

# IVECO ASTRA

## CNH INDUSTRIAL

A GLOBAL LEADER IN THE CAPITAL GOODS SECTOR

### ONE GROUP

- ▶ 12 COMMERCIAL BRANDS
- ▶ 180 NATIONAL MARKETS
- ▶ 64 PLANTS
- ▶ 50 R&D CENTERS
- ▶ ~64,400 EMPLOYEES
- ▶ 25,9BLN US\$ REVENUES
- ▶ 4,05 US\$ INVESTED IN TRAINING
- ▶ ~ 0,9BLN US\$ INVESTED IN R&D



## ASTRA IN ACTION

MINING – THE NEW BORN

HHD9 8x6 GVW=63 ton Payload=40 ton

HD9 8x6 GVW=60 ton Payload=37 ton

### BAUMA 2016

THE NEW BORN HD9  
DUMPER FOR MINING  
OPERATIONS

#### HD9 86.56

- ▶ GVW up to 60 ton
- ▶ 8x6, 560HP
- ▶ Kessler axles
- ▶ AS-Tronic gearbox
- ▶ 24 cm Dump body



# ASTRA Full Off-Road Trucks:



## Mining:

### Mission highlights

Mine and quarry operators need not a single product, but a complete range to manage stripping, extraction, transportation and reclamation. Different equipment is necessary for different tasks. No site is equal to another for material type, location and access route – but all require vehicles of exceptional robustness, capable to carry heavy loads of mineral ore and waste rock in extreme conditions.

### Astra for Mining

ASTRA designs and builds tailor-made off-road trucks, dumpers and special vehicles to perform the most demanding mining tasks.

Our specialized HD9 and HHD9 maximize productivity with their high-standard load capability (up to 60 t and above). In order to face the most challenging terrains, it offers traction configurations from 4×2 to 8×8 (also including 4×4, 6×4, 6×6, 8×4 and 8×6 versions).

Driveline combinations include high-torque engines coupled with either semi-automatic or automatic gearbox, and reinforced axles to tackle the steepest uphill and downhill slopes.

Our machines work in the very heart of operations, with tailor-made solutions to perform all mining tasks: the ASTRA range encompasses dumpers, crane-equipped service trucks for on-site material handling, water tanks for the preparation of the job site, off-road vehicles for people transport, off-road train combinations (with a maximum 400-ton GCW capability) and more.

Short- and long-distance routes can be covered on rough, rocky, sandy and muddy terrain thanks to extra-size tires and heavy-duty suspension systems.

Our mission is to go further, farther and deeper.



## Astra in Action







## Why HHD9: THE MISSION

**IVECO  
ASTRA**

### HHD8 88.54T

Multipurpose truck:

- Heavy Haulage (GCW 250T)
- Dumptrucks tyres handling

**Special features:**

- WSK440 Hydraulic Torque converter
- Extra cooling system
- Front and Rear hook 250Ton
- Effer Crane 75 ton/m



