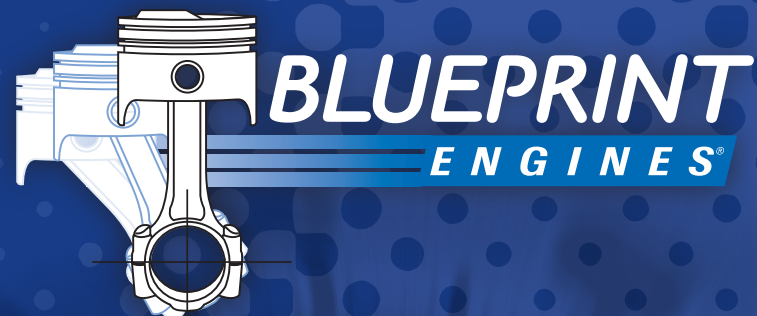


*Brute, honest horsepower from the leader  
in high performance crate engines!*



*Engine Installation Guide*

# WELCOME TO BLUEPRINT



## Contents

- 2 Inventory Checklist
- 4 Recommended Add-ons
- 6 Engine Installation Procedures
- 7 Start-up & Break-in Procedures
- 8 Maintenance & Contact Info

## ***Congratulations...***

...on your purchase of a BluePrint performance crate engine. By making this decision, you now own one of the best-performing, best-warranted performance crate engines on the market today. All of our engines are designed and tested to get you the maximum performance and enjoyment out of your vehicle; whether you are cruising the local boulevard, heading to the racetrack, or navigating your favorite off-road trail, we've got you covered.

We developed this guide to provide you proper installation and maintenance instructions to ensure your new engine will give you many years of trouble-free operation. We have included a list of phone numbers for additional technical and warranty questions.

Thank you for your decision to purchase a BluePrint engine. We believe this will be the start of a whole new relationship between you and your vehicle.

# Inventory Checklist



Please ensure your engine has been received with the correct components and items.

Your engine part number will be preceded by one of the following nomenclatures:

**CT = Base engine with intake manifold, valve covers, timing cover and oil pan**

**CTC = Dressed engine with carburetor**

**CTF = Dressed engine with fuel injection**

Budget Stomper Series:

**CT = Valve covers, timing cover and oil pan**

**CTC = Same at CT, plus intake manifold, distributor and carburetor**

Note: Your engine may differ from the checklist depending on custom configurations made at time of ordering.

Components	CT Engines	CTC Engines	CTF Engines	CT Budget Stomper Engines	CTC Budget Stomper Engines
Shortblock Assembly	■	■	■	■	■
Oil Pump/Pick Up	■	■	■	■	■
Oil Pan	■	■	■	■	■
Cylinder Heads	■	■	■	■	■
Valve Covers	■	■	■	■	■
Intake Manifold	■	■	■		■
Carburetor		■			■
Fuel Injection			■		
Distributor/Coil		■	■		■
Spark Plugs		■	■		
Plug Wires		■	■		
Harmonic Balancer	■*	■	■		
Water Pump		■	■		
Fuel Pump		■	■		
Fuel Line		■	■		
Warranty Card	■	■	■	■	■
Dyno Sheet	■	■	■	■	■
Installation Guide	■	■	■	■	■

\*Harmonic Balancer is NOT included on BP3472CT, BP3550CT, BP3550CT1, BP3830CT, BP3830CT1, BP38301CT, BP38302CT, MBP262CT, MBP3550CT, MBP3830CT.

