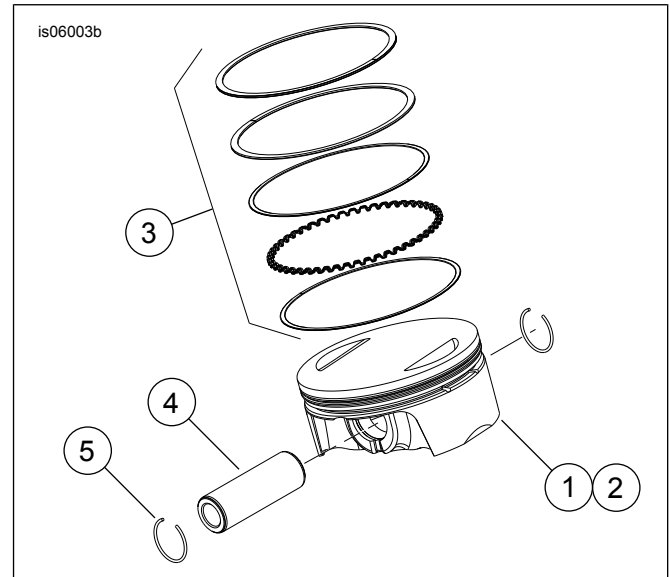


Figure 5. Piston Assembly

Table 11. Piston Assembly

| Item | Description (Quantity)   |
|------|--------------------------|
| 1    | Piston (front, standard) |
| 2    | Piston (rear, standard)  |
| 3    | • Ring set, standard (2) |
| 4    | • Piston pin (2)         |
| 5    | • Circlip (4)            |
| 1    | Piston (front, +0.010)   |
| 2    | Piston (rear, +0.010)    |
| 3    | • Ring set, +0.010 (2)   |
| 4    | • Piston pin (2)         |
| 5    | • Circlip (4)            |

## REPLACING/SERVICING PUSHRODS

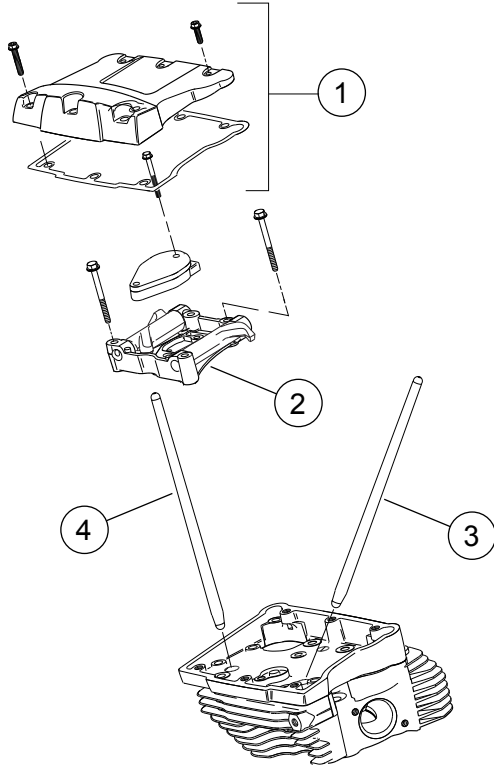
- Refer to ENGINE section of service manual.

### NOTE

Follow the appropriate service manual procedures for installing or removing the pushrods. The pushrods are marked Intake and Exhaust.

The pushrods are directional. Verify that the larger ends of the pushrods are installed down in the lifter sockets.

is06297



- 1. Rocker cover assembly
- 2. Rocker arm support plate assembly
- 3. Rear intake pushrod
- 4. Rear exhaust pushrod

Figure 6. Push Rods

## REPLACING/SERVICING CYLINDER HEADS

1. Refer to ENGINE section of service manual.

### NOTE

See Figure 9. Replacement cylinder heads (1) have "CNC PORTED" medallions. If desired, reuse or purchase new "120R" medallions (12).

2. Apply Loctite 246 Medium Strength/High Temperature Threadlocker and Sealer (purchased separately) to screws and install the "120R" medallions. Tighten to 1.1–2.3 N·m (10–12 in-lbs)