**MINING**

## HHD9 – Technical Highlights

**IVECO  
ASTRA**

### EXTRA HEAVY DUTY AXLES **KESSLER-CO**

#### 10 t FRONT AXLES



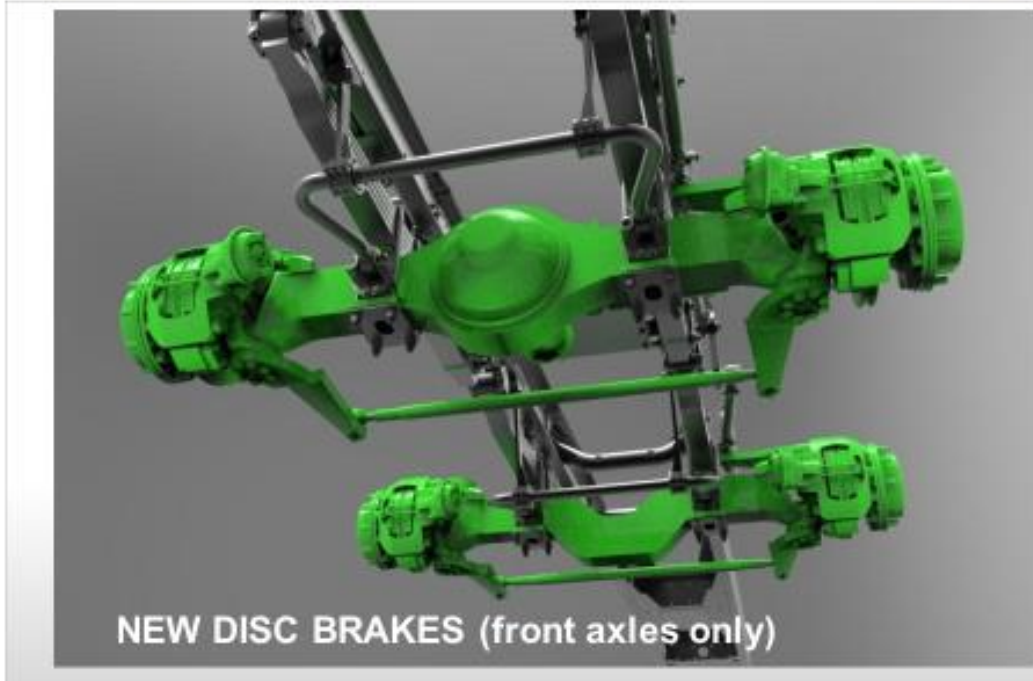
