

**V-Twin MFG.**  
**XL 1200CC Big Bore Kit for 1986-1990 XL's Models**  
**VT No. 11-0251**

**This is a custom application and rider safety depends on proper installation. This product should only be installed by a knowledgeable and trained motorcycle technician. V-Twin Mfg. accepts no responsibility for improper installation.**

1200cc Big Bore Kit General Information - This kit can be used on either XLH-883cc or XLH-1100cc motorcycles.

**Caution** - XLH-883cc cylinder head combustion chamber must be modified through use of the enclosed template kit. before installation of kit components. Failure to enlarge the combustion chamber could result in extreme high compression which could cause severe engine damage.

**Installation Instructions:**

1. **Disassembly:** Follow procedures in the 1986-1988 XLH Service Manual, Section 3 to remove cylinder heads, cylinders and pistons.
2. **Inspection** - Boring & Honing See instructions, or refer to the 1986-1988 XLH Service Manual.
3. **Assembly** - Follow instructions in the 1986-1988 XLH Service Manual, Section 3.

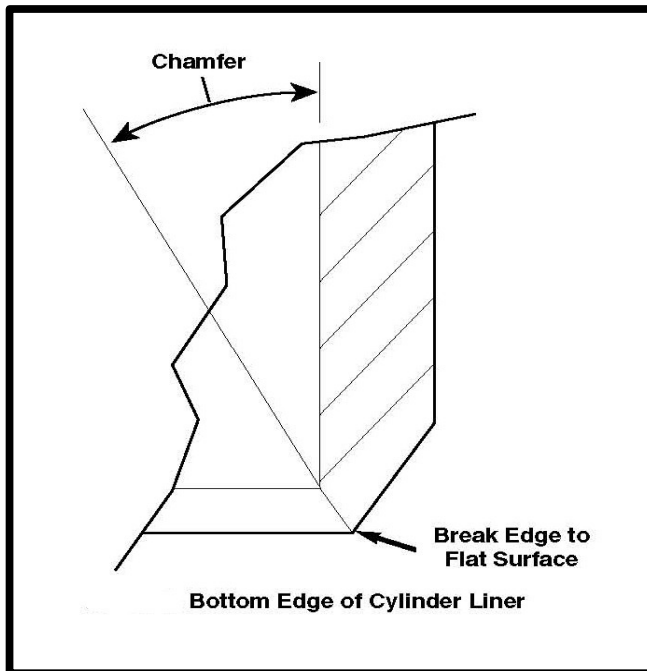
**Inspection** - After the cylinders have been removed, check all gasket surfaces for clean smooth finish. Remove any burrs or old gasket material. Before installing new pistons, check connecting rod bushings for pin clearance. Replace bushings, if clearance is 0.002" or more.

**Boring & Honing -**

1. Check again for burrs on cylinder gasket surfaces and remove burrs before performing Step 2.
2. Install original head & base gaskets, using OEM torque bolts, & cylinder torque plates. Tighten bolts following procedures in the 1986/88 XLH Service Manual, under "Installation of Cylinder Head."

**Note:** OEM torque plates must be used to simulate engine operating conditions. Measurements will vary as much as 0.001" without the use of torque plates.

3. The cylinder must be bored with the gaskets & torque plates installed. Bore cylinder to 0.003" under the desired finish size.
4. Hone the cylinder to it's finished size, using a 280 grit flexible ball hone followed by a 240 grit flexible ball hone. All honing must be done with torque plates attached. All honing must be done from the bottom of the crankcase side of the cylinder, with the torque plates attached. Work for a 60 degree crosshatch pattern.
5. Final Bore Size - Standard Bore Size for a 1200cc Cylinder (after honing) is 3.4980" +/- 0.0002". Chamfer the bottom inner edge of the cylinder after honing. Doing so, provides a beveled surface for ease of piston ring installation. Break leading edge of liner to a flat surface. If left sharp, this edge could easily be damaged during installation. See illustration below.



**Piston Installation**

1. The 1200cc pistons in this kit have arrow marks at the top. This arrow must be faced toward the front of the engine when the piston is installed. There is no front or rear cylinder piston. Either piston can be installed in either cylinder. Check piston ring side clearance & end gap, referring to the 1986-1988 XLH Service Manual. Set end gap of adjacent rings 90 degrees apart.

