Next Gen Case IH Step UP! 2015

Ken Ohnell
NA-High HP Tractor Specialist
Minneapolis, Mn., USA
NEXT Gen Case IH Step UP!

Case IH is committed to the Sugar Cane Industry
NEXT Gen CaseIH Step UP!

2015 Puma Lineup
### 2015 Puma Lineup Short Wheel Base 112”

<table>
<thead>
<tr>
<th>Puma Model</th>
<th>PTO HP</th>
<th>Transmission Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puma 125</td>
<td>112</td>
<td>Full Powershift</td>
</tr>
<tr>
<td>Puma 130</td>
<td>106</td>
<td>CVT</td>
</tr>
<tr>
<td>Puma 140</td>
<td>123</td>
<td>Full Powershift</td>
</tr>
<tr>
<td>Puma 145</td>
<td>121</td>
<td>CVT</td>
</tr>
<tr>
<td>Puma 155</td>
<td>135</td>
<td>Full Powershift</td>
</tr>
<tr>
<td>Puma 160</td>
<td>135</td>
<td>CVT</td>
</tr>
</tbody>
</table>
### 2015 Puma Lineup Long Wheel Base 115”

<table>
<thead>
<tr>
<th>Puma Model</th>
<th>PTO HP</th>
<th>Transmission Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puma 165</td>
<td>150</td>
<td>Full Powershift or CVT</td>
</tr>
<tr>
<td>Puma 180</td>
<td>160</td>
<td>Full Powershift or CVT</td>
</tr>
<tr>
<td>Puma 195</td>
<td>172</td>
<td>Full Powershift or CVT</td>
</tr>
<tr>
<td>Puma 210</td>
<td>175</td>
<td>Full Powershift or CVT</td>
</tr>
<tr>
<td>Puma 225</td>
<td>181</td>
<td>CVT</td>
</tr>
</tbody>
</table>
## CURRENT 2015 PRODUCT MODELS

### MID-HORSEPOWER MAGNUM

<table>
<thead>
<tr>
<th>Model</th>
<th>Transmission Type</th>
<th>Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnum 200</td>
<td>Powershift or CVT</td>
<td>Tier 4 B/Final</td>
</tr>
<tr>
<td>Magnum 220</td>
<td>Powershift or CVT</td>
<td>Tier 4 B/Final</td>
</tr>
<tr>
<td>Magnum 240</td>
<td>CVT</td>
<td>Tier 4 B/Final</td>
</tr>
</tbody>
</table>
Magnum ROWTRAC – AE50

SCR Only Tier4b Final Technology

Powerful
- FPT “Cursor 9” provides leading fuel efficiency while maximizing power

Simple
- High efficiency SCR (Hi-eSCR) does not compromise engine performance
- Does not rely on diesel particulate filter or exhaust gas recirculation

Smart
- Patented and proprietary SCR technology
Validation testing showed that the Steiger 620 Hp. T4B engine with indirect cooling and 40% torque rise accelerated from idle to rated speed **20 percent faster** than the Steiger 600 Hp. T4A engine.

The Steiger 620 Hp. T4B engine recovered **13 percent faster** than the Steiger 600 Hp. T4A in load acceptance testing.

CIH 40% Torque Rise w 2165 ft. lbs. of Torque

---

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOx Emission</td>
<td>PM Emission</td>
<td>Rated Power</td>
</tr>
<tr>
<td>Case IH Steiger® 600 T4A</td>
<td>&lt;2g/kW-hr</td>
<td>0.02g/kW-hr</td>
<td>454kW</td>
</tr>
<tr>
<td></td>
<td>(Required use of credits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case IH Steiger® 620 with Indirect Engine Cooling System T4B</td>
<td>&lt;0.4g/kW-hr</td>
<td>0.02g/kW-hr</td>
<td>497kW</td>
</tr>
<tr>
<td></td>
<td>(No credits required)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUTCOME</td>
<td>Compliant</td>
<td>Compliant</td>
<td>+9.4%</td>
</tr>
</tbody>
</table>
Magnum ROWTRAC – AE50