#### 20 t REAR AXLES





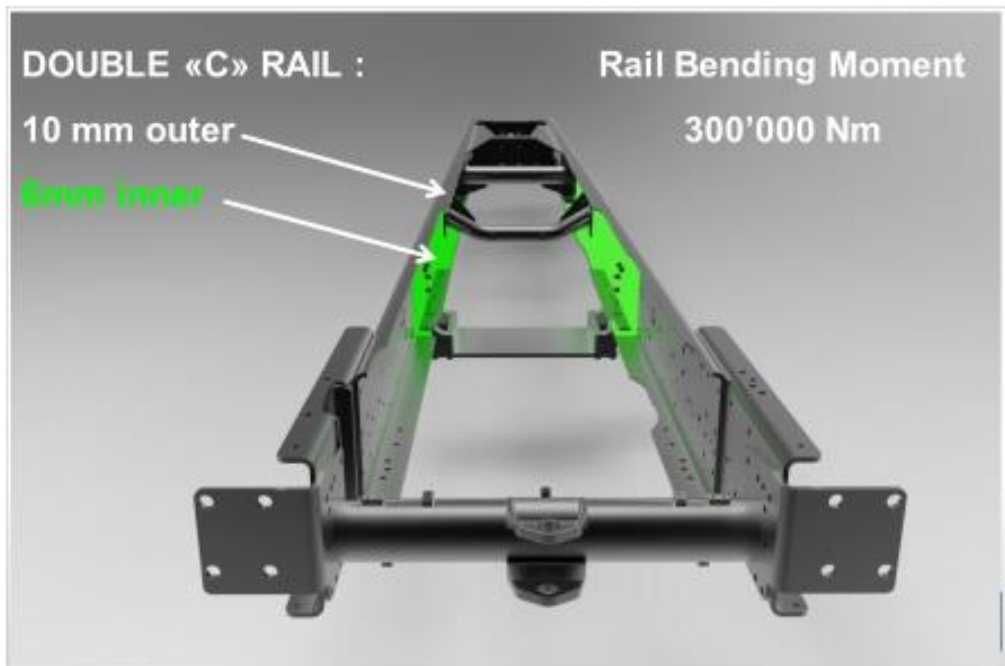
## HHD9 8x6 – AXLES

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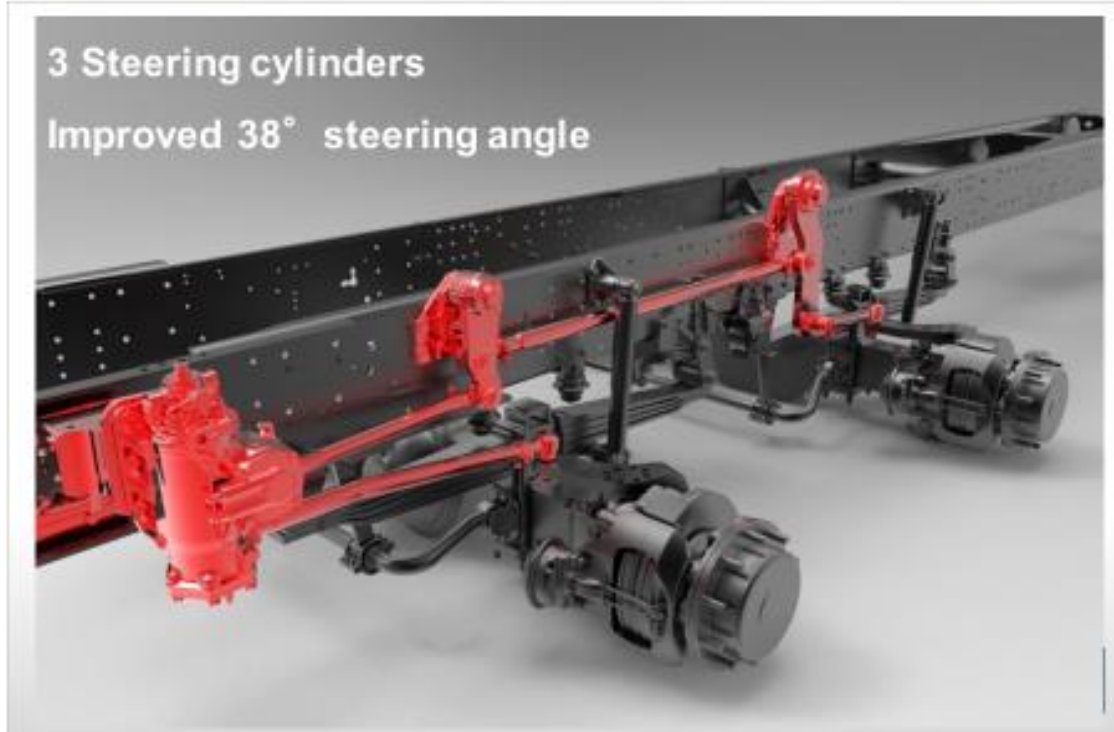
## HHD9 8x6 - CHASSIS

