

ZC Information

From tuning to transmissions, replacement parts and even information on unusual swaps, if it's a ZC, this article touches on it.

Timing Belt 88 Honda Prelude p/n - 14400-PK2-004
Distributor cap 88 Acura Integra p/n - 30102-PM7-305
Rotor 88 Acura Integra p/n - 30103-PM5-A05
Head Gasket 88 Honda Prelude p/n - 12251-PM7-003
Intake Gasket 88 Acura Integra p/n - 17105-PG6-S00
Exhaust Gasket 88 Acura Integra p/n - 18110-PG6-003
Water Pump 90 Honda CRX p/n - 19200-P01-004
Oil Filter 88 Acura Integra p/n - 15400-PR3-004
Clutch Parts 90 Honda CRX I used the CRX transmission and the CRX clutch
ZC Clutch disk use: 89 Honda Civic DX p/n - 22200-PM7-J02
ZC Pressure plate use: 89 Honda Civic DX

The 89 DX and the 89,90,91 CRX use the same size shaft and same number of splines on the transmission. The 89 DX clutch disk and pressure plate is smaller in diameter by about one inch than the CRX Si. Although the flywheel is the same diameter on both and as long you stay with one or the other it should work fine.

Technical Data:

1.6L (1590 cc) DOHC
130-135 hp @ 6800 rpm
Bore 75.0
Stroke 90.0
C.R. 9.5:1 I can find no evidence of it being any higher than this.
91 octane. Some have reported no problems with 87, but the specified gas is 95 and/or 96 RON, which is equal to 91-92 'pump octane' available in the US.

Identification:

There are three versions of the ZC that I am aware of, but there could be more
D16A8 Euro. spec featuring EFI
D16A9 Euro. spec featuring Carbs
ZC Jap. spec featuring EFI
The ZC comes with a black valve cover with the cover bolts on the sides
The Honda symbol is on the exhaust side of the valve cover
The ZC comes with a 4-2-1 header style exhaust manifold
The ZC comes with a small oil to water oil cooler on the back of the block
The ZC has the same mounting points as the standard 88-91 CRX/CIVIC

Swap Info:

The ZC will bolt right in to the 88-91 CRX/CIVIC no fabricating or welding is needed
The swap can use your existing wiring harness if you have an SI, if you have a DX then minor modification is necessary. There is info on this procedure at the Honda Hybrid Page

You can use the SI or DX transmissions, they both bolt up. You can also use the SI or DX flywheel.

The engine only adds about twenty-five pounds to the front of the car, so your steering and suspension should be the same. If you are still concerned about the added weight, move your battery to your trunk.

Maintenance:

Spark plugs: NGK BCPR6E-11

Timing belt: Part no. 14400-PK2-004 (same as 88 Prelude)

Oil filter: Same as 88-89 Integra. Fram part no. PH3539A

Oil pan gasket: Same as 88-91 CRX/CIVIC or 86-89 Integra

Spark plug wires: Same as 86-89 Integra

Distributor cap and rotor: you can use the 88-91 CRX/CIVIC SI or 88-89 Integra

Modifications:

Throttle body is the same as the 88-91 CRX/CIVIC SI

The internals of the ZC feature dome shaped pistons and rods that are a little stronger than the CRX/CIVIC SI

HKS makes cams for the ZC, here are the specs, 256 degrees intake and exhaust duration, 5.95mm Intake lift, 5.3 mm exhaust lift, they are ground from new billets.

The exhaust manifold for Greddy Turbo kit for the 92-95 Civic, was originally designed for the ZC. Greddy modified the casting tool for the D16 ports, so there is plenty of material to safely port it back out to ZC sized ports. However, the guys at greddy say don't bother until you are running over 7 psi.

The scoop on the headers, is that while the bolt pattern for the Civic SOHC engines and the ZC engines are identical, the port pattern is not. The ZC engine has the ports shifted almost 3 mm (appx 1/8"). In real terms, this means that when you use the SOHC header, the ports do not align properly. The exiting exhaust gases literally run into one edge of the misaligned header flange. You can see this by holding the steel exhaust gasket from the ZC engine up to the DC header.

The easiest and best solution is to use the ZC gasket as a template and mark the misalignment. Using an air grinder, with a small stone "port" the header to match the ZC port configuration. While you're at it clean up the entry point of the header a little so that the whole port on the header is slightly larger than the ZC port. It is an old, but proven trick that the larger header port decreases the chance of exhaust gas reversing flow and re-entering the still open exhaust valves. It is better to have the port larger than to have them matched identical. Do not under any circumstances grind the port on the head to match the header though. This gives poor results."

Tuning the ZC

Just had my CRX with a ZC motor, dc headers, K&N, ultraflo, straight pipe, and stock ECU dyno. Baseline run came out to be 112.1hp, 98.6 ft-lbs @ 6800 rpm at the wheel. After installing Cusco cam sprockets(VTEC), it increased to 118.8 hp, 107.0 ft-lbs at 6800 rpm at the wheel. This gain was not as significant as the power gain at 3000 rpm to 5000 rpm which was a gain of 16.2 hp and 26.9 ft-lbs. All runs were made on 3rd gear on a stock Si tran. Like to thank Aries at dynamic autosports for his bomb-ass hypertuning adjustments!

