Technical Data

Agriculture

CARRARO

Carraro Agriculture
Product Range

Carraro is rooted in Agriculture Machinery: established in 1932, the company became a reputed tractor manufacturer in the 1960s.
Still today, it boasts a unique understanding, not just of the Agricultural Drivetrain, but also of the vehicle has a whole. Carraro is a recognised expert in the development and production of Utility and Specialty Tractors, both for his own brand, as well as for World Class OEMs.

Carraro now has a truly global footprint: starting from Europe (Italy), the company has also been present in Asia for over ten years now, with state of art Operations in Qingdao, China, and Pune, India, not to mention Carraro Technology India, the largest R&D Centre operating out of Italy. In South America, the company is present with its plant and R&D Centre in Haedo, Argentina, and Caxias, Brazil. More recently, the company has also established its Chinese Engineering Centre in Qingdao.

This organisation has allowed us to obtain a profound understanding of the Local Market Requirements, which, combined with our consolidated Know-How of Hydraulics, Electronics and Engineering, renders Carraro a truly **Global Drivetrain Provider**.

For **Tractors** Carraro offers a complete range of 4WD steering drive axles from 40 to 400 HP, with or without suspension, supported by the Agricultural Transaxles series, which range from **basic configuration** for low-power tractors, to **fully-automated** units for mid to high-power premium tractors.

All Carraro front Suspension Modules come with a **Semi-Active suspension function**, which is electronically controlled and **fully interchangeable** with the Non-suspended Axles. All can be equipped with steering & speed sensors capable of interacting with the Vehicle's Electronic Control Unit and Transmission Control Unit, thus allowing for advanced tractor functions, such as GPS guidance and ABS control.

For high speed tractors, Carraro offers both of its available Braking Solutions: Wet Discs located in the Axle Wheel Hubs, or Dry Caliper Disc Brakes to reduce power loss with applications at speeds greater than 50 Km/h.

In order to enhance Efficiency and Productivity, Carraro also offers its **Central Inflation Tire System**, which can be installed in the axles of premium tractors. This System guarantees the best possible combination of traction, fuel savings and drivability during both field work and road transit.

All the Carraro Transaxle Models from 60 to 180 HP are available with 3 different levels of technology:

- **Mechanical**
  (Synchro Shuttle & Shift)
- **Basic Power Shift**
  (Power High/Low & Power Shuttle)
- **Power Shift**
  (Power Shuttle & Shift)
  with full Electronic Control

