ASTRA HEAVY DUTY

On-Off Vehicles for RSA & Export

Distributed by:

Autumn Star Trading 758 (Pty) Ltd

Andrea Ceccarelli 082 847 5559 email: info@astratrucks.co.za
FIAT Industrial: The organization

- Industrial Vehicles
- Agriculture
- Construction
- Engines

FIAT Industrial: The organization

- NEW HOLLAND
- CASE
- STEYR

Engines

FPT

Powertrain Technologies
IVECO: The Organization
Since the very first dump truck, ASTRA has designed, produced, promoted and sold thousands of specialized vehicles to suit customers demands and applications all around the world.

Over 300 different vehicles variants designed and produced specifically to operate in extreme temperature between -50 to +50 degrees Celsius.

Unique technical features give ASTRA trucks the durability & strength to operate in the extremely harsh conditions of Mining and Quarry operations, offering a high reliability, simple maintenance & maximum profitability.

Class leading payloads in off road applications at high average speeds.

Multiple choices for, tyres, transmission, axle ratios, chassis length, horse power and many other options.
ASTRA: The location / production plant
1946
Established in Cagliari (Anonima Sarda Trasporti). The main mission was to refurbish all military vehicles left on the battlefield, converting them for civilian use.

1951
ASTRA production moved to Piacenza.

1956
ASTRA sold the first dumper truck.

1986
IVECO group became the 100% shareholder of ASTRA.
ASTRA: Certifications

ISO 14001:2004 - since 2003

OHSAS 18001:2007 since 22.04.2010
### Off Road Range

<table>
<thead>
<tr>
<th>HD RANGE</th>
<th>HHD RANGE</th>
<th>RD RANGE</th>
<th>ADT RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime mover &amp; Chassis</td>
<td>Prime mover &amp; Chassis</td>
<td>Drive line</td>
<td>Drive line</td>
</tr>
<tr>
<td>Drive Line: 4x2, 4x4 6x4, 6x6 8x4, 8x6, 8x8</td>
<td>Drive Line: 6x6 8x6, 8x8</td>
<td>4x2</td>
<td>6x6</td>
</tr>
<tr>
<td>EURO 3</td>
<td>EURO 3</td>
<td>TIER 3</td>
<td>TIER 3</td>
</tr>
<tr>
<td>GVM up to 50Ton GCM up to 300Ton (*)</td>
<td>GVM up to 63T GCM up to 400Ton (*)</td>
<td>Max Payload</td>
<td>Max Payload(**):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28T 32T 40T 50T</td>
<td>25T 30T 35T 40T</td>
</tr>
</tbody>
</table>

(**) Short Ton

(*) tech limits depending by mission
### HD& HHD: Available tractions / engines

<table>
<thead>
<tr>
<th>HD EURO 3 RANGE</th>
<th></th>
<th>HHD EURO 3 RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version</strong></td>
<td>2 axles</td>
<td>3 axles</td>
</tr>
<tr>
<td><strong>Traction</strong></td>
<td>4 x 2</td>
<td>6 x 4</td>
</tr>
<tr>
<td></td>
<td>4 x 4</td>
<td>6 x 6</td>
</tr>
<tr>
<td></td>
<td>×</td>
<td>×</td>
</tr>
</tbody>
</table>

| CHASSIS | ✓  ✓  ✓ | ✓  ✓  ✓ |
| TRACTOR | ✓  ✓  ✓ | ✓  ✓  ✓ |

| Min. Power (HP) | 310 | 380 | 380 | 480 | 480 |
| Max. Power (HP) | 440 | 540 | 540 | 540 | 540 |

| Max. GVW (ton) | 21  | 41  | 50  | 55  | 63  |
| Max. GCW (ton) (*) | 85  | 250 | 300 | 160 | 400 |