**Assembly**

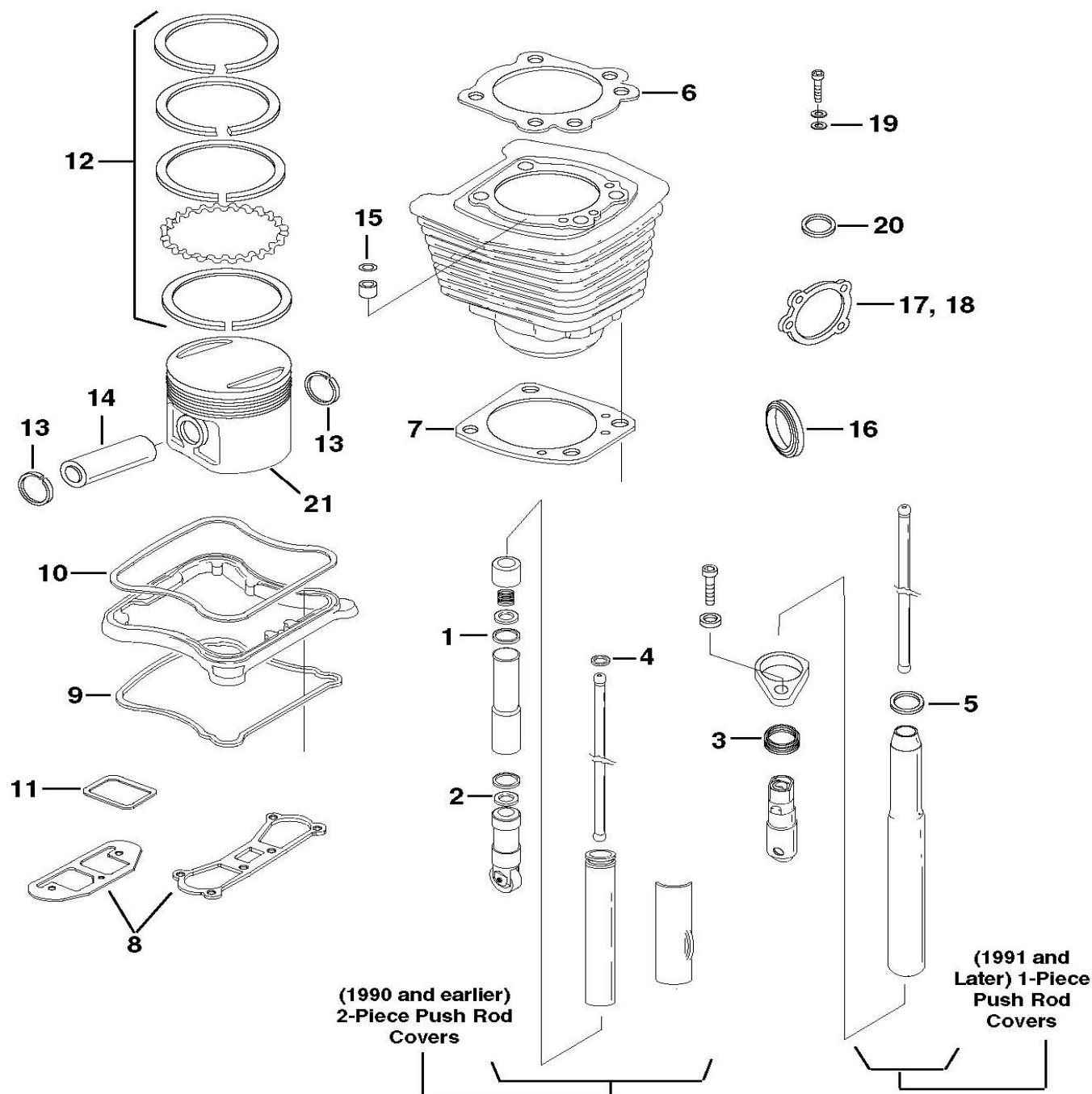
1. Follow procedures & torque information in the 1986-1988 XLH Service Manual. Replace original gaskets, O-rings & seals with those furnished in the kit.

**Note:** Push rod covers on 1991 and later models are one-piece and the correct O-rings are as follows:

**Bottom**-Part Number 17944-89  
**Upper**-Part Number 11190

**Engine Break In**

1. For best results, observe the following break in rules for the first 500 miles.
  - A. For the first 50 miles, keep engine speed below 2500 RPM in all gears.
  - B. Up to 500 miles, vary the engine speed, avoiding any steady speed for long distances. Engine speed up to 3000 RPM is permissible in any gear.
  - C. Avoid fast starts with wide open throttle. Drive slowly until engine warms up.
  - D. Also avoid running the engine at very low RPM in higher gears. Engine will perform best if these simple rules are observed during the break in period.