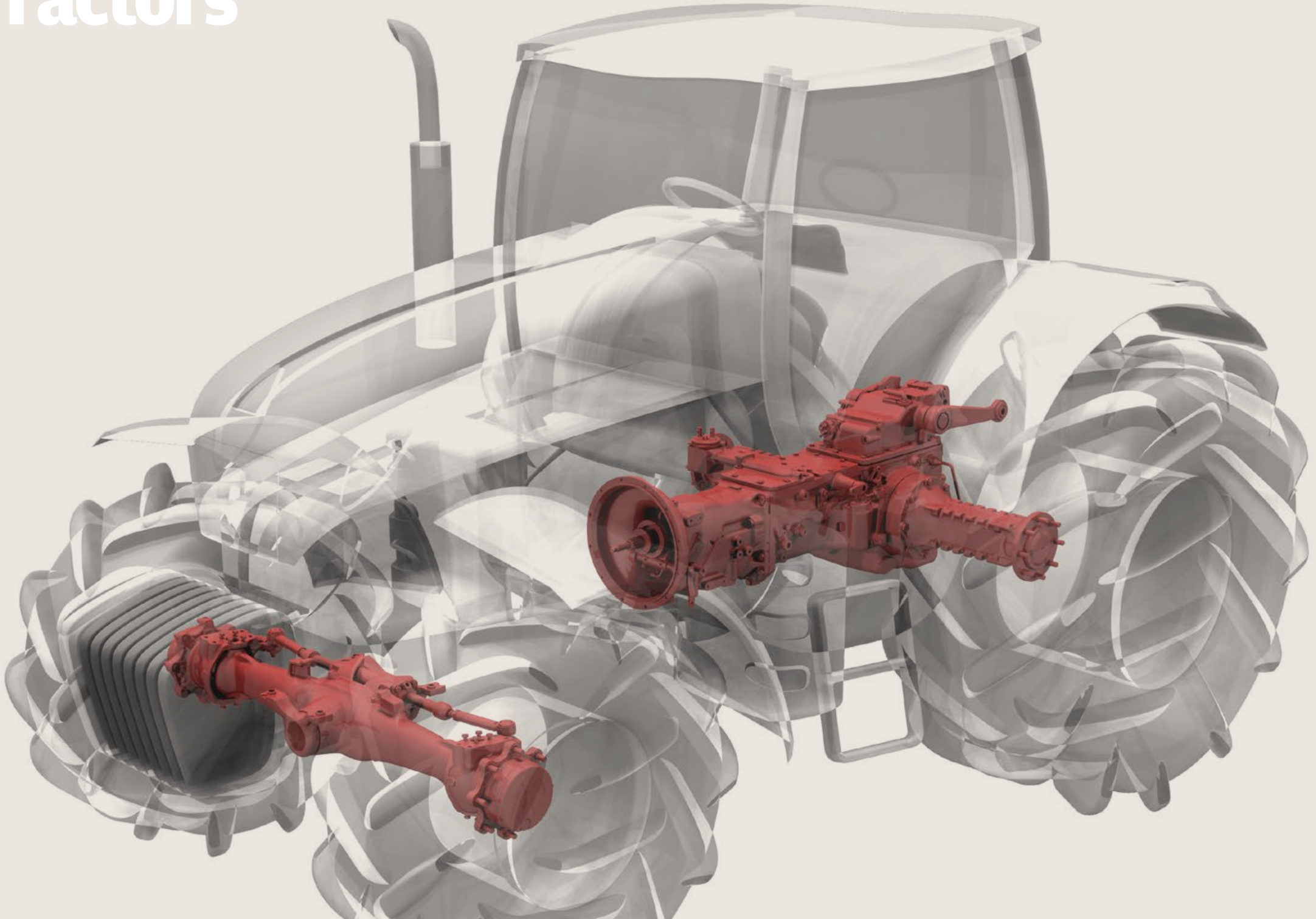
The Power Shift models are based on the **Power Shift Dual Clutch Architecture** (Carraro Twin Shift ™), which represents the state-of-the-art solution for AG Tractors, combining the **best possible fuel efficiency** (better than CVT) with **Carraro Twin Shift** capability.

Fuel efficiency and productivity are further enhanced with the possibility of having **simultaneous control over the entire Powertrain** (i.e. Engine and Transmission), thanks to Carraro's proprietary Transmission Electronic Control Unit. These already Functional Safety compliant ECUs are designed to provide optimised performance for every application with all Carraro E-Controlled Transmissions and Suspension Modules.

The Carraro product range also features several steering drive axle modules for **Harvesting Machines**, which are based on a versatile, scalable and modular architecture that uses the same components and features as higher volume applications.

In terms of **Telescopic Boom Handlers**, Carraro has developed a comprehensive series of products, ranging from lighter and more compact machines, to heavier/higher reaching models. The company can even provide full drivelines (i.e. axles and transmissions) for Hydrostatic, Torque Converter, and more recent Electric drive machines.

Drivelines for Tractors



Agricultural Tractor Axles

Taking advantage of its vast experience with tractors, Carraro has developed a complete range of steering drive axles for tractors from 40 to 400 hp. Each axle model is available with several reduction ratios, in multiple widths, and with various vehicle mounting interfaces. Combined with the large number of available options, these features allow for virtually any usage application to be fully satisfied.