# SERVICE PARTS

is07076a

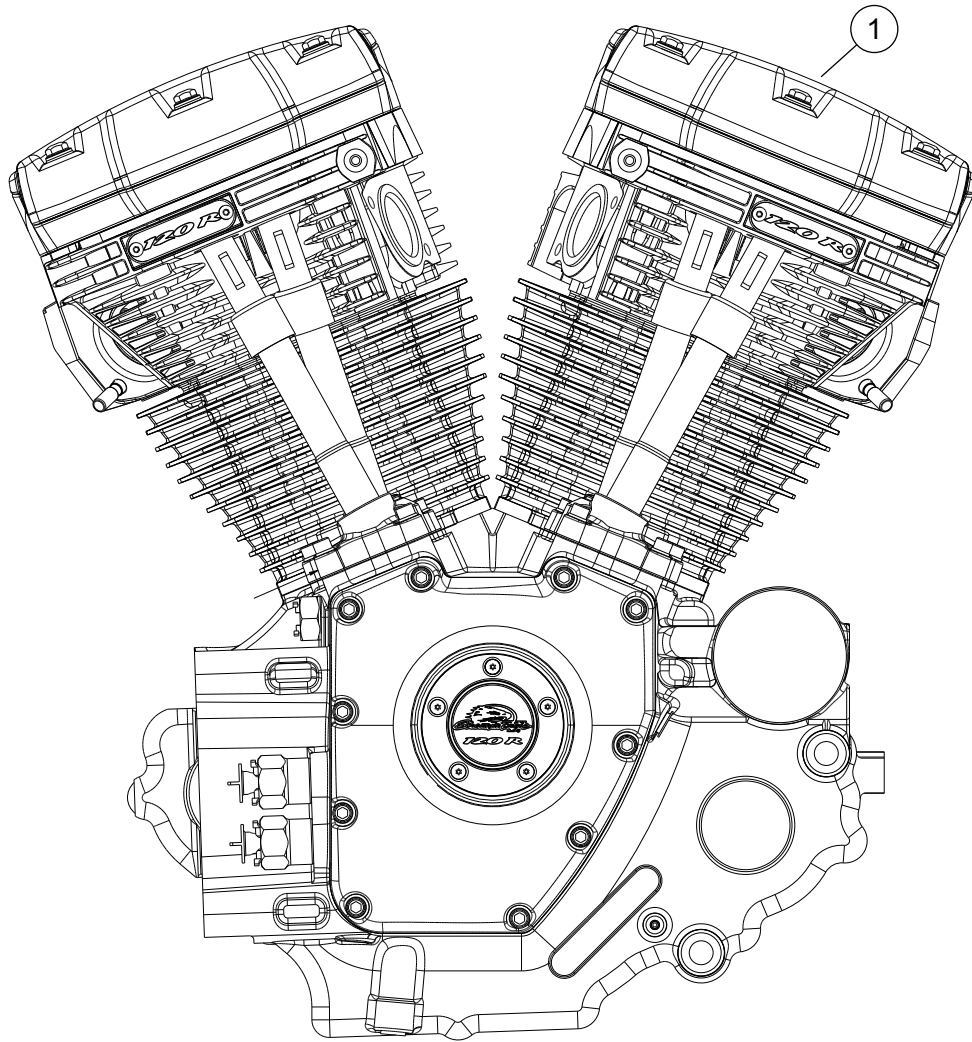
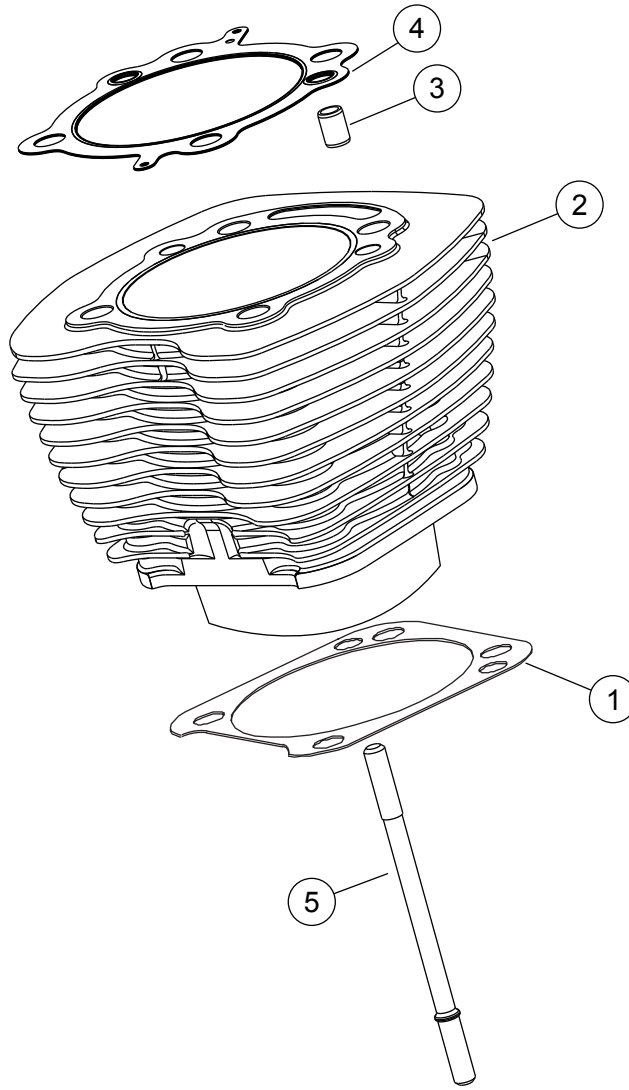


Figure 7. Service Parts: Engine Assembly, SE 120R Complete

Table 12. Service Parts Table

| Item | Description (Quantity)    | Part Number |
|------|---------------------------|-------------|
| 1    | Engine assembly, complete | 19290-12    |