Item	Description	Part Number	Item	Description	Part Number
1	O-Ring (4) (1990 and earlier)	11132	12	Piston ring set (2)	21920-83
2	O-Ring (4) (1990 and earlier)	11145	13	Retaining ring (4)	22589-83
3	O-Ring (4) (1991 and later)	17944-89	14	Piston pin (2)	22765-88
4	O-Ring (4) (1990 and earlier)	11157	15	O-ring (4)	26432-76A
5	O-Ring (4) (1991 and later)	11190	16	Gasket, intake manifold (2)	22995-86B
6	Gasket, cylinder head (2)	16770-84D	17	Gasket, carb inlet (1987 & earlier)	29058-77
7	Gasket, cylinder base (2)	16774-86D	18	Gasket, carb inlet (1988 & later)	29059-88A
8	Gasket, cylinder head left/right (2)	16800-84	19	Gasket, rocker cover screw (8)	63858-49
9	Gasket, lower rocker cover (2)	17353-89	20	Gasket, exhaust port (2)	65324-83A
10	Gasket, upper rocker cover (2)	17354-89	21	Piston, (standard) (2)	Not sold
11	Gasket, rocker cover, inner (2)	17358-84A			

### 883 CYLINDER HEAD TEMPLATE KIT

#### General

This template kit is for use with VT Kit 11-02511200cc Piston Kit Part and was designed for upgrading Evolution 883cc models to 1200cc displacement. Each kit contains one template.

#### Procedure

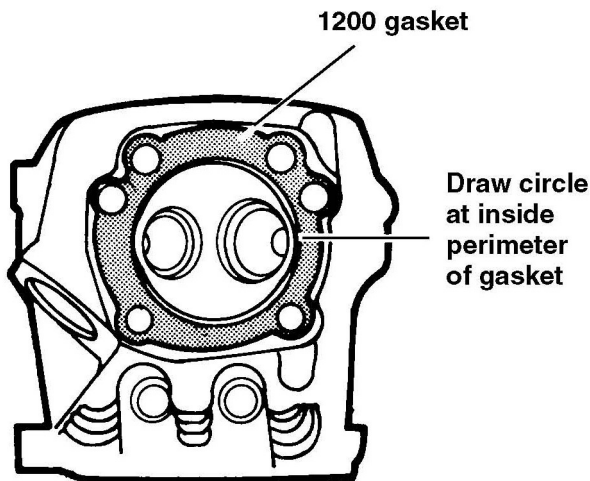
1. Remove cylinder heads following instructions in the appropriate XLH Service Manual.
2. Remove valve springs and valves from both cylinder heads.
3. Apply machinists die or magic marker to gasket surface of cylinder head. Take the 1200cc gasket from the 1200cc Big Bore Kit and position on cylinder head with holes aligned. Insert two short 3/8" diameter bolts through gasket and into two diametrically opposite bolt holes to keep gasket centered. Hold

gasket securely while drawing a circle around the inner perimeter of the gasket. Remove bolts and 1200cc gasket.

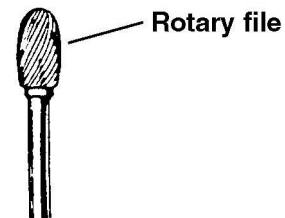
4. Take two old 883cc valves and apply grease around the valve seating surface. Insert the valves into the head. The grease will seal the valves and hold them in place.