Every axle has been designed for use under the most severe conditions, with a high load capacity, and robust gear design to ensure an extended service life with improved durability.
The high steering angle and optimised geometry are standard features on all Carraro axles, thus ensuring precise steering, high manoeuvrability, and minimum tyre wear. All the models are available with multiple differential configurations, from open to 100% locked, in order to ensure optimal traction with any ground conditions.
In order to ensure powerful and reliable braking, all the models can be equipped with virtually maintenance free wet disc brakes, while dry disc calliper configuration is also available for faster tractors.
Moreover, the waterproof configuration (seal kit and protection) is available for paddy field use, in order to ensure an extended and reliable service life under wet conditions.
The axle design processes are particularly focused upon achieving Easy Field Serviceability: in fact, the company is currently beginning to test models that allow for longer oil change/lubrication intervals, the use of fewer spare parts, and the decreased need for special repair tools, all with a high degree of sub-component standardisation in order to minimise spare parts storage space, even for maintaining multiple Carraro axle models.

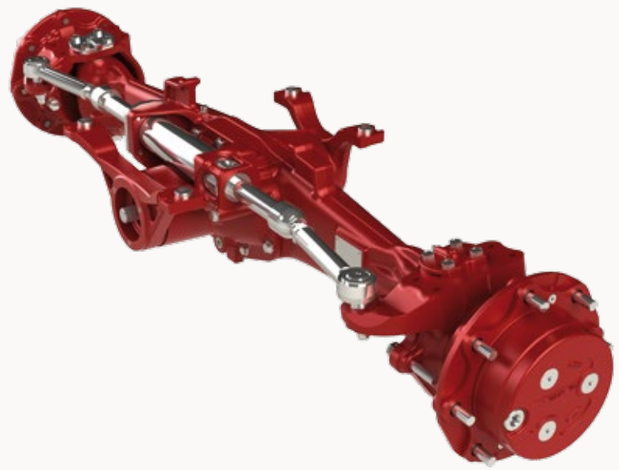
Options

- Wet Oil Brakes or Dry Caliper Disc Brakes
- Self Locking (Limited Slip) or 100% Differential Lock, Electro-Hydraulically operated
- Steering sensor
- Speed sensor
- Long-lasting lubricated U-joints and available waterproof Seals
- Central Tire Inflation System

Augmented Contents > Steering sensor

Intermediate axles size also available		**20.09**	**20.16**	**20.22**	**20.43**	**20.55**	**20.80**
Maximum Gross Engine Power (ECE R24)	**kW** **HP**	63 85.7	74 100.6	88 120	154 210	227 309.5	294 400
Peak Torque @ Wheels	**kNm**	12.6	22.4	30.8	60.2	77	112
Total Ratio		8:1 - 21.5:1	10:1 - 25.8:1	10.7:1 - 27.7:1	12:1 - 21:1 13.4:1 - 28.5:1	15.8:1 - 26.3:1	17.2:1 - 23.6:1
Dynamic Load Capacity*	**kN**	24	45	55	68	80	110
Static Load Capacity**	**kN**	60	112.5	137.5	170	200	275
Flange to Flange Distance	**mm**	990 1155 1375 1555	1175 1325 1460 1640	1640 1800 1900	1850 1900 1940	1940	1890
Brakes (Optional)		Wet multi disc	Wet multi disc	Wet multi disc	Wet multi disc	Wet multi disc Dry brakes	Wet multi disc Dry brakes
Differential		Limited slip system Mechanical diff. lock Open	Limited slip system Mechanical diff. lock Open	Limited slip system Mechanical diff. lock Wet clutch diff. lock Open	Limited slip system Wet clutch diff. lock Open	Limited slip system Wet clutch diff. lock Open	Limited slip system Wet clutch diff. lock Open

* Front loader operation
** Ballasted vehicle & without implements



Agricultural Tractor Axles with suspension

In addition to its comprehensive range of steering drive axles, Carraro has also developed an equivalent version with an integrated suspension function.