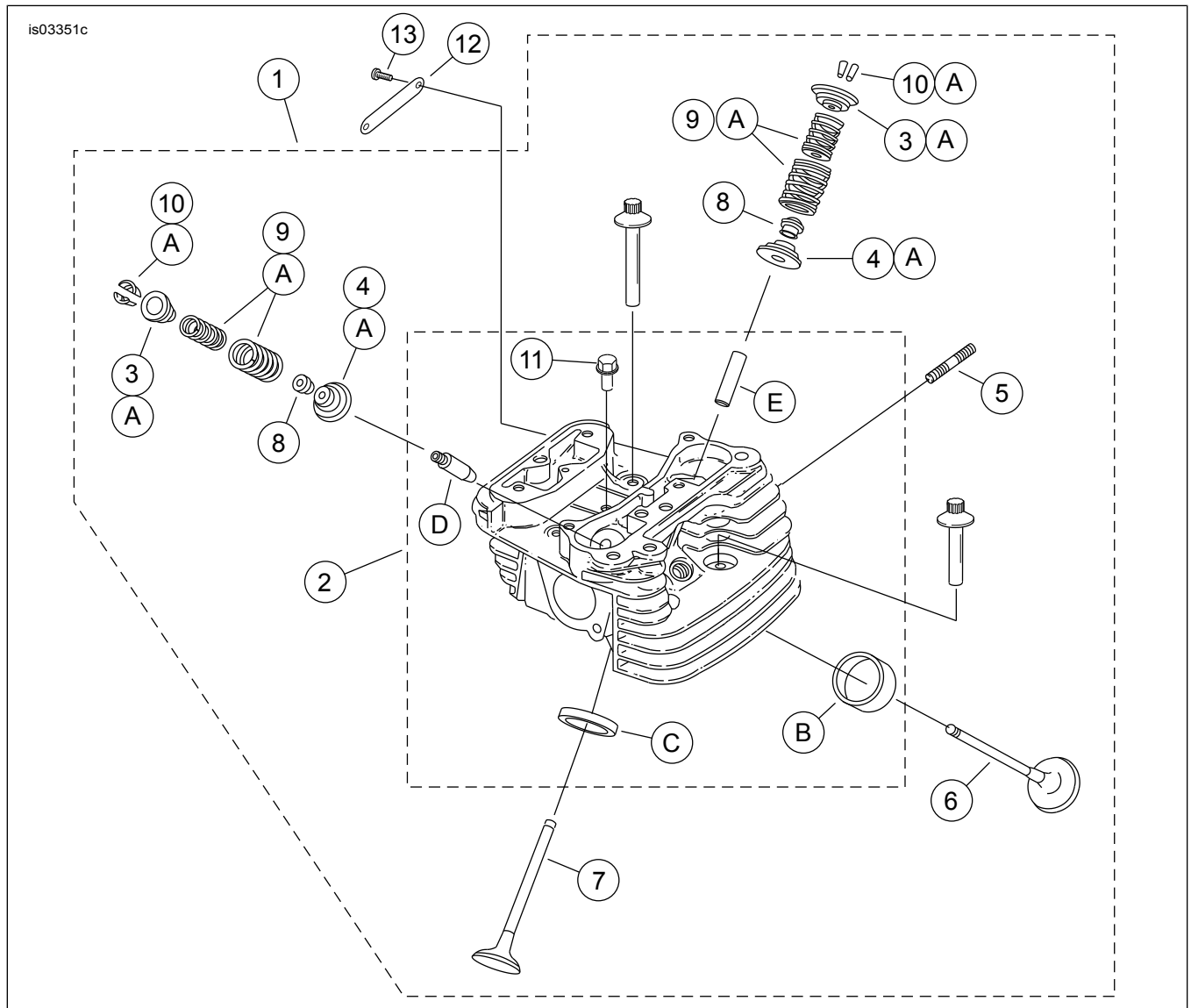


**Figure 8. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

**Table 13. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

| Item | Description (Quantity)   | Part Number |
|------|--|-------------|
| 1    | Base gasket, cylinder  | 16736-04A   |
| 2    | SE cylinder kit, 4.060 in., (black) (includes items 1, 3, 4, 1105 and 1086A)                                     | 16550-04C   |
| 3    | Dowel pin, ring (4)  | 16595-99A   |
| 4    | Gasket, cylinder head (2)  | 16104-04    |
| 5    | Stud, cylinder (8)   | 16834-99A   |
| 6    | Gasket kit, engine overhaul (does not include cylinder head gasket, base gasket or valve stem seals) (Not Shown) | 17053-99C   |
| 7    | Gasket kit, top-end, (does not include cylinder head gasket, base gasket or valve stem seals) (Not Shown)        | 17052-99C   |





**Figure 9. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

**Table 14. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

| Item | Description (Quantity)  | Part Number         |
|------|---|---------------------|
| 1    | Cylinder head assembly, rear with "CNC PORTED" medallion (includes items 2 through 11)  | 16921-11            |
|      | Cylinder head assembly, front with "CNC PORTED" medallion (includes items 2 through 11) | 16917-11            |
| 2    | • Cylinder head (machined, with items B, C, D and E installed)                          | Not Sold Separately |
| 3    | • Collar, valve spring, upper (4)   | See Service Kits    |
| 4    | • Collar, valve spring, lower (4)   | See Service Kits    |
| 5    | • Stud, exhaust port (4)  | 16715-83            |
| 6    | • Intake valve (2)  | 18190-08            |
| 7    | • Exhaust valve (2)   | 18183-03            |
| 8    | • Seal, valve (4)   | 18046-98            |
| 9    | • Valve spring unit (4)   | See Service Kits    |
| 10   | • Retainer, valve collar (8). Also included with Kit 18281-02A                          | 18240-98            |
| 11   | • Automatic compression release plug (2)  | 16648-08            |
| 12   | Medallion, "120R"   | 17136-10            |
| 13   | Screw, button head, TORX (2)  | 94634-99            |
| 14   | Screw, internal thread, 3-3/16 inch (4)   | 16478-85A           |

**Table 14. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

| <b>Item</b>  | <b>Description (Quantity)</b>          | <b>Part Number</b> |
|--|--|--------------------|
| 15   | Screw, internal thread, 1-7/8 inch (4) | 16480-92A          |
| 16   | Spark plugs (not shown) (2)            | 32186-10           |
| <b>Service Kits:</b>   |  |                    |
| A  | Valve Spring Kit, Screamin' Eagle      | 18281-02A          |
| <b>The following Screamin' Eagle parts are available separately:</b> |  |                    |
| B  | Valve seat, intake                     | 18191-08           |
| C  | Valve seat, exhaust                    | 18048-98A          |
| D  | Valve guide, intake (for service)      |                    |
|  | • (+ 0.003 in.)                        | 18158-05           |
|  | • (+ 0.002 in.)                        | 18156-05           |
|  | • (+ 0.001 in.)                        | 18154-05           |
| E  | Valve guide, exhaust (for service)     |                    |
|  | • (+ 0.003 in.)                        | 18157-05           |
|  | • (+ 0.002 in.)                        | 18155-05           |
|  | • (+ 0.001 in.)                        | 18153-05           |