(*) Tech Limits depending by configuration and OPERATION
<table>
<thead>
<tr>
<th>OPERATION &amp; APPLICATION</th>
<th>HD</th>
<th>TRAKKER</th>
<th>OPERATIONAL CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light Operation (On Road)</strong></td>
<td>Low tare mass</td>
<td>Legallity on road</td>
<td>Max payload under Road Traffic Act</td>
</tr>
<tr>
<td>• Building material transport</td>
<td>☹️</td>
<td>☺️</td>
<td>Zero overloading allowed</td>
</tr>
<tr>
<td>• Steel or Alloy transport</td>
<td>☹️</td>
<td>☺️</td>
<td>Good tar roads</td>
</tr>
<tr>
<td>• Concrete Mixer</td>
<td>☹️</td>
<td>☺️</td>
<td></td>
</tr>
<tr>
<td>• Road maintenance</td>
<td>☹️</td>
<td>☺️</td>
<td></td>
</tr>
<tr>
<td><strong>Heavy Duty (OFF ROAD)</strong></td>
<td>Robustness, Overload conditions, Reliability, Durability, high mobility, High Overload Capacity, Robustness &amp; High mobility in harsh terrain, Oversized suspensions, chassis and driveline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Earthmoving (Heavy tipper)</td>
<td>☺️</td>
<td>☺️</td>
<td>Robustness, Overload conditions, High slope</td>
</tr>
<tr>
<td>• Concrete Mixer (MO &amp; remote site)</td>
<td>☺️</td>
<td>☺️</td>
<td>Robustness, Power, Towing capacity</td>
</tr>
<tr>
<td>• Water/Fuel Bowsers</td>
<td>☺️</td>
<td>☺️</td>
<td></td>
</tr>
<tr>
<td>• Prime mover</td>
<td>☺️</td>
<td>☺️</td>
<td></td>
</tr>
<tr>
<td><strong>Ultra Heavy Duty (ONLY OFF ROAD)</strong></td>
<td>High Overload Capacity, Robustness &amp; High mobility in harsh terrain, Oversized suspensions, chassis and driveline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Quarry and Mining</td>
<td>☹️</td>
<td>☹️</td>
<td></td>
</tr>
<tr>
<td>• Extreme off road</td>
<td>☹️</td>
<td>☹️</td>
<td></td>
</tr>
<tr>
<td>• Roads in very bad condition</td>
<td>☺️</td>
<td>☺️</td>
<td></td>
</tr>
</tbody>
</table>
Common Engine throughout range

Cursor 13 F3B

- Total displacement: 12.882 cm³
- ITB (Iveco Turbo Brake): 200 / 255 kW
- Power €3 (HP): 380, 420, 440, 480, 540
- Torque €3 (NM): 1800, 1900, 2100, 2200, 2350

The Iveco Turbo Brake

The Iveco Turbo Brake is basically a JAKE Brake powered by the Variable Geometry Turbine
**ASTRA**
- High tensile pressed steel
  - Std capacity 8 tons
  - Max 9 tons (with larger tyres and reduced speeds)

**FRONT AXLE OPTIONS**

**IVECO, reinforced for Astra**
- Cast iron housing
- Std capacity 8 ton
- Max 9 tons (with larger tyres and reduced speeds)

Designed by Kessler to Astra Specs
- High tensile pressed steel
  - **Max load up to 10 tons**
  (with specific Tyres, Reinforced Parabolic Suspensions, Dedicated Steering system with Oversized steering cylinders)
IVECO, reinforced for Astra HD
Tandem with dual reduction
Max std load 32 ton

Std 2 & 3 axles Parabolic 4 leaves
Std 4 axles Parabolic 3 leaves

Optional 2 & 3 axles
Reinforced Parabolic 5 leaves
Optional 4 axles
Reinforced Parabolic 4 leaves
Optional all
Semi-Elliptic 10 leaves

Stabilizing bar
Standard 1° axle and 4° (4 axles)
Rear Suspension

Standard 3 & 4 axles: Parabolic 4 leaves
Optional 3 & 4 axles: Semi-elliptic 10 leaves
THE CHASSIS

TRAKKER

two double neck side members (width 840 mm)
C section (289x80x7,7 mm) – (289x80x10 mm)
rail bending moment = 155 kNm