3G ZC Swap

You need an 87 Integra parts to run an 87 F.I. ZC motor:

ECU

Axles

Distributor

tranny (waayyy better than a 87 ZC tranny (longer gearing))

tranny mount

shift linkage

hub & spindle assembly.

If you can get a Japanese ZC ECU get it!! I had it, it runs good at idle. The 86-87 ECU tends to run a little rich at idle (stinky fumes emitted), the ZC ECU fixes that & runs a bit smoother (way less fumes).

D16a1 = 1st gen 'teg

D16a8 = euro w/o cat

D16a9 = euro with cat

ZC = Japan (JDM)

89 Integra valve seals DO FIT a ZC

Use 89 Teg valve seals as I asked an Acura tech and he told me that almost all Integra's have the same size valve stems diameter of approx 6.6mm. My Helm's book for 89 Integra confirms this, it says 6.56mm-6.52mm. My other Helm's book for the 91 Civic says that the SOHC engines have 5.46mm-5.42mm valve stems. I removed my exhaust manifold (again) and stuck a pair of dividers in the port to get a measurement. I did not use the most exact method because my dividers had straight legs instead of the ones where the tips curve in (wouldn't fit in the port). I then measured them with my calipers and got 6.5mm! I would say that that is pretty close.

I also got to thinking, if it was thought that the Teg had the 5.5mm valves, somebody would have noticed that when the valve seals were being installed. I'm sure that the machine shop would have given me a call to let me know that I got the wrong seals, that is quite a bit of slop for a "seal". So after all this, the 89 Teg valve seals DO fit a ZC.

Parts Interchange List

Engine Mounts:-----1988-91 CRX/Civic

Timing Belt:-----1988 Prelude 2.0

AC Compressor / Parts:-----1989-91 CRX/Civic

Throttle Body:-----1988-91 CRX/Civic

TPS:-----1988-91 CRX/Civic

ECU:-----1989-91 CRX/Civic Si, 88-89 Integra 5-spd, 89-91 ZC

Intake:-----1988-91 CRX/Civic

Headers/Exhaust Manifold-----88-91 CRX can be used port will not be perfect---Ideal is DC 86-89 Integra Top with 88-91 CRX downpipe---(I use port matched GUDE 4-1 Header)

Plug Wires:-----1986-89 Integra

Spark plugs:-----1986-89 Integra or 1988-91 CRX/Civic----- NGK BCPR6E-11

Distributor Cap:-----1988-91 CRX/Civic 1988 Integra

Distributor Rotor:-----1988-91 CRX/Civic 1988 Integra

Head Gasket:-----1988 Prelude

Intake Gasket:-----1988 Integra

Exhaust Gasket:-----1988 Integra

Water Pump:-----1989-91 CRX

Oil Filter:-----1988-89 Integra-----Fram PH3539A

Oil Pan Gasket:-----1988-91 CRX/Civic or 1986-89 Integra

Flywheel from 1989-91 CRX Si may be used

Transmissions:

4 speed 88-91

5 speed DX 88-91

5 speed Si 88-91

5 speed ZC 88-91

ZC Pressure Plate:-----1989 Civic DX

ZC Clutch Disk:-----1989 Civic DX

I know these have been asked before, and I know they will be asked again, but here are a few ZC tranny questions.

- 1.) For axles, I use the ZC halfshafts, 90-93 teg axles, and the 90-93 axles fit on all the 4G hubs?
- 2.) Which clutch, pressure plate, and flywheel do I need? 90-91?
- 3.) Does Quaife make a limited slip that would fit the ZC tranny? Are the diffs in the ZC the same as in the other 4G's?

1) A better choice of axle would be two 88-91 Civic/CRX DX/Si right hand axles with 90-93 Integra inner joints. If you have a CRX HF or Civic Standard model a custom job is called for. OR you can use 88-91 DX/Si knuckles and hubs and make your life simpler.

2) The clutch should match the year of the transmission you have, 88 if it is an 88 and your choice of 89 or 90-91 if the transmission is 89 or later.

3) Yes they do, I have one, it is not available through Autotech though. If the tranny is an 89 or later you may use a 90 91 clutch, pressure plate and flywheel.

I'm wondering whether it is worth it to pay extra for the ZC Tranny, with the Integra axles, rather than the Si tranny?

	ZC:	Si:
1st:	3.250.....	3.250
2nd:	1.944.....	1.894
3rd:	1.346.....	1.259
4th:	1.033.....	.937
5th: .	878.....	.771
Final	3.888.....	4.250

The ZC tranny has a closer ratio and has slightly lower gearing. If you are doing the daily driver thing and want an LSD, buy a ZC and leave it alone. The price with axles will be around what you'd spend on a Quaife. If you wanna have a sweet street/strip racer, put the Si final drive in the ZC. There may be some machine work involved to do this but it would be worth it.