



## **HONDA FIT 1500 technical rules**

The following rule subset applies only to the Honda Fit 1500 (L15A7) engine as used in Formula 1600.

### 15.1 General

- a) No modifications to this engine are allowed except where specifically authorized within these rules. This includes, but is not limited to, all fuel injection and engine management components, electrical, cooling, and lubrication systems. All systems are subject to test procedures and must conform to OEM specifications as stated in the Honda Fit factory service manual, Honda PN61/TK600 and all superseding years, or as specified in these rules.
- b) Permitted engine maintenance includes the replacement, but not modification, of external engine and engine systems parts.
- c) All rubber fluid lines may be replaced with braided metal or fabric covered (Aeroquip type) lines. Hose clamps may be installed on the rubber oil lines.
- d) No balancing, lightening, polishing or other modification of moving parts of the engine is permitted.
- e) Only stock Honda manufactured gaskets and seals as specified in the Honda Fit factory service manual are permitted (including, but not limited to, head gasket, intake runner gaskets and O-rings, restrictor plate gasket, and intake and exhaust gaskets).
- f) For all Honda part numbers in these specifications, superseding part numbers are considered equivalent.

### 15.2 Block

- a)The only permitted cylinder block is Honda PN: 11000-RP3-810
- b)Honing of cylinders is permitted to a maximum diameter of 73.065mm (2.8766 inches). Fitting of cylinder sleeves is prohibited. Re-boring to over size is prohibited.
- c)Block must use stock main bearings caps, girdle and hardware as supplied.
- d)Minimum deck height from crank centerline: 220.00mm (8.661 inches)

### 15.3 Crankshaft

- a)The stock Honda Fit crankshaft, Honda PN:13310-RB-1-000, must be used with no modifications allowed.
- b)Minimum weight: 27.7 lbs. No pilot bearing, pulsar or hardware.
- c)Maximum stroke at piston: 89.5mm (3.526 inches).
- d) Main and rod bearings must not be modified in any way. OEM bearings must be used from within the standard range as allowed in the Honda Fit factory service manual.
- e)The Crank pulsar must not be altered in any way
- f)The crank pulley/balancer must not be altered or modified in any way.
  - i)Minimum weight 3.90lbs
  - ii) Honda PN:13810-RB0-003

### 15.4 Connecting Rods

- a)Stock Honda Fit connecting rod must be used PN:13320-RB1-000.
- b)Minimum connecting rod weight with cap and bolts: 280.0 grams (9.88 ounces)
- c)Maximum connecting rod length center to center: 149.05mm (5.868 inches)

### 15.5 Pistons

- a) Honda Fit OEM standard size pistons, PN: 13010-RB1-000, must be used.
- b)The use of over size pistons is not permitted.
- c)Piston dimensions and weights:
  - i)Maximum standard piston diameter, measured at a point 16mm from the bottom of

the skirt:

72.990mm (2.8736 inches).

ii) Centerline of wrist pin to crown maximum: 26.21mm (1.032 inches).

iii) Maximum overall height from skirt to crown edge: 47.80mm (1.882 inches)

iv) Minimum weight: 198.0 grams (6.984 ounces)

v) Minimum weight of piston pin: 66 grams (2.25 ounces)

vi) Combined minimum weight of piston, piston pin and connecting rod: 543.5 grams (18.85 ounces).

d) Piston Rings

Piston Rings must be as used in the Fit engine. Two Compression rings and one 3 piece oil control ring must be used.

i) The standard ring pack is PN 13011-RB1-004 (Riken) or 13011-RB1-006 (Nippon).

ii) No modification of the piston is permitted for the installation of rings.

iii) Ring groove widths.

Top ring groove: 1.04mm (0.0409 inches) +/- 0.01mm

Middle ring groove: 1.02mm (0.04016 inches) +/- 0.01mm

Oil ring groove 2.00 mm (0.07874 inches) +/- 0.01mm

iv) Ring gaps must be from 0.006" to 0.024"

15.6 Cylinder Head

a) The only permitted cylinder heads are Honda PN: 122000-RB0-G00 (US Spec) and 12200-RB0-000 (Japan Spec).

b) The gasket face of the cylinder head may be resurfaced provided the maximum compression ratio is not exceeded or to a service limit of 0.2mm (0.008 inches) based on a height of 120mm (4.72 inches).

c) The original head must not be ported, polished, or machined. The original casting

must not be modified in any way or polished.

d) Head gasket to be stock Honda Fit PN: 12251-RB0-004. Minimum compressed thickness of 0.76mm +/-0.05mm.

e)Cylinder head breather restrictor must be used as supplied by HPD, unmodified.

PN:15262-F21S-A200.