Steiger ROWTRAC Introduction

- Case IH introduced the Steiger ROWTRAC in 2013
- Using QUADTRAC technology, it was the first four-track articulated agricultural tractor designed specifically for use in row-crop applications under a wide range of working conditions
- Provides tread settings of 80”, 88” and 120”
- Satisfies row spacing of 20”, 22”, 30”, and 40”
- Track widths of 16”, 18”, 24” and 30” are available
Less Compaction, Higher Yields, Agronomic, Adaptable!
Steiger, Quadtrac, Rowtrac, Magnum, Axial Flow Headers

Steiger Leads the Way

- 2 Decades of Leadership
- Innovation 4 > 2 No Berms in Turns
- Four Independent Positive Drive Tracks
- Five Axle Design Less Compaction
NEXT Gen Case IH Step UP!

Case IH “Leader of the Track” Harvest
Innovation
Magnum Rowtrac

Tractor of the Year 2015

Farm Industry News FinOvation Award 2015

AE50 Award 2015
NEXT Gen Case IH Step UP!

Leader of the Track now introducing the Magnum Rowtrac
Case IH developed and introduced the original QUADTRAC in 1996

The QUADTRAC positive-drive system was the first OEM-designed and integrated four-track drive system of its kind in the agricultural industry

QUADTRAC technology has been refined and updated numerous times

Current QUADTRAC 620 launched as the highest HP track tractor produced in the industry
Magnum ROWTRAC – AE50

Magnum Track History

- Case IH brand teased a rear track concept at the 1992 Farm Progress Show

- Concept integrated wide tracks on the rear of a Magnum tractor. It was not intended for row crop applications
Case IH has now introduced the Magnum ROWTRAC Using QUADTRAC technology.

The Case IH Magnum ROWTRAC tractor is the first high-horsepower tracked row-crop tractor with a steerable front wheel axle.

- Provides tread settings of 76", 80", 88", 120", 136", 144" and 152"
- Satisfies row spacing of 20", 22", 30", 34", 36", 38" and 40"
- Track widths of 16", 18", 24” and 30” are available
Case IH Magnum ROWTRAC available for use in a wide range of applications

<table>
<thead>
<tr>
<th></th>
<th>Magnum 340</th>
<th>Magnum 380</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine HP</td>
<td>340</td>
<td>380</td>
</tr>
<tr>
<td>PTO HP</td>
<td>290</td>
<td>315</td>
</tr>
<tr>
<td>Boosted HP</td>
<td>410</td>
<td>435</td>
</tr>
<tr>
<td>Power Shift</td>
<td>Standard</td>
<td>NA</td>
</tr>
<tr>
<td>CVT</td>
<td>Available</td>
<td>Standard</td>
</tr>
<tr>
<td>Suspended Front Axle</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>Cab Suspension</td>
<td>Standard</td>
<td>Standard</td>
</tr>
</tbody>
</table>
Magnum ROWTRAC – AE50

CNHi Undercarriage

- Designed by CNH Industrial for use on both Steiger ROWTRAC and Magnum ROWTRAC
- Over 7 traction lugs continuously engaged in drive wheel to transmit power
- Patented rubber mounting system allows for 8 degrees of roller beam roll to compensate for road and ground contour
- Undercarriage allows for 20 degrees of rotation, 10 degrees in each direction
- Clear bearing covers are standard equipment

Clear Bearing Covers

7 Drive Lugs Engaged

20 Degrees Oscillation

8 Degrees Roll
High percentage of commonality between Steiger ROWTRAC and Magnum ROWTRAC

- Drive wheel
- Complete undercarriage structure
- Idler and roller wheels
- End plate and alignment system
- Tracks
- Flange axle
- Many of the internal track drive box components
Magnum ROWTRAC – AE50

CNHi Undercarriage

- Rear undercarriage coupled with wheeled front axle allows complete vehicle to follow ground while providing smooth ride
Magnus ROWTRAC – AE50
CNHi Undercarriage Assembly

- **QUADTRAC** and **ROWTRAC** undercarriages are all assembled in a common area at the CNH Industrial Fargo Plant.