<table>
<thead>
<tr>
<th>FeE 490</th>
<th>Limite di snervamento</th>
<th>490 N/mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Limite di resistenza</td>
<td>540 - 690 N/mm²</td>
</tr>
</tbody>
</table>

Chassis 289x80x7,7 mm on EEC \(\bar\) Light duty
Chassis 289x80x10 mm on M.O. \(\bar\) Heavy duty

HD & HHD

two flat and parallel side members (width 820 mm)
C section (320x90x10mm)
rail bending moment = 202 kNm

<table>
<thead>
<tr>
<th>HD8</th>
<th>Limite di snervamento</th>
<th>530 N/mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Limite di resistenza</td>
<td>610 - 770 N/mm²</td>
</tr>
</tbody>
</table>

Chassis 320x70x10mm
## Chassis

High capacity of bearing laden with low stress

<table>
<thead>
<tr>
<th>SECTION mm</th>
<th>MATERIAL Rs (daN / mm²)</th>
<th>R.B.M. Sez. (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 x 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ASTRA HD 84.44</strong></td>
<td>320 x 90 x 10</td>
<td>53,00</td>
</tr>
<tr>
<td><strong>IVECO AD 410 T44</strong></td>
<td>309 x 80 x 10</td>
<td>49,00</td>
</tr>
<tr>
<td><strong>MERCEDES 4144 K</strong></td>
<td>289 x 70 x 9.5</td>
<td>50,00</td>
</tr>
<tr>
<td><strong>MAN 41.480 F</strong></td>
<td>270 x 85 x 10</td>
<td>42,00</td>
</tr>
<tr>
<td><strong>DAF AD 85XC.480</strong></td>
<td>310 x 75 x 7</td>
<td>37,50</td>
</tr>
<tr>
<td><strong>VOLVO FM12 R84</strong></td>
<td>300 x 90 x 8</td>
<td>60,00</td>
</tr>
<tr>
<td><strong>SCANIA P124 HZ 470</strong></td>
<td>270 x 90 x 10</td>
<td>40,00</td>
</tr>
<tr>
<td><strong>RENAULT 33FVC2-420</strong></td>
<td>302 x 83 x 8</td>
<td>35,30</td>
</tr>
</tbody>
</table>
Astra HD chassis: The TANDEM SHOULDER

The advantage of a CLOSED STRUCTURE:
- Extra Reinforcement lateral oscillation
- Driver "feel" improved
- Greater truck stability & safety
- Positive effect on tyre wear

Extra Reinforcement Connection Bar

Oversized pin

Cast iron

Cast iron
Standard Manual Gearbox

ZF Ecosplit Manual Gearbox STD

Output

- 380 HP
- 440 HP

Models

- 16S 2220 TO
- 16S 2520 TO

Gearbox Option 1
Astronic 16 speed

Semi-Auto gearbox ZF Astronic 16AS2601OD on 440 and 480 HP Only
ADVANTAGES / APPLICATIONS

- Very high torque at low engine rpm (e.g. good for heavy haulage up to ca. 250 ton)
- Extremely high reliability
- No power interruption during shift: helps traction control on slippery terrain
- Top comfort thanks to very smooth start and gear shifts
- Top acceleration: best for frequent start and stops (quarrying & mining)
- Hydraulic Torque Converter - 7 speed with lockup
Extra Heavy – Duty

TRANSFER CASE VG 2700

OPTION ON HD 6x6 and 8x6
STD ON HHD

“The most powerful transfer case in the truck industry with an input torque of 3300 Nm”

Source: ZF.com
Tropical Cooling Pack

MANDATORY FOR:
- ZF manual gearbox + WSK torque converter and/or
- 540 HP engine and/or continuously high ambient temperatures (> 42 °C)
Provides WSK torque converter cooling and extra engine cooling
CAB TOP AIR INTAKE
Cleanest position (far from ground)

Air Filtration

HEAVY DUTY DUAL CARTRIDGE FILTER
STD on all the HD / HHD RANGE
Easy replacement
Same design as the ADT series
ASTRA HD
Heavy Duty Truck & Bus