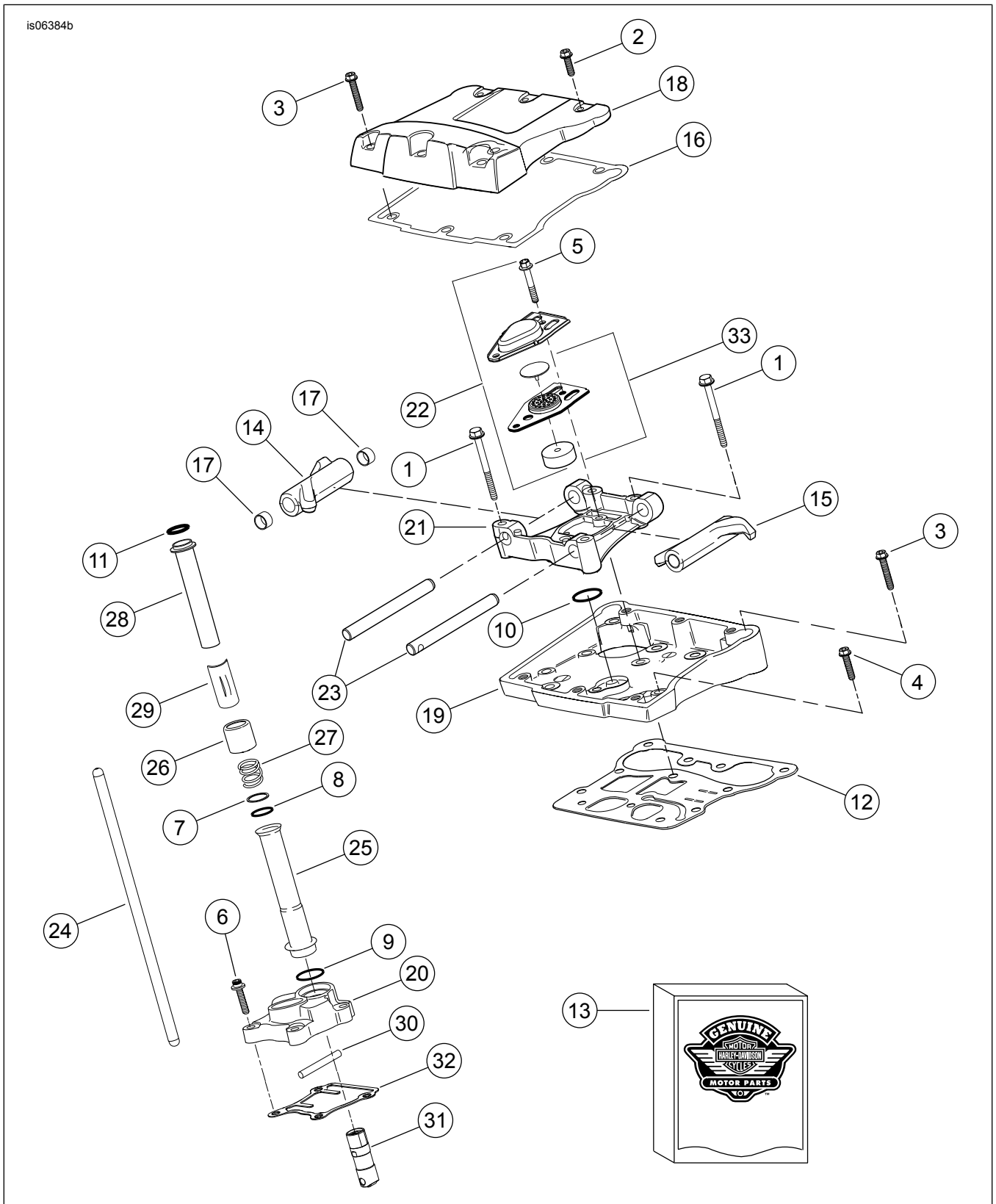


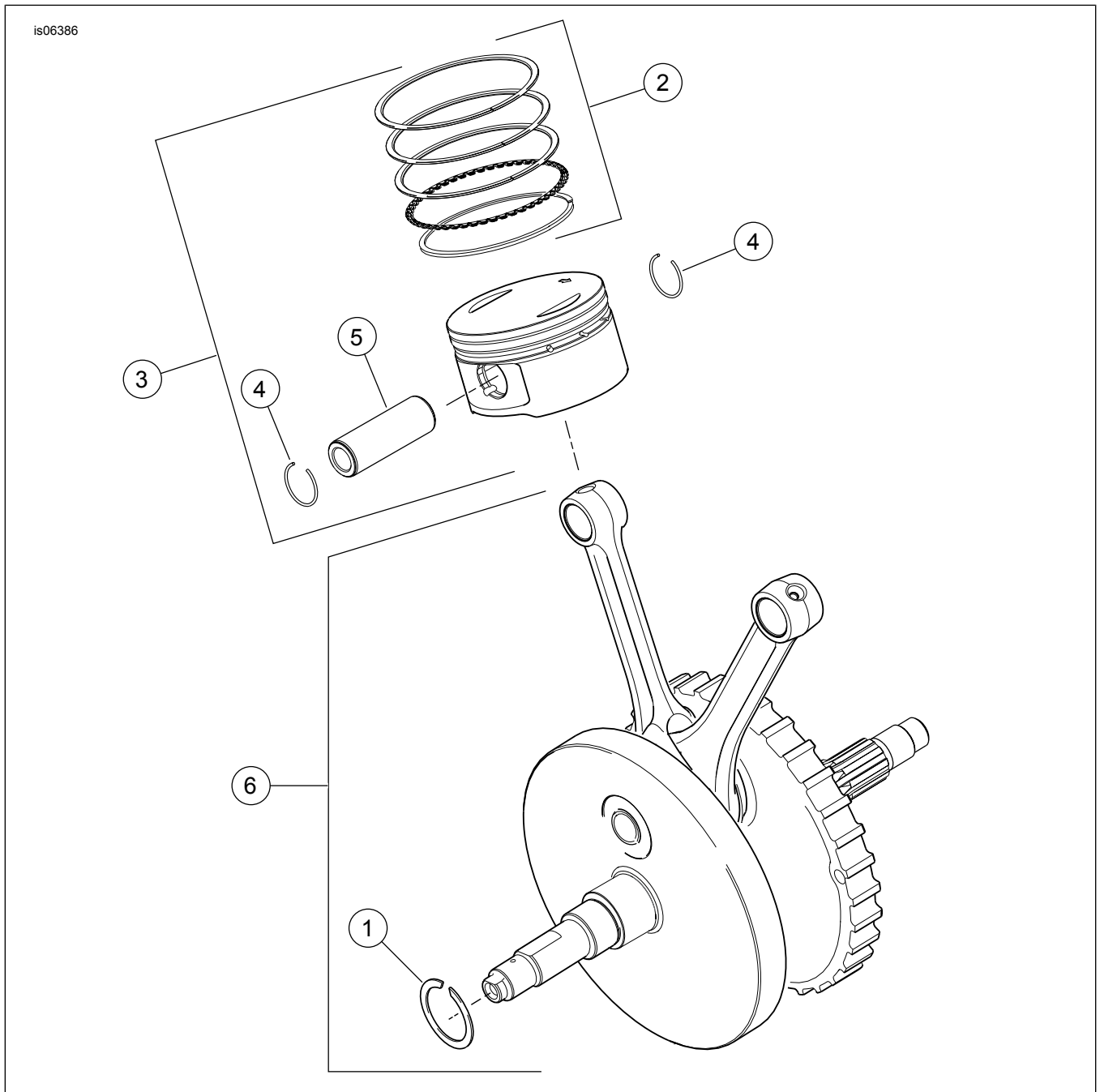
Figure 10. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine

