Testing & Setup (Normal / Sports / Upgrade) = AHC System Pressure & Spheres

Warning
Never undo the Adapter they do not come off!!!
Never over Tighten the Spheres when fitting you will damage the threads!!!

Providing nothing has been adjusted on your vehicle since it was factory set then you should only need to fit the spheres & bleed the system as below (Section 1), if the front torsion bars have been adjusted in anyway or the height sensors then you will need to Fully Set the system back up = see below (Section 2)

Note the following:
You will need 2.5 to 5lts. of AHC fluid from Toyota main dealers depending on what you are doing! see below (Section 2)

Other Notes & Things you might need:

To set the AHC Sphere pressures you will need a set of pressure gauges that can read around 1500 psi with short hoses say 300mm with M7x1.0 mm Bleed nipple size fittings on the ends to fit in the bleed nipple holes next to the spheres = Note: I am told if you are using a Toyota hand-held tester - the pressure is only estimated from the pump-emitted-pressure sensor! = it is best to use Pressure Gauges!!!

Front Torsion bar adjustment is only used to correct the front suspension pressure & the level between the PS/DS - they do not adjust the height of the vehicle! The Front & Rear height sensors control the height of the vehicle via the front & rear hydraulic rams which look like shocks!

To remove the old Spheres use the 36 mm open ended spanner that is supplied with this kit

Testing the Spheres = the only true way you can test the spheres is with a sphere pressure tester - there is no other way except road test for the comfort of the ride which is no way accurate! also the suspension pressure will not tell you anything about the condition of the spheres or the amount of fluid used from low to high used! but low reservoir level is normally a good indication that the spheres are going or gone!

SECTION 1

Just fitting the Spheres & Bleeding the System

A: Start engine, set the vehicles height selector switch to Low once the vehicle has finished dropping to the lowest position switch off engine ignition

B: Discharge the suspension pressure at the Spheres bleed nipple plugs with the use of a hose & container release the suspension fluid (Slowly as it is still High Pressure) Note: the vehicle will drop in height by a couple inches / 25 to 50 mm

C: Loosen the original spheres with the 36 mm open ended spanner - unscrew & remove each sphere & fit the new as you remove the old ones one use a little AHC fluid over the O ring seal to lubricate it (((WARNING do no over tighten the spheres they only need to be gently / just tight no more!!!)))

you will need to use a small scissor jack between the chassis & the inner sill when fitting the front spheres to give you an extra 10 mm extra gap to get the new sphere in due to limited space! --- when tightening the new sphere you need to gently tightened / just tight - do not over tighten!!!

D: Run the engine & select the Low position, bleed one of the front spheres at the bleed nipple do a bit at a time until the AHC header tank is near empty avoiding any air going in via the reservoir tank, now fill the tank with New Toyota AHC fluid nearly to the top & bleed each sphere bleed point until the fluid runs clear at all 4 - topping up the reservoir tank as you need to, once all 4 are bleed select the High position - the header tank level should drop down between the Max & Min marking top up or remove to correct level

E: Now lower the suspension to the Low position once reached select High position & repeat a couple of times to remove any air in the system - recheck header tank level at the last High position before selecting the Normal position

F: Check for any leaks - if all is ok take vehicle for a test drive = Done

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SECTION 2

Full Setup or Sensors & Torsion bars & fitting new Spheres

A: Unloaded the vehicle if there is any extra or heavy items in the vehicle also there should be no one sitting in the vehicle to do the work/tests etc....

B: Start engine, set the vehicles height selector switch to Low once the vehicle has finished dropping to the lowest position switch off engine ignition

C: Discharge the suspension pressure at the Spheres bleed nipple plugs with the use of a hose & container release the suspension fluid (Slowly as it is still High Pressure) Note: the vehicle will drop in height by a couple inches / 25 to 50 mm

D: Loosen the original spheres with the 36 mm open ended spanner - unscrew & remove each sphere & fit the new as you remove the old ones one use a little AHC fluid over the O ring seal to lubricate it
(((WARNING do no over tighten the spheres they only need to be gently / just tight no more!!!)))

you will need to use a small scissor jack between the chassis & the inner sill when fitting the front spheres to give you an extra 10 mm extra gap to get the new sphere in due to limited space! --- when tightening the new sphere you need to gently tightened / just tight - do not over tighten!!!