**IVECO  
ASTRA**



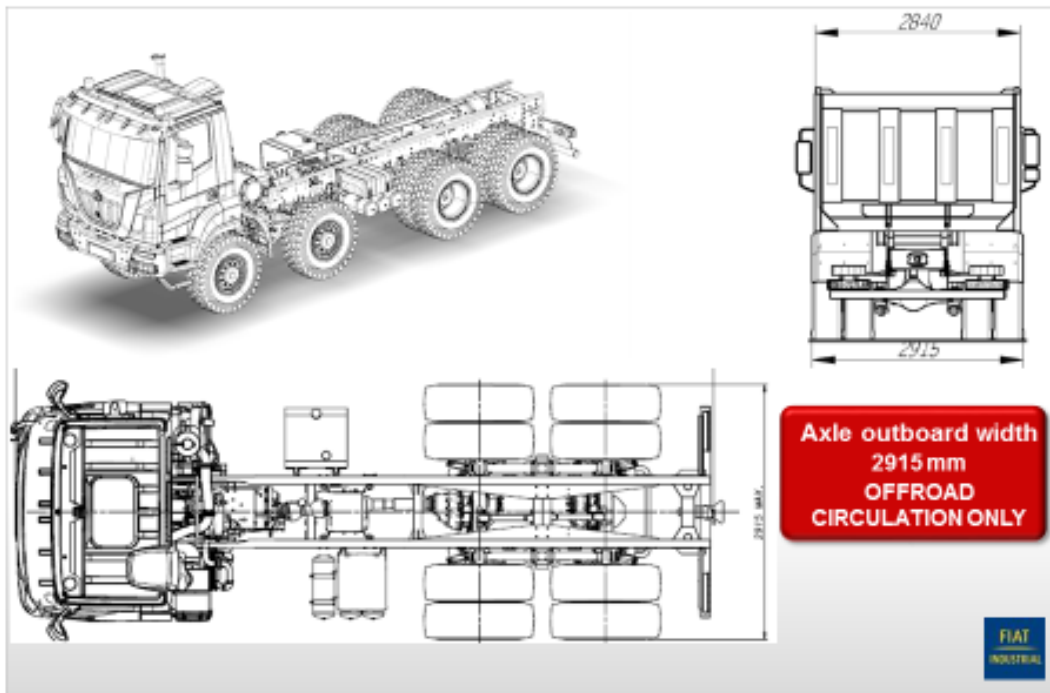
## HHD9 - STEERING

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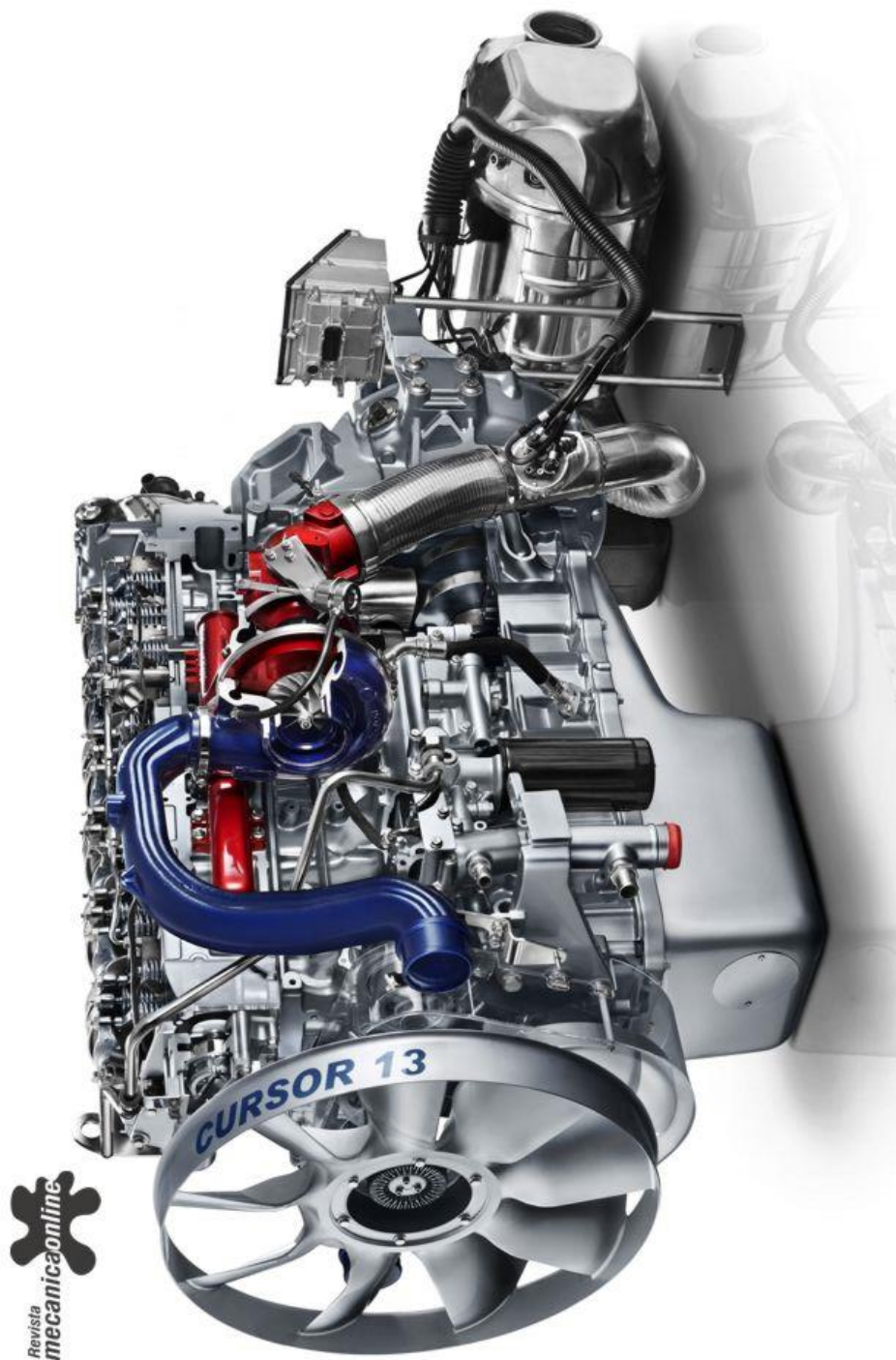