Table 15. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine

| Item | Description (Quantity)                              | Part Number |
|------|---|-------------|
| 1    | Screw 5/16-18 X 2-1/2 hex flange head (grade 8) (8) | 1039        |
| 2    | Screw 5/16-18 X 1.0 hex head, with lockpatch (6)    | 3692A       |
| 3    | Screw 5/16-18 X 1-3/4 hex head, with lockpatch (10) | 3693A       |

**Table 15. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

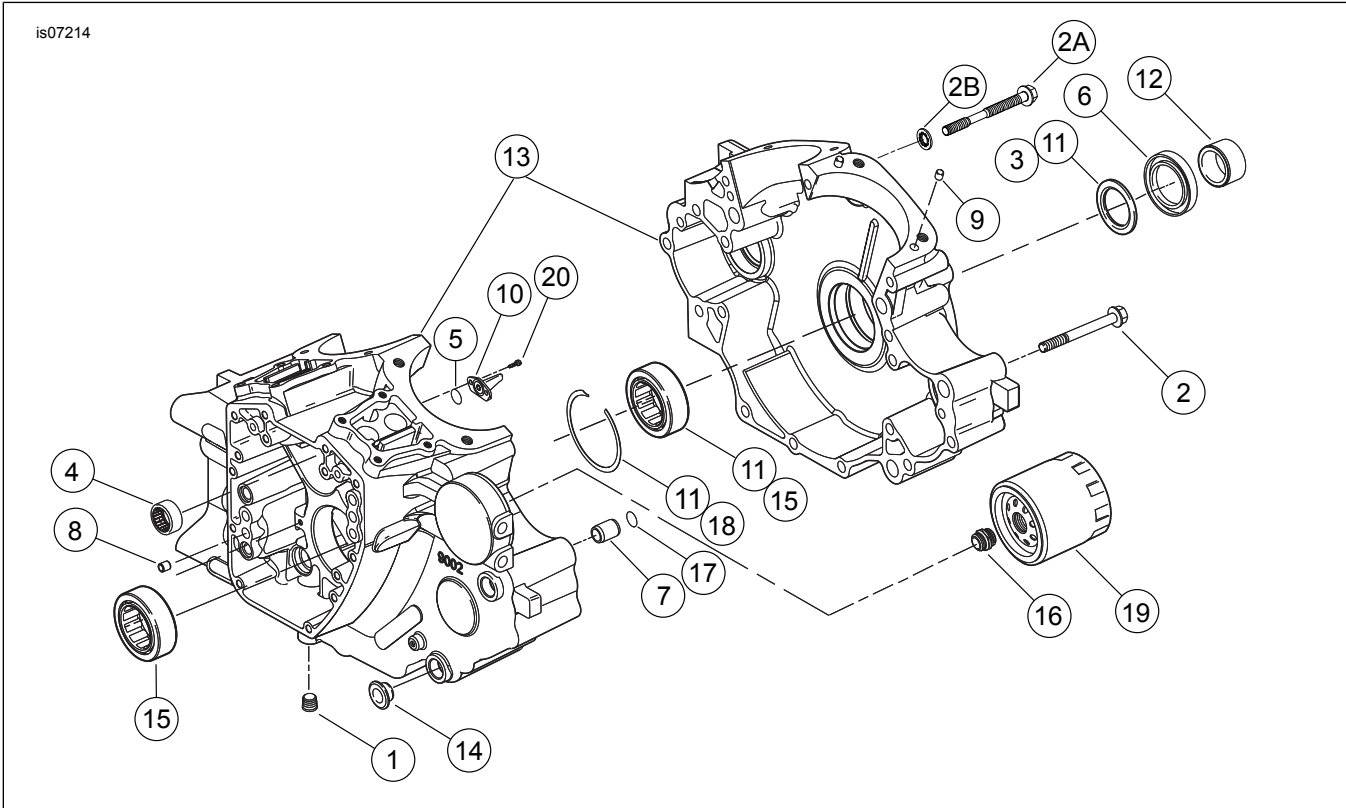
| <b>Item</b> | <b>Description (Quantity)</b>                                  | <b>Part Number</b>   |
|-------------|--|----------------------|
| 4           | Screw 5/16-18 X 1-1/4 hex flange head, with lockpatch (8)      | 3736B                |
| 5           | Screw 1/4-20 X 1-11/16 hex head (grade 8), with lockpatch, (4) | 4400                 |
| 6           | Screw 1/4-20 X 1 socket head, with lockpatch (8)               | 4741A                |
| 7           | Washer 11/16 X 29/32 X 1/32 (4)                                | 6762B                |
| 8           | O-ring, push rod cover (4)                                     | 11132A               |
| 9           | O-ring, push rod cover (4)                                     | 11145A               |
| 10          | O-ring (2)   | 11270                |
| 11          | O-ring (4)   | 11293                |
| 12          | Gasket, rocker housing (2)                                     | 16719-99B            |
| 13          | Gasket kit, cam service  | 17045-99D            |
| 14          | Rocker arm, front intake, rear exhaust, with bushings (2)      | 17360-83A            |
| 15          | Rocker arm, rear intake, front exhaust, with bushings (2)      | 17375-83A            |
| 16          | Gasket, rocker cover (2)                                       | 17386-99A            |
| 17          | Bushing, rocker arm (8)  | 17428-57             |
| 18          | Rocker cover, (chrome) (2)                                     | 17572-99             |
| 19          | Rocker housing, (chrome) (2)                                   | 17578-10             |
| 20          | Lifter cover, front (chrome)<br>Lifter cover, rear (chrome)    | 17964-99<br>17966-99 |
| 21          | Support, rocker arm (2)  | 17594-99             |
| 22          | Breather assembly (2)  | 17025-03A            |
| 23          | Shaft, rocker arm (4)  | 17611-83             |
| 24          | Perfect Fit push rod kit (+0.030 inch)                         | 18401-03             |
| 25          | Cover, push rod, lower (4)                                     | 17939-99             |
| 26          | Cap, cover spring (4)  | 17945-36B            |
| 27          | Spring, push rod cover (4)                                     | 17947-36             |
| 28          | Cover, push rod upper (4)                                      | 17948-99             |
| 29          | Retainer, spring cap (4)                                       | 17968-99             |
| 30          | Pin, anti-rotation (2)   | 18535-99             |
| 31          | Hydraulic lifter kit (Includes 4 lifters)                      | 18572-13             |
| 32          | Gasket, lifter cover (2)                                       | 18673-07             |
| 33          | Baffle assembly, breather (2)                                  | 26500002             |



