ZX14 Turbo Engine Upgrade List

The stock Kawasaki ZX14 engine is turbocharger-compatible, with the level of boost it can handle depending on factors like engine generation, mileage, and wear. Here's a general overview by scraping various forums and calling on various experts:

ZX14 Engine Boost Capabilities

- **ZX14 07-11 (Gen 1):**
  Maximum 6 psi, with weak spots identified in the oiling system, pistons, rods, and valve springs. Rods are the biggest concern.

- **ZX14 12-26 (Gen 2):**
  Maximum 4 psi, with weak spots in pistons, rods, and valve springs. Rods are the biggest concern.

You can boost a totally stock engine. But not for long.

ECU tuning or swap must not be overlooked.

Stage 1 (Up to 260 HP) Engine Build List

- **Valve Springs:**
  APE/Carpenter Valve Spring Kit - Boosts spring pressure to 62 psi from the stock 24-26 psi (reportedly) to prevent valve float under increased intake pressure.

- **Slotted Cam Sprockets:**
  Adjustable Cam Sprockets - Necessary for adjusting cam timing affected by the thicker head gasket (if applicable).

- **Adjustable Cam Chain Tensioner:**
  Compensates for reduced cam chain stretch caused by the thicker head gasket (if applicable). Adds consistency to tension on chain, regardless of oil pressure.

- **Cylinder Head Studs:**
  Cylinder Studs - Ensures a tight seal under added boost pressure and power output.

- **RBM Viton Valve Seals:**
  Don't leak oil into your cylinders when reusing OEM seals. These will stay alive longer

under higher temps.

- **Head Gasket:**
  High-quality Cometic MLS head gasket.

- **Engine Case Gasket Set:**
  Covers all engine covers that need removal.

- **Exhaust Gaskets:**
  Ensures a tight seal for the manifold.

- **Clutch Plate Kit:**
  Consider adding a fresh kit with these upgrades.

- **Oil Pump Gear:**
  High-speed gear for increased oil volume to engine components and the turbo.

- **Oil Pressure Valve:**
  Higher set pressure than stock for increased total oil pressure.

- **HD Clutch Springs:**
  Essential for ensuring the clutch can handle the increased power.

- **Colder Spark Plugs:**
  To resist higher temps and not have spark blow out from boost.
- **Power Commander with PTI, MicroTech, MaxxEcu**

Stage 2 (Up to 400 HP) Engine Build List

Includes Stage 1 upgrades plus:

- **Turbo Piston Kit:**
  Stock bore is the max bore recommended. Larger sizes reduce head gasket material between cylinders, leading to head gasket delete and tearing the engine back down. Also increased running temps across the board.

    - **Low Compression Pistons:**
      ~9.0 Compression Ratio Ideal for higher peak HP.
      ~10.0 for flatter HP + low-end power curve but lower peak.
        - CP Pistons
        - JE Pistons

        - Wiseco Pistons
        - Wossner Pistons
- **Heavy Duty Connecting Rods:**
  Stock rods and bolts are going to fail above 350 HP. Not if, but when. Lots of failures on stock engines with no mods. Stage 1 is limited by power because of rods primarily.

    - Carrillo Con Rods
    - Wossner Con Rods
- **Main Bearings:**
  Best to replace these with fresh bearings.

- **Rod Bearings:**
  Measure your crankshaft and HD rods to determine the size/color before ordering.

- **Lockup Style Clutch:**
  Clutch Springs will not hold this power level. The use of a lockup is recommended.

    - **Good:** Standard 2-Stage Lockup
    - **Better:** Multistage Lockup
    - **Best:** RPM Driven Lockup

- **Silicone Intake Tubes:**
  Contain boost pressure within the airbox by eliminating the stock air tubes, known to leak before 10 PSI.

- **Blow Off Valve:**
  Control pressurization of the airbox when off-throttle or partial throttle. Also helps evacuate heated air from the airbox. Reduces wear on turbo by preventing turbo stall. Although it also reduces famous turbo noises, it adds a wonderful ‘whoosh’.
- **MaxxEcu**
- **Pump Fuel (93 Octane) no longer sufficient above ~300**

Stage 3 (400+ HP) Engine Build List

Note: Oversize Valves flow more but usually add weight to the valve and strength concerns.

Plenty of example bikes to reference that make beyond 600hp. Not without extensive work that is potentially not mentioned here. Special-use bikes only. Anything more than 400 is pretty impossible to use on the street.

Includes Stage 2 upgrades plus:

- **Full Valve Job:**
  Carpenter Head Job.

- **Valve Springs:**
  APE Valve Spring Kit with Titanium Retainers.

- **Bronze Valve Guides:**
  Keep Valves under control under severe conditions.

- **Upgraded Cam Chain and Sprockets Conversion:**
  New "Hayabusa Style" Hyvo Heavy Duty Cam Chain.

- **Exhaust Valves:**
  Inconel or Stainless Valves to handle heat.

- **Intake Valves:**
  Inconel or Stainless Valves to handle heat.

- **Pistons:**
  Ideally ceramic coated on the heads to control heat.

- **Cylinder Block:**
  Fresh Nikasil Coating.

- **Transmission Ceramic Bearings:**
  Transmission Cut and micro-polished at APE.

- **Crank:**
  Knife-edged, balanced, micro-polished, nitrided at APE.

- **Steel Shift Shafts:**
  Prevents flexing for a solid gear change.

- **Lifetime Oil Filter:**
  Billet construction for durability, allowing easy inspection for debris under extreme oil pressure.

- **Cams:**
  Cams will improve performance up top by allowing more flow through more lift.
- **MaxxEcu**
- **Pump Fuel (93 Octane) no longer sufficient above ~300**

Parts:

Engine:

- Head Studs
- Oil Mod full kit
- Discount Bearing Kit
- Engine Upgrade Parts (Rods and Pistons and such)
- Valve Springs
- Viton Valve Seals (Recommended)
- Replace with CR10E spark plugs (gap: 0.018")
- Cam Chain Replacement + Tensioner

Clutch:

- Clutch Mod + Hardware
- Billet Basket (REQUIRED IF USING AFTERMARKET RODS)
- Clutch Cover (Required for Lockup Clutches)
- MTC Clutch Pack (Call to order):

Item Code	Description	Quantity	Price Each	Amount
CLU-K475	KAW (ZX-14) CLUTCH FIBER - .119"	9	13.65	122.85
CLU-K475T	KAW (ZX-14) CLUTCH FIBER - .151"	1	13.65	13.65
CLU-K476K	KAW (ZX-14) HARD CHROME CLUTCH PLATES (9PC)	1	116.40	116.40

- MTC 2-Stage Lockup (Call to order):

KAW (ZX-14) (2012 to current)	Core Req'd: Pressure plate	LUC-SFLZX14-2A	$473.20

Other:

- Header studs (if needed)
- Exhaust Gaskets
- Full engine gasket set (no head gasket)
- Head Gasket

Tools:

- Valve spring compressor tool: Part #57001-241
- Valve spring compressor tool adapter (required): Part #7001-1586