**Note:** Old valves are used so no damage occurs to good valves and also to protect the valve seats.

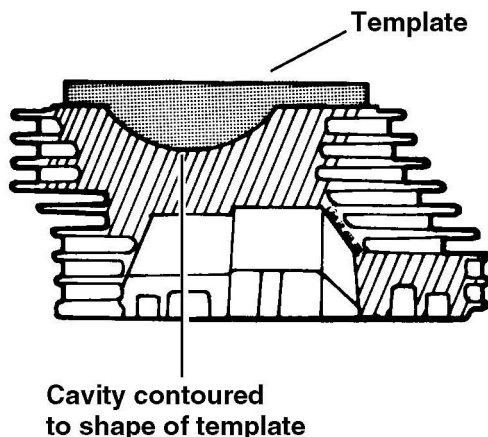
5. Set the head level on two short pieces of wooden 2x4. Clamp head firmly to table as considerable force is exerted on hand grinder.
6. Find an old 1340cc head gasket and apply grease to one surface (the side that contacts the head). Press the gasket onto cylinder head with holes in gasket and head aligned. Insert two short 3/8" diameter bolts through gasket and into two diametrically opposite bolt holes to keep gasket centered.  
Caution: Gasket is used only as a precaution to protect the machined gasket surface of the head. If this is not done and the gasket surface is damaged, the head gasket will fail.  
Warning: A full face shield, gloves and a long sleeved garment must be worn at all times when using the hand grinder. Metal particles coming off the high speed cutting tool will have enough velocity to penetrate the skin surface and cause injury.
7. Install an oval shaped aluminum cutting, rotary file into the chuck of an air or electric die grinder. See Figure 3. Enlarge the combustion chamber by removing the material within the scribed circle to a depth and contour that matches the perimeter of the template furnished in the kit. Do not grind up to the line. Leave a small amount of material (approximately 1/16") around the inside perimeter of the line. The valves can be removed when checking the cavity with the template. Once the cavity is nearly to shape, finish sand the surface smooth with an 80 or 60 grit sanding cartridge. The cavity must be contoured to a smooth radius without steps or gouges.
8. When combustion chamber is enlarged and ground smooth to the perimeter of the template, the volume of the cavity must be checked. To check the combustion chamber volume you will need the following:
  - CC PLATE can be purchased from any hot rod shop or can be made out of 3/16" Plexiglas 5" x 5" with a 5/16" hole drilled through the center as shown in Figure 4.
  - 100 CC BURETTE (with Spigot)-can be purchased from medical or scientific supply house.
9. Remove old gasket. Apply a thin coat of grease around the seating surface of the old valves. Install the old valves, each with one valve spring. Be sure spark plug is installed. Apply a thin coat of grease on the gasket surface of the head. Apply grease to the CC. Plate in a circle matching the perimeter of the head gasket.
10. Press the plastic plate, grease side down, on the head and slide back and forth in short strokes to insure all surfaces are sealed around the entire perimeter.
11. Fill the burette with a clean light oil such as cutting oil. Adjust the level of the fluid so that the bottom of the meniscus (concave surface of fluid) is level with the zero graduation.
12. Slowly fill the combustion cavity with oil until the fluid comes up to the bottom of the plastic plate. If the head is not sitting perfectly level, air bubbles will appear off to the side from center. Carefully slide (do not lift) the plate so the center hole, in plate, is over the air bubble or shim under head to move bubble to center. Fill the air pocket with fluid up to the bottom of the plate. Repeat at all other air bubbles.
13. When the cavity is filled and all air bubbles are eliminated, read the level of the fluid in the burette. The fluid level should be between 60-62 cc's.



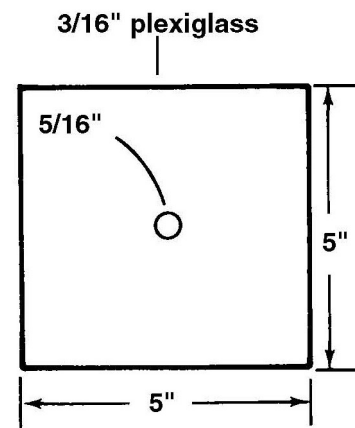
Scribing Perimeter



Aluminum Cutting Tool



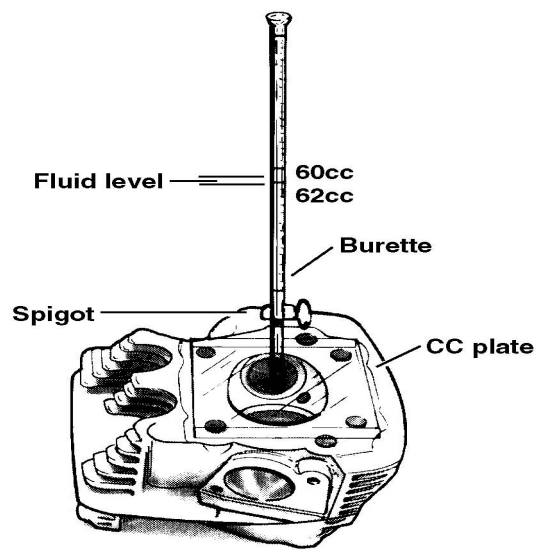
Shaping Combustion Chamber



CC Plate

COMPRESSION RATIO WITH STANDARD BORE AND  
STANDARD HEAD GASKET

Volume Cylinder Head Combustion Chamber	Compression Ratio
60cc	9.9:1
61cc	9.7:1
62cc	9.6:1



Checking Combustion Chamber Volume

Note: When printing do not shrink page or template will be off.