## HHD9 8x6 - DIMENSIONS

**IVECO  
ASTRA**



## FPT ENGINE CURSOR 13 F3B



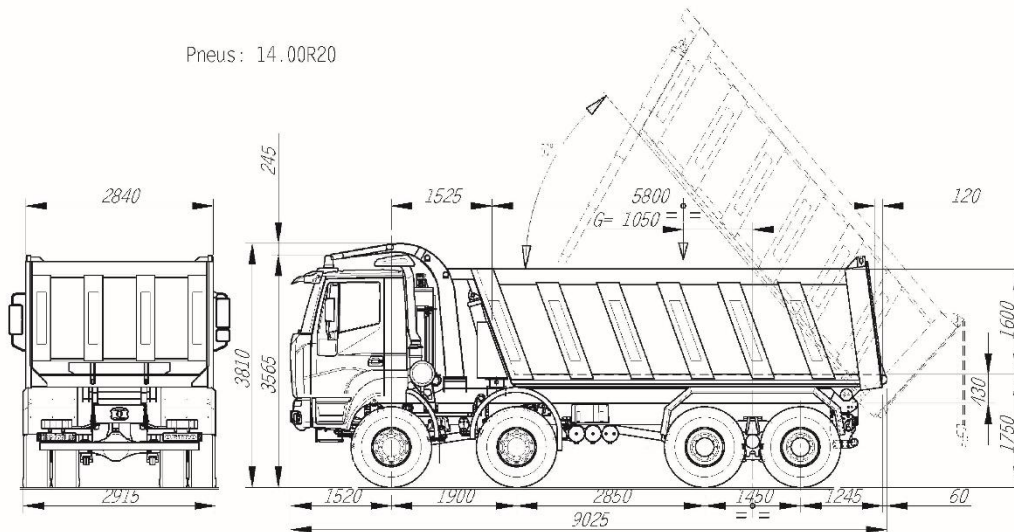
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**EURO 3**
**Heavy - Heavy Duty**

**G.V.W. 63.000 kg**
**chassis 8x6  
86.48 / 86.54**
**Chassis 8x6**


Pneus: 14.00R20


**DIMENSIONS (mm) short cab**

WHEELBASE	TOTAL LENGHT	BODY LENGHT	OVERHANG	OVERHANG OPT	TOTAL HEIGHT
2850	9025	6645	1200	875/1500	3810


**WEIGHT (kg)**

WHEELBASE	Distribution net weight (*)			Max technical weight			
	1 <sup>st</sup> + 2 <sup>nd</sup> axle	3 <sup>rd</sup> + 4 <sup>th</sup> axle	NET WEIGHT	1 <sup>st</sup> + 2 <sup>nd</sup> axle	3 <sup>rd</sup> + 4 <sup>th</sup> axle	Gross Vehicle weight	Gross Combination Weight
2850	8650	4920	13570	21000	42000	63000 (**)	over 250 ton

(\*) Weight including oil, fuel, spare wheel, driver Kg.75

(\*\*) At max speed 40 Km/h.

Technical data and general specifications - validity to be checked according to each individual country

**EURO 3**

**03-2013  
ENGLISH**



## ENGINES

CURSOR 13 turbo intercooler euro 3 diesel injection/cycle with electronic unit injection pumps. 6 in-line cylinders. Single block head, four valves per cylinder, light alloy pistons. Total displacement: 12.882 cm<sup>3</sup>. Bore for stroke: 135 x 150 mm. Water cooling. Viscostatic cooling fan. Dry air filter with safety cartridge. Vertical muffler.

	86.48	86.54
Model	FPT Cursor F3B	FPT Cursor F3B
Max. power (EEC)	353 kW (480 HP)	397 kW (540 HP)
Corresponding rpm	1900	1.900
Max. torque (EEC)	2.200 Nm (224 kgm)	2.350 Nm (240 kgm)
Corresponding rpm	1.000-1.440	1.000-1.690
Turbine	VGT variable geometry	



## GEARBOX

Manual gear **ZF 16 S 2520 TO** with servoshift, 16 synchronised forward speeds + 2 reverse

		Speed [kph] at maximum power rpm - Tyres 14.00R20																	
		Gears																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	RM1	RM2
ZF 16 S 2520TO	Gear ratios	13,80	11,54	9,49	7,93	6,53	5,46	4,57	3,82	3,02	2,53	2,08	1,74	1,43	1,20	1,00	0,84	12,92	10,80
	Rear axle ratio with transfer 1:1.0	4,7	5,7	6,9	8,3	10,0	12,0	14,3	17,2	21,7	25,9	31,5	37,7	45,8	54,6	65,5	78,0	5,1	6,1

On request: **ZF ASTRONIC 16 AS 2601 TO** semi-automatic transmission (16+2 speeds).

**Automatic gearbox Allison 4700** with closed loop adaptive shifts, 7 forward speeds + 1 reverse.

Torque converter TC-561. Stall torque ratio 1.58. Cab-mounted shift selector lever.

Hydraulic retarder on request.