- Fargo Plant has been assembling undercarriages since the introduction of the QUADTRAC in 1996
Magnum ROWTRAC – AE50

CNHi Undercarriage Assembly

- ROWTRAC undercarriages are delivered to the Fargo assembly line on autonomous carts or to a staging area for shipment to the CNH Industrial Racine assembly plant
- Magnum ROWTRAC tractors are assembled on the same assembly line as wheeled units in the CNH Industrial Racine Plant
- Undercarriage and drive box assemblies are sub-assembled and presented to the tractor as a complete unit
Magnum ROWTRAC – AE50

Drive Box and Final Drive

- Final drive was modified to accommodate track drive box assembly
- Bevel gear and differential were moved to opposite side to reverse rotation of output shafts
- New output stub shaft added to accommodate track box drive shaft
- Cab mount casting added
- Planetary was moved to inside the track drive housing
Magnum ROWTRAC – AE50

Tread Setting Adjustment

- Factory settings available: 76”, 80”, 88” and 120”

- All four tread settings are also available as dealer installed kits

- Tread settings vary by spacer and axle drive shaft lengths
Magnum ROWTRAC – AE50

Tread Setting Adjustment

- Optional dealer installed kits: 136”, 144” and 152”
- Kits consist of spacers, shafts and plumbing
Magnum ROWTRAC – AE50

Cab Design

- Cab frame was modified to meet 40 percent increase in ROPS weight capacity
- Added additional structure in fender well area
- Increased “A” and “C” Post thickness
- Added additional support gussets
- Created cast cab mounts which do not have to be removed when adjusting tread settings.
Magnum ROWTRAC – AE50

Cab Design

- Cab frame was analyzed using FEA
- ROPS test was performed to validate FEA results
Magnum ROWTRAC – AE50

Structural Testing

- Vehicle/chassis structural testing

- Including areas such as frames, tread setting spacers, gear box housing, under carriage components and final drive housings
Magnum ROWTRAC – AE50

Front Axle Design

- New front axle with 68% increase in weight carrying capacity
- Satisfies tread settings of 76” to 152” with cast spacers and adjustable front wheels

Diagram showing:
- Tie rod
- King pin
- Knuckle
- Axle beam
Magnum ROWTRAC – AE50

Soil Disturbance

- Magnum ROWTRAC reduces soil disturbance during turns
Magnum ROWTRAC – AE50

Turn Radius

- Magnum ROWTRAC has improved turn radius capability

- Tests showed superior turn radius during powered turns

- Tests performed with implement in the ground while turning under load

<table>
<thead>
<tr>
<th></th>
<th>Untilled Soil</th>
<th>Tilled Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnum Rowtrac</td>
<td>Achieved</td>
<td>Achieved</td>
</tr>
<tr>
<td>7.5M Radius</td>
<td>7.5M Radius</td>
<td></td>
</tr>
</tbody>
</table>

Untilled Soil

Tilled Soil
Magnum ROWTRAC – AE50

Ground Pressure

- Magnum ROWTRAC provides more flotation than comparable wheel unit
- Based on ground contact area

<table>
<thead>
<tr>
<th>PSI</th>
<th>Rear Tires/Tracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>18” Tracks</td>
</tr>
<tr>
<td>17</td>
<td>480/95R50 Duals</td>
</tr>
</tbody>
</table>
Magnum ROWTRAC – AE50

CVT Transmission

- Magnum ROWTRAC is available with the recently introduced Case IH CVT transmission

Efficiency

- 4-range design provides more mechanical efficiency
- APM (Automatic Power Management) selects most efficient engine and transmission speed

Intuitive and Smooth

- Seamless drive from field to road speeds, no manual selection of ranges
- Active Hold Control for smooth acceleration under load
- Adjustable shuttle aggressiveness
Next Gen Case IH Step UP! 2015

Thank YOU!

Ken Ohnell
NA-High HP Tractor Specialist
Minneapolis, Mn., USA