# Recommended Add-ons

	PART NUMBER	RECOMMENDED CFM	SPARK PLUG EQUIVALENT	SPARK PLUG GAP†	BALANCER TYPE	FLEXPLATE/FLYWHEEL TYPE
<b>GM</b>	BP3550CT/CTC	600 VAC. SECONDARIES	AC 41-993	.045"	NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3550CT1/CTC1	600 VAC. SECONDARIES	AC 41-993	.045"	NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3555CT/CTC/CTF*	600 VAC. SECONDARIES	AC 41-629	.045"	NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3556CT/CTC/CTF*	600 VAC. SECONDARIES	AC 41-629	.045"	NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP35511CT1/CTC1	600 VAC. SECONDARIES	NGK UR5	.035"	NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP35512CT1/CTC1	600 VAC. SECONDARIES	NGK R5672A-9	.032"	NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3830CT/CTC	750 VAC. SECONDARIES	AC 41-993	.045"	400 WEIGHTED 8" DIA.	NON WEIGHTED AND BALANCE PLATE++
	BP3830CT1/CTC1	750 VAC. SECONDARIES	AC 41-993	.045"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3832CT1/CTC1	750 VAC. SECONDARIES	NGK UR5	.035"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3833CT1/CTC1	750 VAC. SECONDARIES	AC 41-993	.045"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3834CT1/CTC1	750 VAC. SECONDARIES	NGK R5672A-9	.032"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3836CT/CTC/CTF*	750 VAC. SECONDARIES	AC 41-629	.045"	400 WEIGHTED 8" DIA.	NON WEIGHTED AND BALANCE PLATE++
	BP3837CT/CTC/CTF*	750 VAC. SECONDARIES	AC 41-629	.045"	NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP38310CTC	750 MECH. SECONDARIES	CHAMPION 12331	.050"	NON WEIGHTED 8" DIA.	NON WEIGHTED AND BALANCE PLATE
	BP38301CT	STOCK INJECTORS	NGK UR6	.040"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP38302CT	STOCK INJECTORS	NGK TR6	.040"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP38303CT	STOCK INTAKE	AC 41-993	.045"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3740CT/CTC	750 MECH. SECONDARIES	NGK TR5	.040"	400 WEIGHTED 6" DIA.	NON WEIGHTED
	BP37401CTF		NGK TR5	.040"	400 WEIGHTED 8" DIA.	NON WEIGHTED
	BP4960CT/CTC/CTF*	800 VAC. SECONDARIES	NGK 2817	.045"	NON WEIGHTED 8" DIA.	NON WEIGHTED
BP4961CT/CTC/CTF*	850 MECH. SECONDARIES	CHAMPION 792	.045"	NON WEIGHTED 8" DIA.	NON WEIGHTED	
<b>FORD</b>	BP3470CT/CTC/CTF*	600 VAC. SECONDARIES	CHAMPION 792	.045"	28.4 OZ. 6.4" DIA.	28.4 OZ. WEIGHTED
	BP3471CT/CTC/CTF*	750 VAC. SECONDARIES	CHAMPION 792	.045"	28.4 OZ. 6.4" DIA.	28.4 OZ. WEIGHTED
	BP3472CT/CTC	600 VAC. SECONDARIES	NGK 2817	.045"	28.4 OZ. 6.4" DIA.	28.4 OZ. WEIGHTED
	BPF4080CT/CTC/CTF*	750 VAC. SECONDARIES	CHAMPION 792	.045"	50 OZ. 6.4" DIA.	50 OZ. WEIGHTED
<b>CHRYSLER</b>	BPC4080CT/CTC	750 VAC. SECONDARIES	CHAMPION 792	.045"	360 MAG WEIGHTED 7.25" DIA.	WEIGHTED 360 (PRE MAGNUM)**
	BPC4081CT/CTC/CTF*	825 MECH. SECONDARIES	CHAMPION 792	.045"	360 MAG WEIGHTED 7.25" DIA.	WEIGHTED 360 (PRE MAGNUM)**
<b>MARINE</b>	MBP262CT	600 MARINE	AC 41-993	.045"	NON WEIGHTED	WEIGHTED
	MBP3550CT/CTC	600 MARINE	AC 41-993	.045"	NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	MBP3830CT/CTC	750 MARINE	AC 41-993	.045"	400 WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	MBP4960CT/CTC	850 MARINE	NGK 2817	.045"	NON WEIGHTED 8" DIA.	NON WEIGHTED
<b>CIRCLE TRACK</b>	BP3557CT	750 GAS OR ALCOHOL	NGK 2817	.027"	NON WEIGHTED	NON WEIGHTED
	BP3558CT	825 GAS OR ALCOHOL	NGK R5673-7	.027"	NON WEIGHTED	NON WEIGHTED
	BP3559CT	750 GAS OR ALCOHOL	NGK 2817	.027"	NON WEIGHTED	NON WEIGHTED
	BP35510CT	825 GAS OR ALCOHOL	NGK R5672A-9	.027"	NON WEIGHTED	NON WEIGHTED
	BP3838CT	825 GAS OR ALCOHOL	NGK R5673-7	.027"	NON WEIGHTED	NON WEIGHTED
	BP3839CT	750 GAS OR ALCOHOL	NGK 2817	.027"	400 WEIGHTED 8" DIA.	NON WEIGHTED AND BALANCE PLATE
<b>SHORT BLOCK</b>	BP3551				NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3552				NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3553				NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3554				NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3556				NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP3830				400 WEIGHTED 8" DIA.	NON WEIGHTED AND BALANCE PLATE++
	BP3831				400 WEIGHTED 8" DIA.	NON WEIGHTED AND BALANCE PLATE++
	BP3837				NON WEIGHTED 8" DIA.	LATE 350 WEIGHTED
	BP4960				NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP4961				NON WEIGHTED 8" DIA.	NON WEIGHTED
	BP3472				28.4 OZ. 6.4" DIA.	28.4 OZ. WEIGHTED
	BPC4080				360 MAG WEIGHTED 7.25" DIA.	WEIGHTED 360 (PRE MAGNUM)