		Allison 4700							
		Gears							
		1	2	3	4	5	6	7	RM
Gear ratios		7,63:1	3,51:1	1,91:1	1,43:1	1,00:1	0,74:1	0,64:1	-480:1



## P.T.O.

Gearbox	ZF16S2520TO	Mx. Torque	Application
P.T.O.	Ratio	Nm	
ZF NH/1b	0,91/1,09:1	1000	For tipping unit pumps, pumps for cranes, ecc...
ZF NH/1c	0,91/1,09:1	1000	For tipping unit pumps, unit pumps for concrete, pumps for cranes, ecc...
ZF NH/4c	1,17/1,40:1	430	For tipping unit pumps, ecc...
ZFN221/10b+PL+NL/1c	1,75/2,09:1+0,91/1,09:1	560+600	Double PTO for concrete pumps



## P.T.O. CHELSEA only for automatic gearbox Allison 4700

Gearbox	Allison 4700	Mx. Torque	Application
P.T.O.	Ratio	Nm	
859 XGF JP-5	1,08:1	780	For higher performance, 30t windlass...
277 XGF JP-D5XY	1,47:1	407	For standard application, tipping unit pumps, cranes, ecc...

Technical data and general specifications - validity to be checked according to each individual country





## CLUTCH

Single dry plate, diameter 17". Pull type engagement with diaphragm spring control. Hydro-pneumatic power steering engagement with driven disc wear recovery slave cylinder.

**On request:** 17" ceramic clutch.



## TRANSFER ZF STEYR VG 2700

Mechanical with two ratios. It consists of a series of helical spur gears, mounted on three shafts, engaged with each other.

Differential lockable by pneumatic control.

Transmission ratio: 0:913 - 1,407

Front torque distribution ratio: 1,0

Rear torque distribution ratio: 2,6



## SUSPENSIONS

### FRONT

1<sup>st</sup> and 2<sup>nd</sup> parabolic springs with bushings, 4 leaves 24x90 mm. Hydraulic shock absorbers and standard stabilizer bars.

### REAR

Parabolic springs, swivelling on central pin: 5 leaves 40x100 mm. Supplemented by torque bars and stiffening brackets. Stabilizer bar on the 3<sup>rd</sup> and 4<sup>th</sup> axle.



## AXLES

### FRONT

1<sup>st</sup> axle: KESSLER, steering type; with dual reduction, central with pinion-crown wheel, side by means of epicycloidal assembly in wheel hubs.

2<sup>nd</sup> axle: KESSLER dead steering axle.

### REAR

3<sup>rd</sup> + 4<sup>th</sup> axle: KESSLER drive axles in tandem.

Double reduction: central with bevelled pair, final in the wheel hubs by means of epicycloidal assembly.

3<sup>rd</sup> axle with distributor for the torque distribution between the two axles.

Differential lockable by pneumatic control from driver's seat. Tandem assembled to the chassis by reaction rods with silentblock.

Axle ratio 1:7,29.



## CHASSIS

In steel with high elasticity limit consisting of two flat parallel side members (width 820 mm.) with C section (320x90x10 mm), jointed by nailed cross members.

R.M.B. (Rail Bending Moment): 202.020 Nm (20.593 Kgm).

Chassis reinforcements 298x76x6mm. Front bumpers in steel with headlamp protection grids, front manoeuvring hook, rear underrun bar, steel fuel tank, capacity 300 litres.

### On request:

Rapid attachment for compressed air for tyres' inflation.

Rear underrun bar in set back position.

Rear manoeuvring hook.

Rear automatic towing hook.

Rubber mudguards on 2<sup>nd</sup> and 3<sup>rd</sup> axle.

Front bumper climbing step



## STEERING

Hydraulic power steering ZF 8099 with variable ratio 1:22,2/1:26,2, with 3 auxiliary cylinders mounted on axles. Hydraulic pumps flanged to engine.

Steering linkage with self lubricating floating joints.

Emergency steering pump on transfer box.

Mechanically adjustable steering wheel for height and angle.



## TYRES

**FRONT:** 14.00R20 Pirelli PS 22 Single tubeless

**REAR:** 14.00R20 Pirelli PS 22 Twin tubeless

Spare wheel on the chassis.