## 15.7 Camshaft

a)The only permitted camshaft is PN:14110-RB1-J00, I must not be modified in any way.

b)The CMP pulse (cam trigger) plate must be as supplied, Honda PN 14221-RB0-003.

c)The camshaft and crankshaft sprockets must be as supplied, Honda PN's: 14211-RB0-J00 and 13621-RB0-003, respectively. Cam timing must not be altered, the timing must be installed as specified in the Honda Fit factory service manual. The timing chain/sprocket cover and crankshaft pulley may not be altered. With the engine at TDC (no. 1 cylinder), the "UP" mark on the camshaft sprocket must be at the top and the TDC grooves on the camshaft sprocket must line up with the top edge of the cylinder head.

i) Timing chain Honda PN:14401-RB1-003

ii)Case assy, chain (sprocket cover) PH: 14410-RB1-000

iii) Pulley comp, crankshaft, PN: 13810-RB0-003

iv) Cam timing at lobe centers: (at 1mm after opening to 1mm before closing).

Exhaust: 119 degrees +/-1.0 degree.

Intake VTEC on: 111 degrees +/-1.0 degree

d) camshaft profile and lobe centres shall be checked using the official CASC checking procedure.

e)Cam lobe heights: Intake, Primary: 35.240mm, secondary:36.200mm, exhaust 35.490mm

f)Valve lift measured at the retainer:

i) Exhaust: 9.200mm

ii)Intake VTEC off: 8.680mm

iii) Intake VTEC on: 9.900mm

g) Valve rockers must not be modified in any way.

i) Honda PN: 1460-RB1-010 Arm Assy, rocker.

h) The VTEC system must be stock. The VTEC activation valve must be stock. The HPD ECU will activate the VTEC at 5200 RPM. Honda PN:15810RB0-G01.

## 15.7 Valves

OEM valves must be as used in the FIT.

a) Dimensions

i) Inlet PN:14711-RB0-000 Exhaust PN:14721-RB0-000

ii) Maximum diameter: Inlet 28.15mm Exhaust 23.15mm

iii) Maximum overall length: Inlet 119.15mm Exhaust 117.85mm

iv) Minimum stem diameter: Inlet 5.45mm Exhaust 5.42mm

b) Valve location or angle must not be altered.

c) Reshaping of the valves is strictly prohibited/

d) Valve guides may be replaced provided the position of the valve is not changed and the replacement guides are Honda OEM parts.

Inlet guide PN: 12204-PJ7-305 (over size)

Exhaust guide PN: 12205-PJ7-305 (over size)

e) It is permitted to replace or re-cut valve seats provided the valve seat angles are stock Honda three angle cut per the Honda Fit factory manual.

f) Valve stem installed height must be per the Honda Fit factory service manual:

Intake maximum: 46.8mm

Exhaust maximum:46.9mm

g) Valve stem seals must be Honda OEM parts

Honda PN: 12210-P1-004 seal A.

Honda PN: 12211-PZ1-003 or PN: 12211-PZ1-004 seal B

### 15.8 Valve springs

a) Valve springs are Honda OEM as specified in the Honda Fit factory service manual.

i) Intake PN: 14761-RB1-003, free length: 48.55mm

ii) Exhaust PN: 14762-RB1-007, free length: 54.52mm

b) valve spring shims are not permitted

### 15.9 Compression Ratio

The maximum compression ratio is 10.55 to 1 utilizing Honda Fit factory service manual limits. Carbon may be removed for checking.

### 15.10 Intake Manifold and Fuel System

a) The lower manifold must be stock Honda Fit parts. It is not permitted to add or remove material. No coating is permitted on the exterior or interior of the manifold.

Honda PN: 17100-RB1-000

b) The upper manifold, air box, and throttle body assembly must be used as delivered by HPD. External throttle return springs are unrestricted.

c) All gaskets and sensors utilized on the inlet manifold from head to throttle body must be Honda Fit OEM or HPD supplied.

i) Gasket Intake manifold PN: 17105-RB0-004, Honda Fit OEM

ii) Gasket, EGR chamber cover PN: 17146-RB0-004, Honda Fit OEM

iii) Gasket Intake port PN: 17115-RB0-007, Honda Fit OEM

iv) Gasket Restrictor PN: 17399-F21S-A200, (2 required) HPD.

d) The fuel rail must be as supplied by HPD. Injectors must be stock Honda Fit OEM parts (PN: 16450-RNA-A01). The fuel pressure regulator may be the unit supplied by HPD or any alternate as long as the fuel pressure regulator serves no additional purpose.

e) The Honda Fit engine is required to have an HPD supplied air inlet restrictor with an internal diameter of 30.5mm and a thickness of 3.175mm (0.125 inches) correctly installed within the intake system. The restrictor may not be modified in any way, the specified value can not be exceeded in any measurement or the diameter. The

restrictor centerline or shape must not be altered. CASC/Toyo Tires F1600 Championship will have go-no go gauges to verify that all competitors are in compliance. The Toyo Tires F1600 Championship steering committee with agreement of the CASC Scrutineers have the right to increase or decrease the diameter of the air inlet restrictor at any time via CASC issued bulletin.