\*CTF engines are fuel injected and do not have a recommended CFM.

†Specifications for CTC & CTF engines only. For CT engines, refer to the ignition system manufacturer's specifications.

\*\* If using a stock type weighted torque converter setup, then a non-weighted flexplate should be used.

++ 400 Style flex plate/flywheel can be used instead of the balance plate.

# Engine Installation Procedures



## IMPORTANT: Please read BEFORE starting installation

When we dyno tested your engine, it was run up to correct operating temperature, oil pressure readings were checked, timing was set, and fuel adjustments were performed. We then made three pulls on the dyno to determine the torque and horsepower readings. Total run time was approximately 25 minutes. While this process has started the break-in process, it is in no way complete. To ensure years of trouble-free performance from your new BluePrint engine, we have developed this list of critical procedures to ensure proper break-in of your engine.

## PRE-LUBE

- 1 When we dyno tested your engine the oil washed the assembly lube from all the surfaces. Now it will be very critical that you pre lube the engine before you attempt to start it or rotate it over to set timing. This pre-lube process can be accomplished by two different methods.
  - a. Purchase a pre-lube tank from us through our website or by calling 1-800-483-4263. This is the easiest method. It incorporates a small tank you fill with engine oil, then attach the output hose to the block where you would normally install the oil sending unit.

Next, apply air pressure from an air compressor to force oil throughout the engine. During this oiling process, rotate the engine by hand to ensure even oil distribution throughout the engine. When oil is seen flowing at the rocker arms on both sides of the engine, the pre-lube process is complete.
  - b. Using an old distributor shaft without the cam gear, install the shaft in an electric drill and engage the oil pump drive with the distributor shaft. Fill the engine with oil and run the drill. Periodically rotate the engine over by hand during the process until oil is flowing at the rocker arms on both sides of the engine.
- 2 Use Shell Rotella 15w40 (container states designated for diesel engines). This oil has a higher zinc content which offers better lubrication for flat tappet cams. Royal Purple 10w30 can also be used as long as a zinc additive such as Lucas Oil Break-in additive (#10063) is added to the oil.

## ENGINE TIMING AND START UP

Initial timing should be set at around 1000 -1200 RPM, whichever gives the lowest timing reading. Initial timing should be set with vacuum advance unhooked and plugged.