**Optional:** MICHELIN 325/95R24 (front and rear)



## PNEUMATIC SYSTEM

Two-cylinder 630 cc compressor, APU (Air Processing Unit) that includes: regulation valve set at 10.3 bar, drier, 4-way safety valve, pressure reduction valve for parking circuit and services. 3 air tanks, capacity 30 litres + 2 with 20 litres. ABS system and EBL (Electronic Brake Limiter).



## BRAKES

Front disc brakes, rear "duo-duplex" self-adjusting wedge type brakes with automatic play take-up. Anti-block system ABS. Service brake: Pedal controlled air brake, acting on all wheels.

Solo vehicles: two independent circuits, one for 1<sup>st</sup> and 2<sup>nd</sup> axle, one for 3<sup>rd</sup> and 4<sup>th</sup> axle.

Towing vehicles, three independent circuits, one for 1<sup>st</sup> and 2<sup>nd</sup> axle, one for 3<sup>rd</sup> and 4<sup>th</sup> axle and another for the trailer.

Emergency brake: integrated in service brake.

Parking brake: Manual spring-type mechanical with pneumatic control acting on 2<sup>nd</sup> and 3<sup>rd</sup> axle wheels.

IVECO BRAKE TURBO engine brake:

braking power 295 kW (408 hp)

### On request:

Hydraulic interarder.

1<sup>st</sup> + 2<sup>nd</sup> axle immobiliser system.

OFF/ROAD button for excluding ABS



## ELECTRICAL SYSTEM

Voltage: 24 V

Alternator generator 90 A - 28 V (2520 W).

Accumulators: 2 in series, 170 Ah.

Starter 24 V 5,5 kW.

Mechanically controlled electrical circuit breaker.

Anti-block system ABS with 4 conduits and 4 electric valves electronic system.

Phonic wheels and sensors on 1st and 3rd axle.

1 electrical joint 7-pole (ISO 7638) for trailer ABS (if applicable).

1 electrical joints 15-pole (ISO 12089-4091) for trailer lighting (if applicable).

Electrical provision for outftitters.

Provision for diagnostics.

Provision for radio/cb (without speakers)

Glow plug for cold start.

### On request:

220 Ah accumulators;

170 Ah tropicalised accumulators;

Reverse alarm;

Electrically controlled main current circuit breaker.

Chassis 8x6



EURO 3

 03-2013  
ENGLISH

Technical data and general specifications - validity to be checked according to each individual country



## CAB

White cab built in galvanized pressed steel with hydraulic tilting up to 60°. Tested on the most demanding off road routes. Cab suspension with 4 helicoidal springs with coaxial shock absorbers and integrated dampers, anti-roll bar and end-of-stroke pads. Tinted electric door windows.

Mechanical rear view mirrors, wide angle mirrors and front view mirror. Internal panels completely washable and fireproof.

Compressed air quick coupling for cab cleaning.

4-speed ventilation and heating system with air recirculation system. Air suspended 3-way adjustable driver seat with seat belt. Mechanical passenger seat with seat belts.

### On request:

Additional central seat;

Air conditioning with anti-pollen filter;

Anti-fog lights;

Cab rear window;

Car radio RDS, CD;

Car radio RDS, CD, MP3, Blue Tooth technology;

Centralized closing of the doors with remote control;

External sun visor.

Heated and electric powered rear view mirrors;

Roof hatch.



## INSTRUMENTATION

Dashboard and ergonomic instrument board contain the function buttons and the identification commands.

**Indicator lights:** engine oil low pressure, alternator charging low, main beam lights, side lights, engine warm-up, rear fog light, hazard lights, tractor turn indicators, trailer turn indicators (if applicable), rotating lights, cab lifted, axles differential locked, differential lock, front brakes air pressure low, rear brakes air pressure low, trailer brakes air pressure low (if applicable), parking brake engaged, splitter (reduction on), slow speeds (1-4/9-12), power take-off on (if applicable) air filters clogged, power steering oil level low, rear view mirrors heated (if applicable), ABS, trailer ABS (if applicable), main steering circuit failure, steering auxiliary circuit failure.



## SERVICE DATA(I)

Engine oil sump and filters .....	28
Gearbox oil .....	13
Power steering oil .....	18
Cab tipping oil .....	1
Transferer oil .....	10
Front axle with final red. oil .....	22,5
Intermediate axle with final red. oil .....	21,5
Rear axle with final red. oil .....	22,5
Diesel .....	300

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### DEALER

03 - 2013 A3502322

Characteristics and equipment are subject to changes without prior notice.



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