#### 15.11 Fuel Pump

a) Fuel pump is unrestricted.

#### 15.12 Exhaust Manifold

a) The exhaust manifold must be as supplied by HPD. HPD PN: 18150-F21S-A200 OR HPD PN: 181850-F21S-B200.

b) The exhaust manifold exit may be shortened within HPD specified limits to direct the tail pipe as necessary. The exhaust pipe must maintain a 2 inch outside diameter from the manifold exit to its outlet and must meet 13.0.1 and 13.0.2.

c) exhaust coatings, wraps and heat shields may be used to control engine bay temperatures and protect other components.

#### 15.13 Lubrication System

a) The oil pan must be as supplied by HPD. No modifications are permitted.

b) Oil feed pump must be stock Honda Fit. No modifications are permitted. Oil pressure may be adjusted for wear.

i) The oil pressure sensor location must be as supplied by HPD.

ii) It is recommended that oil pressure be maintained at the factory service manual specification.

c) The scavenge pump must be as supplied from HPD. No modifications are permitted.

i) Rotor length: 25.4mm (1.000 inches)

ii) Rotor Outside Diameter: 44.400mm (1.748 inches)

d) Scavenge drive pulleys must be as supplied by HPD. Drive Belt manufacture is unrestricted provided the belt type and dimensions are as specified by HPD.

e) Hose routing and filter system are unrestricted.

#### 15.14 Cooling system

a) Water pump and water pump pulley must be stock Honda Fit parts. No modifications are permitted.

Honda PN: 19200-RB0-003 Pump, water.

Honda PN; 19224-RB0-000 pulley, water pump

b) The water inlet and outlet at engine must be as supplied by HPD. The thermostat is unrestricted provided the housing is not modified. The thermostat bypass may be plugged.

c) Drive Belt manufacture is unrestricted provided it is designed for use with Honda Fit crank pulley.

d) Radiator is unrestricted.

#### 15.15 Electrical Equipment

a) The ECU and engine electrical harness must be as supplied by HPD. No modifications are permitted.

b) The ECU will be a sealed unit supplied by HPD. The ECU maps and inputs must not be modified. The ECU is capable of being swapped in the case of a protest.

c) CASC &/or Toyo Tires 1600 Championship Series Steering committee reserve the right to replace the ECU with another HPD Fit ECU at any time.

d) Ignition coils must be stock Honda Fit, PN: 30520-RB0-003. No modifications are permitted.

e) All sensors related to engine operating parameters and/or supplied by HPD must be used. These sensors, their locations and mounts, and their wiring harness leads may not be altered or "piggy backed". Any sensors required for analog type gauges must be in addition to the HPD supplied sensors.

f) The alternator must be stock Honda Fit PN:31100-RB0-004 or HPD PN:3100-F21S-A200. The alternator drive pulley must be stock. Alternator connections must be through the HPD engine harness only. The alternator must not be disabled and must be accessible to SCCA officials.

#### 15.16 Flywheel

a) The stock Honda Fit flywheel must be used. No modifications are permitted except for



normal resurfacing for clutch wear.

- i) Stock Honda flywheel PN: 22100-RB0-005
- ii) minimum weight with ring gear: 14.4 lbs
- b) The stock Honda Fit clutch must be used. No modifications are permitted.
  - i) Honda PN: 22300-RB0-005
  - ii) Minimum weight without friction disc: 7.0 lbs
- c) Stock Honda friction disc must be used. No modifications are permitted.
  - i) Honda PN: 22200-RB0-005
  - ii) Weight of new friction disk: 2.1 lbs

#### 15.17 Miscellaneous

- a) All emission control devices must be removed and blocked off by the blanking plate provided by HPD, except the VTEC activation valve. The VTEC activation valve must be retained, and it must be functioning.
- b) Air filter is unrestricted
- c) The use of unleaded premium "pump" gas: 91-93 RON is recommended.
- d) The use of the following non-standard replacement parts is permitted provided their use does not result in any unauthorized modification of any other component.
  - i) Fasteners- nuts, bolts, screw, washers, studs, etc. Head bolts, rod bolts, flywheel bolts, and crank pulley bolt must be provided by Honda and HPD.
  - ii) Gaskets and seals, except those specified in the above rules.
  - iii) Spark plugs.
  - iv) Mechanical tachometer and analog gauges.
  - v) Oil and lubricants are unrestricted. HPD strongly recommends the use of oil and lubricants as described in the Honda Fit factory service manual.
  - vi) The oil filler cap may be removed or plugged.

