

ISOTREX MANUFACTURING



Platform Vehicle Specification



Toyota Land Cruiser 200 Series Armoured to CEN Level B6

Vehicle Type	Trim/Model	Transmission
Toyota LC 200 G9	4.5L Turbo Diesel V8	Manual
Toyota LC 200 GXR	4.5L Turbo Diesel V8	Manual
Toyota LC 200 GXR	4.5L Turbo Diesel V8	Auto
Toyota LC 200 GXR	4.7L Petrol V8	Auto
Toyota LC 200 VXR	4.5L Turbo Diesel V8	Auto
Toyota LC 200 VXR	4.7L Petrol V8	Auto



Chassis Specification



- 285/75 R17 Tyres
- Auto air conditioner, with Manual Rear Cooler, heater,
- Audio – Am/FM/Cassette, 4 speakers, Cigarette lighter and ashtray,
- Clean air filter,
- Front seat – separate,
- Rear seat: 60 : 40 separate, reclining, Rear seat no: 2 – Transverse for 3p,
- Fabric seats,
- Air bag system – for driver and front passenger (dual stage),
- Power windows, Power door lock,
- Power steering,
- Illuminated entry system – scuff plate illumination,
- Rear diff – lsd,
- Tilt and telescopic steering column,
- ABS with brake assist and EBD,
- Smart entry and push start, Anti theft with immobilizer and alarm,
- Inside rear view mirror – auto day/night,
- Intermittent wiper, Rear window wiper – intermittent,
- Rear window defogger,
- Towing hitch with pintle hook



Armour Specification



Opaque Armour

Five sided armouring of passenger compartment using certified ballistic steel plating to defeat high- powered rifle fire which meets or exceeds CEN level B6.



The floor is fitted with Double-Layered 6mm Steel Blast Protection, to protect occupants against fragmentation from simultaneous detonation of 2 DM-51 German ordnance hand grenades, or equivalent.

Armouring included on kick panels, front fenders, rear wheel wells, firewall, A, B, and C door pillars and posts.



The interior frame, constructed of certified ballistic grade steel, provides overlap and backup protection for the large-surface principal impact areas such as the doors and windows and reinforces the structural integrity of the pillars and other key areas.



No gaps will exist between opaque armour plating surface; all meeting points between ballistic steel plates will be overlap welded (as opposed to parallel welded) and all transparent armour is reinforced with a ballistic steel frame backing. All opaque and transparent armor will completely protect the vehicle's interior passenger compartment (100%), including the roof area, and is constructed such that a projectile following a linear or angled path shall not enter the vehicle's interior without first contacting the armour material. The possibility of a projectile entering the interior due to a ricochet from the armour is also minimized.



Transparent Armour

A combination of glass, Polycarbonate and Mylar are bonded together using the latest technology, producing one of the finest Transparent Armours available while incorporating the following:

- Anti-spall shield protecting against shattering glass.
- Multiple impact protection (three shot).
- Finest optical quality offers minimal distortion.





Door and Window Overlaps

Armour overlaps are installed on all doors to prevent penetration through door posts and pillars. Overlaps also act as structural reinforcement to prevent doors from collapsing inside the vehicle in blast scenario .

- Door pillars are reinforced for maximum strength retention.
- Door hinges are replaced with custom engineered heavy duty hinges



Electrical

All standard electrical equipment which has been altered during the armour conversion of this vehicle shall be tested and modified as necessary to protect against the armouring process.

Interior

All original OEM interior panels and trim will be resized or modified and re-installed wherever possible to obtain as close to an original look as possible. In order to accommodate armor placement, some panels may be custom made and/or redesigned completely.



Brake & Suspension System Upgrades

Isotrex Manufacturing alters the suspension & the braking components of all vehicles to provide added safety, and improved performance and handling of the finished armored vehicles.

Front brake discs (and rear if applicable) are replaced with slotted, vented discs for better heat dissipation.

Isotrex uses upgraded Dobinson suspension components from the USA as our company standard on all vehicles, which results in a superior ride and handling experience when compared to OEM parts or the less-effective upgrade kits.

As an optional addition, Isotrex can also upgrade with Polybushes & Sway-Bars to improve the ride by reducing body roll and improve cornering.





Tyres and Run Flat System

The certified Run Flats (**American Superior Compounds** and **Hutchinson**) used by ISOTREX have been proven as reliable by clients worldwide in a variety of unique operating environments, rated to NATO standards (50 km distance at an average speed of 50 km/h).

ISOTREX Standard configuration includes a Run Flat installed in the spare tyre, for a total of five (5) per vehicle. For the 2nd spare tyre (the 6th tyre applicable), the run flat can be installed as an optional addition.

ISOTREX also offers an optional Run Flat upgrade and heavier tire combination which maintains higher load capacities than standard units. This guarantees improved performance in the event that the vehicle tires disabled.





Additional Standard Armour Package Features

- Vehicle Tyre jack is replaced with a 10 ton capacity bottle-type hydraulic jack.
- Steel protection over fuel tank is standard on our vehicles.
- Rear bulkhead with view glass, gun port and rear door access hatch installed in front of rear OEM doors.
- Ballistic protection for engine ECM unit, under-hood fuse box and battery.
- Security shield installed in tailpipe to prevent insertion of foreign objects.
- Vehicles are equipped with portable mounted fire extinguisher, first aid kit and road warning triangles as standard.
- All manuals and written information provided by vehicle manufacturer shall be included.
- All armouring is carried out by experienced technicians under the supervision of company foreman.
- 4mm cold roll steel protection over fuel tank is standard on our vehicles.
- OEM handbook and one spare set of keys. All manuals and written information provided by vehicle manufacturer in English.