E: Run the engine & select the Low position, bleed one of the front spheres at the bleed nipple do a bit at a time until the AHC header tank is near empty avoiding any air going in via the reservoir tank, now fill the tank with New Toyota AHC fluid nearly to the top & bleed each sphere bleed point until the fluid runs clear at all 4 - topping up the reservoir tank as you need to, once all 4 are bleed select the High position - the header tank level should drop down between the Max & Min marking top up or remove to correct level

F: Next Remove one of the front bleed nipple plugs and fit a Gauge with hose adapter in to the bleed nipple plug hole for testing the suspension pressure, etc...
Note: you only need to do one side of the vehicle as = both rear spheres are joined & both front spheres are joined! if you have 2 Gauges fit = one on the rear & the other on the front = saves a lot of time, etc...

G: Now select the Normal position once at the normal position which off the engine & make a note of the pressure gauges readings in psi or bar

H: If your suspension is still as factory set? then the Gauge pressures should read =
Front suspension pressure = 790 to 870psi or 54 to 60 bar -- (ideal pressure 800psi or 55 bar)
Rear suspension pressure at = 640 to 800psi or 44 to 55 bar -- (ideal pressure around 745psi or 51 bar)
Rear suspension pressure with rear sub tank = 680 to 840psi or 47 to 58 bar -- (ideal pressure around 760psi or 52 bar)

I: Next check the suspension height from the wheel arches to the centre of the wheel hub with the vehicle in normal height position & on level ground
DS-Front = 510 mm from wheel arch to centre of wheel hub
DS-Rear = 510 mm from wheel arch to centre of wheel hub
PS-Front = 500 mm from wheel arch to centre of wheel hub
PS-Rear = 500 mm from wheel arch to centre of wheel hub
Note there is a 10 mm difference between the PS (passengers side) & DS (drivers side)

K: If the height is incorrect then you need to correct it = correct the suspension height as follows = it is advised to switch the engine off while you are adjusting the sensors under the vehicle & once you are clear you can restart the engine to see the changes!!!
The Rear is adjusted by a single rear height sensor connected to one of the upper link bars that connects to the rear axle (see diagram below) one end slides in the slotted bar this is the end you adjust with 2 10mm spanners & WD40 if required
The front sensors are adjusted on the small threaded link bars & both must be adjusted by the same amount each side of the vehicle

L: Once the suspension height is correct = re-check the suspension Front & Rear pressures
The Rear pressure cannot be adjusted it should be within the parameters in (H) above
The Front pressure is adjusted or corrected by adjusting the suspension torsion bars as follows =

1: Run the engine & select the Normal height position & the front PS & DS difference as in (I) above if they are out then increase or decrease one side torsion bar to correct the level

2: Next if the front pressure is to high then you need to screw in the Torsion Bars equally both sides by 1/2 a turn at a time = this will lower the suspension pressure - repeat until the front pressure is correct as in (H) above

3: If the front pressure is to Low the you need to screw out the Torsion Bars equally both sides by 1/2 a turn at a time = this will increase the suspension pressure - repeat until the front pressure is correct

4: If the rear pressure is to high then it is likely you have extra weight in the rear of the vehicle or the rear springs are worn, you cannot adjust the rear pressure without putting the rear height out!!!

5: Select the High suspension position once reached select the low position once reached select Normal position & re-check the pressures & suspension heights to confirm they are all correct now!

M: If all is ok? - select Low position once reached switch off the engine & Discharge the suspension pressure at the Spheres bleed nipple plugs on the other side with the use of a hose & container release the suspension fluid = Slowly as it is still High Pressure & the vehicle will drop in height!!!