Keith Black <b>Hypereutectic</b> Pistons	13–16 degrees initial / 34 degrees total
Keith Black <b>Forged</b> Pistons	13–16 degrees initial / 34 degrees total
Probe <b>Forged</b> Pistons	15 degrees initial / 36 degrees total

**IMPORTANT: Timing your engine differently than listed will lead to abnormal combustion and/or detonation. This condition will not be covered under warranty. No exceptions.**

- 1 On CTC engines with the supplied MSD distributor setting, the initial timing at 13 degrees will give a total advance of 34 degrees by about 4000 RPM. If engine has the Hypereutectic Piston, then this is the timing setting to use and a total advance of 34 degrees should not be exceeded or engine damage may occur. If engine has Forged Pistons, setting the initial timing at 15 degrees will give a total advance of 36 degrees by about 4000 RPM with supplied MSD distributor. These timing specifications are a good general starting point. The vehicle's weight, trans, gear ratio, tire size, load, and type of fuel used will determine the best timing setting and advance curve. CTC engines that are supplied with MSD distributors also come with an advance curve kit. This can be used along with the MSD instructions that are also supplied, to help obtain the best advance curve and performance for your application. If using a distributor other than the MSD distributor, try to stay as close to these timing specifications as possible, as a starting point. Part numbers BP38301CT, BP38302CT and BP38303CT should have timing set at 0 degrees TDC because the ignition is computer controlled. **A vacuum advance should not be needed or used on BluePrint Engines.**
- 2 All of our Ford 347s use the 1,3,7,2,6,5,4,8 firing order.

All of our Chevrolet and Chrysler engines use the 1,8,4,3,6,5,7,2 firing order.
- 3 Fill the radiator and engine with a 50/50 mix of antifreeze and water. With the thermostat housing removed, fill the engine. This will limit some of the air pockets that develop in the cooling system. Turn the heater controls to their hottest setting, install a new 160 degree thermostat and housing. Failure to correctly fill or purge the cooling system will cause an air lock or overheating problem and void the warranty.
- 4 Start the engine and immediately bring the idle up to 2000 RPM, vary the RPM's but do not let it drop below 1500 RPM for the first 15 to 20 minutes, this will ensure the break-in process for the cam and lifters is complete. While the engine is running, check for oil pressure and fluid leaks such as oil, transmission fluid, antifreeze, etc. Once the timing and fuel distribution is set, no other adjustments need to be made to the engine because we set all the lifters at the factory during dyno testing
- 5 For the first 1000 miles avoid hard acceleration for a long period of time. Periodically adjust the engine speed when driving, this helps the rings seat in. After the first 500 miles change the oil and the filter. You may notice small amounts of trace metal in the oil, this is a normal process as the engine breaks in and should disappear at the next oil change.

# Maintenance & Contact Info



## MAINTENANCE

1. The oil and filter should be changed every 3000 miles. If your engine is used in a heavy duty or dusty environment, the oil should be changed more frequently.
2. Do not use synthetic oil during the break-in period (3000 to 4000 miles).
3. During the break-in period check the oil level frequently. Until the internal components seat in, your engine may consume oil. Check the coolant level as air pockets may purge themselves leaving low coolant levels.

**Technical Answer Hotline: 1-800-483-4263**

## CONTACT US

BluePrint Sales / Technical help . . . . . 1-800-483-4263  
Warranty Dept . . . . . 1-800-264-1608  
E-mail . . . . . [info@blueprintengines.com](mailto:info@blueprintengines.com)  
Fax . . . . . 1-308-234-1978

## Send us your photos!

We love seeing where our engines show up, so BluePrint Engines is on the hunt for customer photos and testimonials. After you've installed your beast, take a snapshot and email it to us. We'll get it posted to our Muscle Row section on our website. So what are you waiting for? Show us your muscle!

Send your photos to: [info@blueprintengines.com](mailto:info@blueprintengines.com)