STANDARDS

Ballistics Specifications describe the ability of a material to stop a projectile. These specifications can apply to any material; this is true of steel, composite, or concrete. Ballistics specifications are internationally recognized standards used when deciding on the level of protection required. Once the protection level is determined, then the appropriate materials will be selected.

Standards vary depending on the region where vehicles are in use, the most common standards are:

European Normalization Standard (EN) - Europe & Middle East

(EN) EUROPEAN BALLISTIC STANDARDS							
LEVEL	TYPE OF WEAPON	CALIBRE (mm)	MASS (g)	TYPE	BULLET Velocity m/s	Nr. of strikes	STRIKING Distance mm
FB/BR4		9 mm Luger	8,0 ± 0,1	FJ ¹ /RN/SC	400 ± 10	3	120 ± 10
		0,357 Magnum	10,2 ± 0,1	FJ ¹ /CB/SC	430 ± 10	3	120 ± 10
		0,44 Rem. Magnum	15,6 ± 0,1	FJ ² /FN/SC	440 ± 10	3	120 ± 10
FB/BR5		5,56 x 45*	4,0 ± 0,1	FJ ² /PB/SCP1	950 ± 10	3	120 ± 10
		7,62 x 39	8,0 ± 0,1	FJ ¹ /PB/SC	710 ± 10	3	120 ± 10
FB/BR6		7,62 x 51**	9,5 ± 0,1	FJ ¹ /PB/SC	830 ± 10	3	120 ± 10
FB/BR7		7,62 x 51**	9,8 ± 0,1	FJ ² /PB/HCI	820 ± 10	3	120 ± 10

LEGEND

L – Armor Piercing

CB – Coned Bullet

FJ – Full Metal Jacket Bullet
±10mm

FN – Flat Nose
±10mm

PB – Pointed Bullet

RN – Round Nose

SC – Soft Core (Lead)

SCP1 – Soft Core (Lead &

1) Full Steel Jacket Plated

2) Full Steel Jacket

*Twisted Length 178mm

**Twisted Length 254mm

HC1 – Steel Hard Core Mass



Steel Penetrator SS109)

Mass 3.7 ±0.1g HRC 63+

National Institution of Justice (NIJ) - North America

NIJ Standard – 0108.01 BALLISTIC RESISTANT PROTECTIVE MATERIALS						
ARMOR TYPE	TYPE OF WEAPON	TEST AMMUNITION	NOMINAL BULLET MASS	SUGGESTED BARREL LENGTH	REQUIRED BULLET VELOCITY	REQUIRED HITS PER ARMOR SPECIMEN
I		22 LRHV	2.6 g	15 to 16.5 cm	320 ± 12 m/s	5
		Lead	40 gr	6 to 6.5 in	1050 ± 40 ft/s	
		38 Special	10.2 g	15 to 16.5 cm	259 ± 15 m/s	5
		RN Lead	158 gr	6 to 6.5 in	850 ± 50 ft/s	
II-A	 	357 Magnum	10.2 g	10 to 12 cm	381 ± 15 m/s	5
		JSP	158 gr	4 to 4.75 in	1250 ± 50 ft/s	
		9 mm	8.0 g	10 to 12 cm	332 ± 12 m/s	5
		FNJ	124 gr	4 to 4.75 in	1090 ± 40 ft/s	
II	 	357 Magnum	10.2 g	15 to 16.5 cm	425 ± 15 m/s	5
		JSP	158 gr	6 to 6.5 in	1395 ± 50 ft/s	
		9 mm	8.0 g	10 to 12 cm	358 ± 12 m/s	5
		FNJ	124 gr	4 to 4.75 in	1175 ± 40 ft/s	
III-A	 	44 Magnum	15.55 g	14 to 16 cm	426 ± 15 m/s	5
		Lead SWC	240 gr	5.5 to 6.25 in	1400 ± 50 ft/s	
		Gas	8.0 g	24 to 26 cm	426 ± 15 m/s	5
		Checked	124 gr	9.5 to 10.25 in	1400 ± 50 ft/s	
		9 mm FMJ				
III	 	7.62 mm	9.7 g	56 cm	838 ± 15 m/s	5
		308 Winchester FMJ	150 gr	22 in		
IV	 	30-06	10.8 g	56 cm	838 ± 15 m/s	1
		AP	166 gr	22 in	2850 ± 50 ft/s	

LEGEND

AP – Armor Piercing

FMJ – Full Metal Jacket

LRHV – Long Rifle Velocity

JSP – Jacketed Soft Point

RN – Round Nose

SWC – Semi-Wadcutter



Illustrations of Armoured Toyota Land Cruiser 200 Series









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Certificate Number:

51082

This is to certify that the Quality Management System of:

ISOTREX MANUFACTURING F.Z.E
of

Office: P.O.Box 40122, 606-A1 Ajman Free Zone Building, Ajman, U.A.E

Workshop: P.O.Box 40122, Ajman Free Zone, Warehouse C-12, C-13, I-015, I-013,
Ajman, U.A.E

has been assessed and registered by ACS Registrars Ltd. against the following
Quality Management System Requirements:

ISO 9001:2008

The scope of registration is:

**“Manufacture of Custom Built Armored and
Other Security Vehicles”**

Signed by:

Date of initial assessment: 16/12/2010
Date of registration: 20/12/2010
Date reissued: n/a
Date of expiry: 15/12/2011

Whilst all due care and skill was exercised in carrying out this assessment, ACS Registrars Ltd. accepts responsibility only for proven gross negligence. This is not a legal document and cannot be used as such. This certificate remains the property of ACS Registrars Ltd. to whom it must be returned upon request. Certificate validity is based on successful completion of required surveillance visits.

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