**Figure 11. Service Parts; SE120R Screamin' Eagle Pro Race-Use Crate Engine**

**Table 16. Service Parts, SE120R Screamin' Eagle Pro Race-Use Crate Engine**

| Item | Description (Quantity)   | Part Number |
|------|--|-------------|
| 1    | Retaining ring   | 11177A      |
| 2    | Piston ring set, standard (2)  | 22526-10    |
|      | Piston ring set, 0.254 mm (0.010 in) over size (2)   | 22529-10    |
| 3    | Piston kit, front and rear, with ring sets, piston pin and lock rings, standard                      | 22574-10    |
|      | Piston kit, front and rear, with ring sets, piston pin and lock rings, 0.254 mm (0.010 in) over size | 22576-10    |
| 4    | Lock ring, piston pin (4)  | 22097-99    |
| 5    | Piston pin (2)   | 22310-10    |
| 6    | Flywheel assembly kit  | 24100011    |



**Figure 12. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

**Table 17. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine**

| Item | Description (Quantity)   | Part Number |
|------|--|-------------|
| 1    | Plug (3)   | 765         |
| 2    | Screw, 5/16-18 x 3.0 inch, hex flange head (8)                       | 895         |
| 2a   | Screw, top center crankcase  | 1105        |
| 2b   | Washer, sealing  | 1086A       |
| 3    | Washer (3)   | 8972        |
| 4    | Needle bearing kit, (kit contains 2)                                 | 24017-10    |
| 5    | O-ring (2)   | 10930       |
| 6    | Oil seal   | 12068       |
| 7    | Dowel pin (2)  | 16574-99A   |
| 8    | Dowel pin (2)  | 16589-99A   |
| 9    | Dowel pin (4)  | 16595-99A   |
| 10   | Piston cooling jet, with 10930 (2)                                   | 22315-06A   |
| 11   | Bearing kit, left side with 8972, 24605-07, 35114-02, and inner race | 24004-03B   |
| 12   | Spacer, sprocket shaft   | 24039-03    |
| 13   | Crankcase set (2) 3, 4, 11, 14, 15, 16, 18, 20                       | 24400034    |
| 14   | Spacer (4)   | 68042-99    |
| 15   | Bearing, main  | 24605-07    |
| 16   | Adapter, oil filter  | 26352-95A   |
| 17   | O-Ring (2)   | 26432-76A   |
| 18   | Retaining ring   | 35114-02    |
| 19   | Oil filter (chrome)  | 63798-99A   |
| 20   | Screw, TORX® 8-32 x 3/8 (4)  | 68042-99    |