N: Remove the 2 pressure Gauges & refit the original bleed nipples back, you now need to bleed the suspension on this side at the low setting

O: Run the engine & select the High Position - the header tank level should drop down between the Max & Min marking top up or remove to correct level

P: Now lower suspension to the Low position once reached select High position & repeat a couple of times to remove any other air in the system - recheck header tank level at the last High position before selection Normal position

Q: Check for any leaks - if all is ok take vehicle for a test drive = Done

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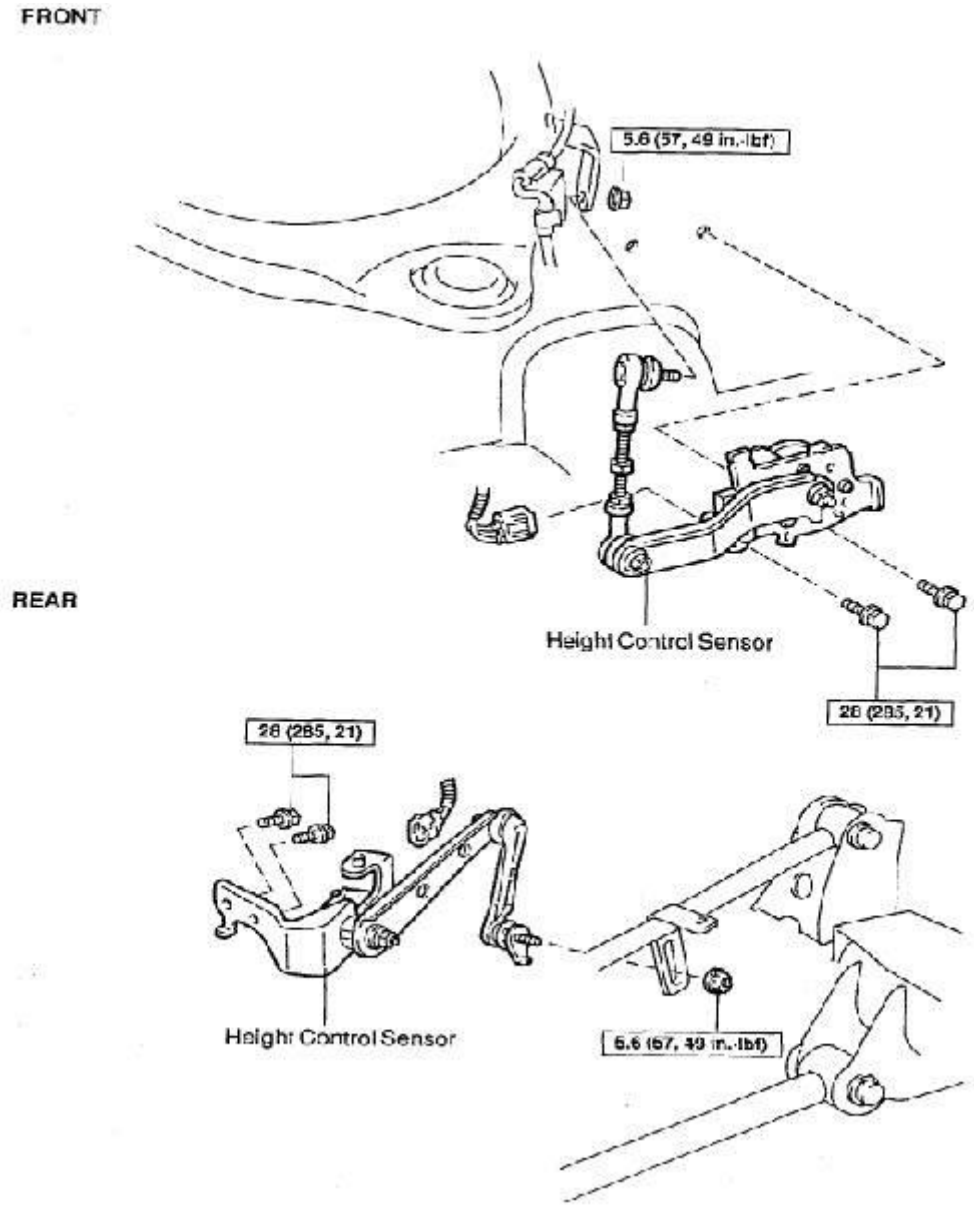

FRONT HEIGTH SENSOR

REAR HEIGTH SENSOR