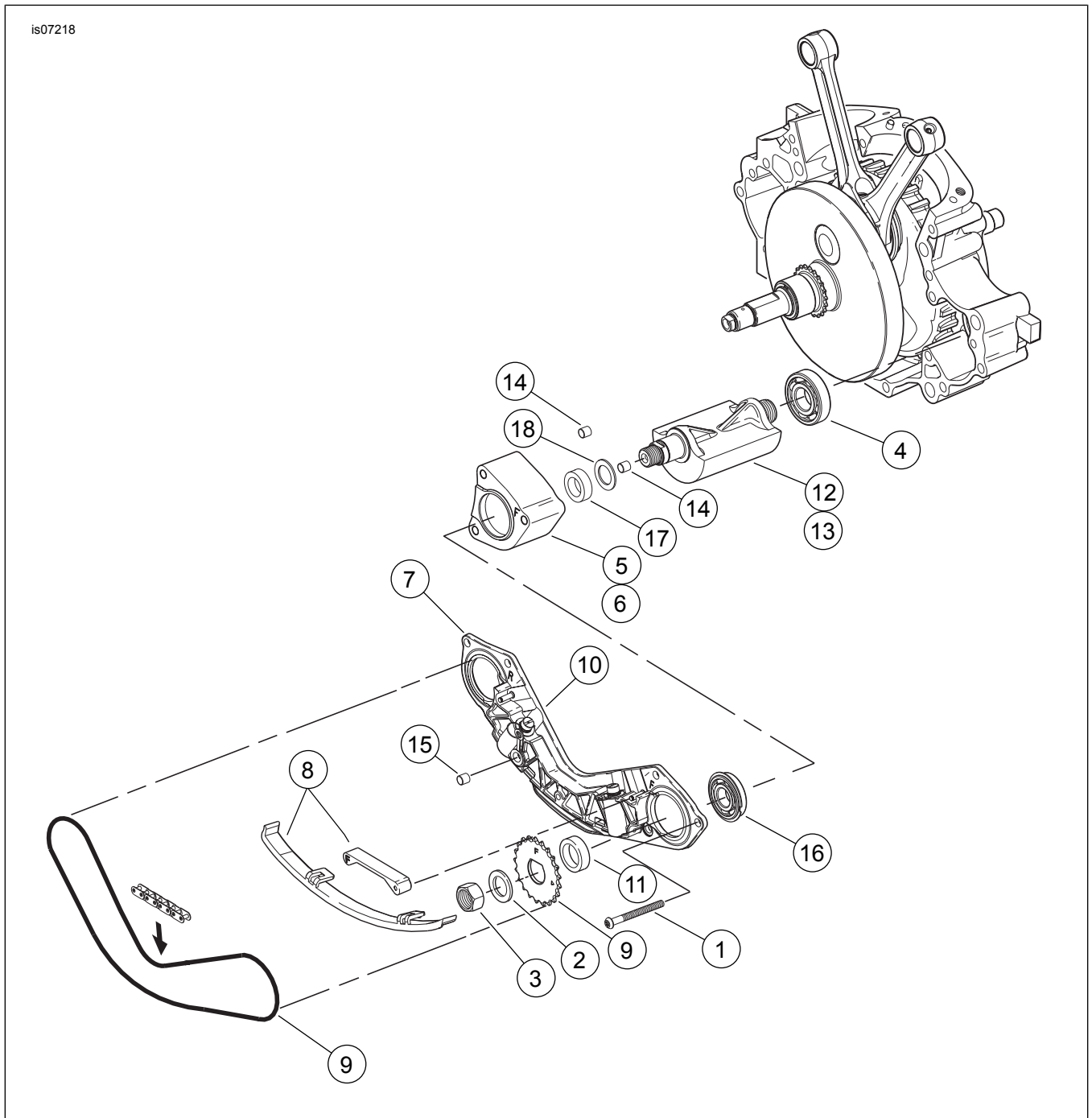


Figure 13. Service Parts: SE120R Screamin' Eagle Pro Race-Use Crate Engine

Table 18. Service Parts Table

| Item | Description (Quantity)  | Part Number |
|------|---|-------------|
| 1    | Screw, 5/16-18 x 3-1/4 button head, w/lockpatch (6)               | 956         |
| 2    | Washer, 41/64 x 1-1/8 x 5/64 (2)                                  | 6852        |
| 3    | Jam Nut, 5/8-18 x 3/8 x 1 (2)                                     | 7974        |
| 4    | Bearing (2)   | 8989        |
| 5    | Support, front balance shaft                                      | 14716-00    |
| 6    | Support, rear balance shaft                                       | 14717-00    |
| 7    | Support assembly, chain guide - includes tensioner pistons        | 14728-00    |
| 8    | Guide kit, chain tensioner, includes lower, front and rear guides | 14761-00    |
| 9    | Chain drive kit, includes chain, front and rear sprockets         | 14762-00    |
| 10   | Piston assembly kit, chain tensioner (2)                          | 14764-00    |

**Table 18. Service Parts Table**

| <b>Item</b> | <b>Description (Quantity)</b>   | <b>Part Number</b> |
|-------------|---|--------------------|
| 11          | Spacer, 0.130 inch thick  | 14780-00           |
|             | Spacer, 0.140 inch thick  | 14781-00           |
|             | Spacer, 0.150 inch thick  | 14782-00           |
|             | Spacer, 0.160 inch thick  | 14783-00           |
|             | Spacer, 0.170 inch thick  | 14784-00           |
|             | Spacer, 0.180 inch thick  | 14785-00           |
|             | Spacer, 0.190 inch thick  | 14786-00           |
|             | Spacer, 0.200 inch thick  | 14787-00           |
|             | Spacer, 0.210 inch thick  | 14788-00           |
| 12          | Balance shaft kit, front - includes balance shaft assembly and sprocket | 14822-05           |
| 13          | Balance shaft kit, rear - includes balance shaft assembly and sprocket  | 14823-05           |
| 14          | Dowel (4)   | 16583-00           |
| 15          | Seal, oil interconnect  | 45359-00           |
| 16          | Bearing, (2)  | 8962               |
| 17          | Inner bearing, (2)  | 8961               |
| 18          | Thrust washer (2)   | 8960               |



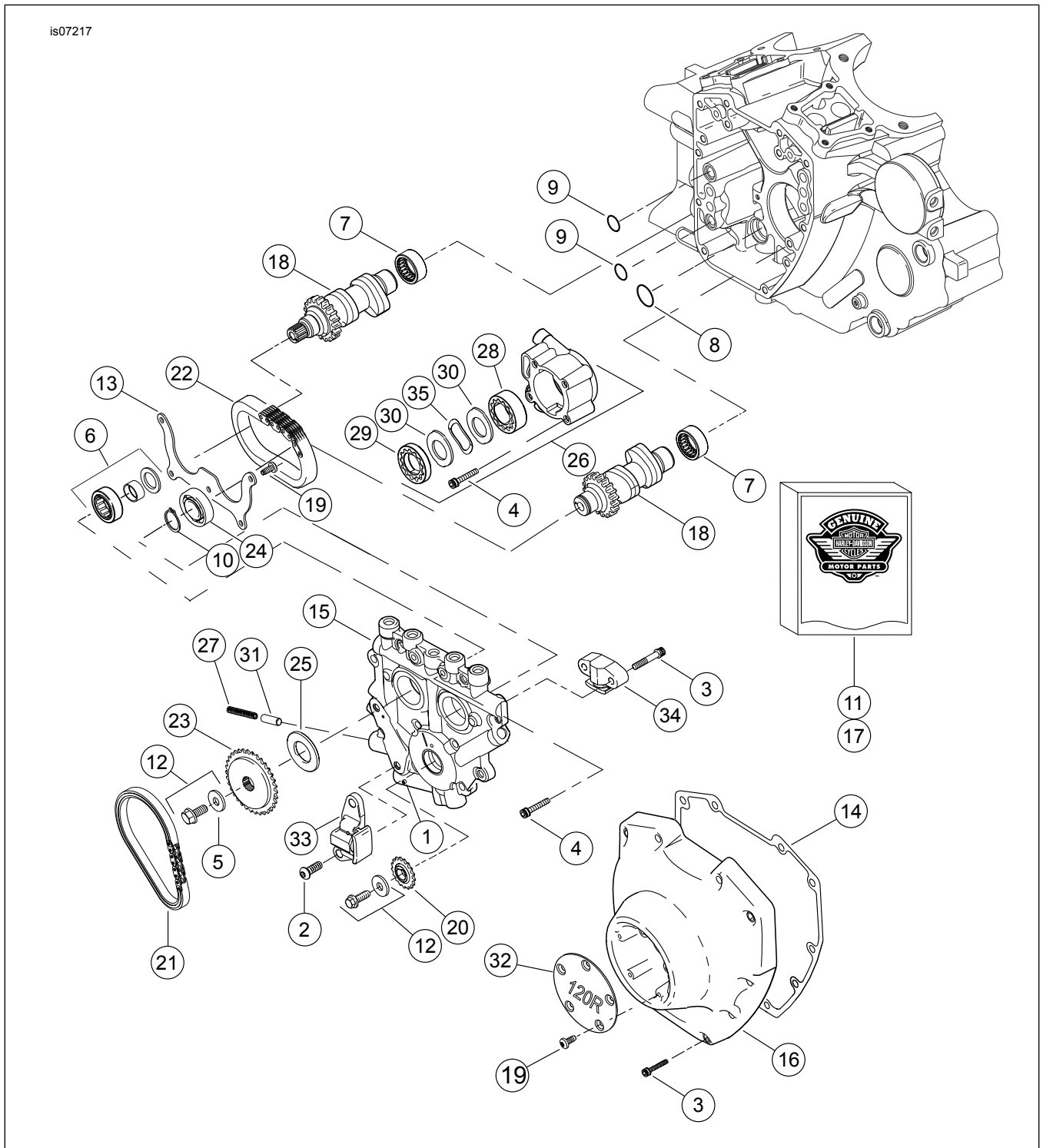


Figure 14. Service Parts: SE120R Screamin' Eagle Pro Race-use Crate Engine

Table 19. Service Parts: SE120R Screamin' Eagle Pro Race-use Crate Engine

| Item | Description (Quantity)  | Part Number |
|------|---|-------------|
| 1    | Roll pin  | 601         |
| 2    | Screw, primary cam chain tensioner (2)  | 942         |
| 3    | Screw, cam cover, 1/4-20 x 1-1/4, knurled with lockpatch (grade 8), (10)              | 4740A       |
|      | Screw, secondary cam tensioner, 1/4-20 x 1-1/4, knurled with lockpatch (grade 8), (2) | 4740A       |
| 4    | Screw, 1/4-20 x 1, socket head, with lockpatch (8)                                    | 4741A       |
| 5    | Washer, 3/8 x 1-1/8 x 7/32  | 6294        |
| 6    | Bearing assembly w/bearing, inner race, washer and O-ring                             | 8983        |
| 7    | Needle bearing kit, camshafts (2) (Kit includes 2)                                    | 24017-10    |

**Table 19. Service Parts: SE120R Screamin' Eagle Pro Race-use Crate Engine**

| <b>Item</b> | <b>Description (Quantity)</b>   | <b>Part Number</b>  |
|-------------|---|---------------------|
| 8           | O-ring  | 11293               |
| 9           | O-ring (2)  | 11301               |
| 10          | Retaining ring  | 11494               |
| 11          | Gasket kit, cam service   | 17045-99D           |
| 12          | Cam drive sprocket retention kit, with 6294, screws and washer                  | 25566-06            |
| 13          | Plate, bearing retaining  | 1200018             |
| 14          | Gasket, cam cover   | 25244-99A           |
| 15          | Cam support plate, with bypass valve  | 25400018            |
| 16          | Cam cover, (chrome)   | 25369-01B           |
| 17          | Camshaft chain and fastener kit, with 25566-06, 25673-06, 25675-06 and 25728-06 | 25585-06            |
| 18          | Camshaft, front and rear kit, SE266E  | 25400029            |
| 19          | Screw, 8-32 x 3/8 TORX® head (9)  | 68042-99            |
| 20          | Sprocket, cam drive on crankshaft, 17 T   | 25673-06            |
| 21          | Chain, primary cam drive  | 25675-06            |
| 22          | Chain, secondary cam drive  | 25607-99            |
| 23          | Sprocket, cam drive, 34 T   | 25728-06            |
| 24          | Ball bearing  | 8990A               |
| 25          | Spacer, cam drive sprocket alignment 0.287 inch thick                           | 25722-00            |
|             | Spacer, cam drive sprocket alignment 0.297 inch thick                           | 25723-00            |
|             | Spacer, cam drive sprocket alignment 0.307 inch thick                           | 25721-00            |
|             | Spacer, cam drive sprocket alignment 0.317 inch thick                           | 25719-00            |
|             | Spacer, cam drive sprocket alignment 0.327 inch thick                           | 25717-00            |
|             | Spacer, cam drive sprocket alignment 0.337 inch thick                           | 25725-00            |
|             | Spacer, cam drive sprocket alignment 0.347 inch thick                           | 11889               |
|             | Spacer, cam drive sprocket alignment 0.357 inch thick                           | 11890               |
| 26          | Oil pump assembly, with items 28-30, 35 and body                                | 62400001            |
| 27          | Spring, relief valve  | 26210-99            |
| 28          | Gerotor assembly, scavenge  | Not Sold Separately |
| 29          | Gerotor assembly, pressure  | Not Sold Separately |
| 30          | Separator plate, gerotor (2)  | Not Sold Separately |
| 31          | Relief valve, oil pump  | 26400-82B           |
| 32          | Cover, 120R   | 25495-10            |
| 33          | Chain tensioner, primary cam drive chain  | 39968-06            |
| 34          | Chain tensioner, secondary cam drive chain                                      | 39969-06            |
| 35          | Spring, separator   | 40323-00            |