These complete Modules feature a semi-active suspension function, and come complete with a hydro-pneumatic unit controlled by a proprietary ECU governed by SW that can be fully customised for each application.
Carraro's suspended Modules range from 70 to 280 HP, and maintain the interchangeable dimension and vehicle interfaces of the non-suspended axle models.
The independent wheel suspension models are based on a patented Carraro system with position control.
This system has been recognised as the highest performance system for shock adsorption, tractor handling, and crop productivity thanks to its ability to maintain optimal traction, even on rough terrain.
Alternatively, Carraro also offers electronically controlled single suspension Modules, which feature a simpler yet highly effective design.
Carraro's suspended axles maintain the same configuration options as its non-suspended models, with a wide range of possibilities in terms of differentials, brakes, seals and sensors.

Options

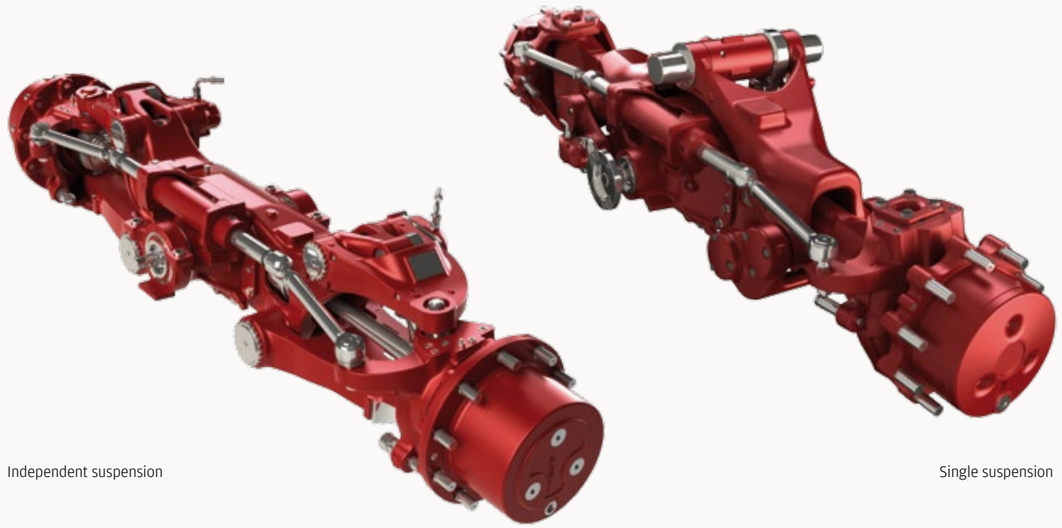
- Wet Oil Brakes or Dry Caliper Disc Brakes
- Self Locking (Limited Slip) or 100% Differential Lock, Electro-Hydraulically operated
- Steering sensor
- Speed sensor
- Long-lasting lubricated U-joints and available waterproof Seals
- Central Tire Inflation System

Augmented Contents > Axle Suspension System

Intermediate axles size also available		20.16S	20.22SI	20.25SI	20.43SI	20.43S	20.55S
Maximum Gross Engine Power (ECE R24)	kW HP	73 100	88 120	103 140	154 210	154 210	227 309.5
Peak Torque @ Wheels	kNm	16	26.6 30.8	35	60.2	60.2	77
Total Ratio		10.333:1 - 20.660:1	10.7:1 - 27.7:1	13.4:1 - 28.5:1	12:1 - 21:1 13.4:1 - 28.5:1	15.8:1 - 26.3:1	15.8:1 - 26.3:1
Dynamic Load Capacity*	kN	45	55	65	68	80	80
Static Load Capacity**	kN	112.5	137.5	162.5	170	200	200
Flange to Flange Distance	mm	1325	1910 1810	1850 1890	1850	1892	1892
Brakes (Optional)			Wet multi disc	Wet multi disc	Wet multi disc	Wet multi disc Dry brakes	Wet multi disc Dry brakes
Differential		Limited slip	Limited slip Mechanical diff. lock Open	Limited slip Mechanical diff. lock Open	Limited slip Wet clutch diff. lock Open	Limited slip Wet clutch diff. lock Open	Limited slip Wet clutch diff. lock Open

* Front loader operation
** Ballasted vehicle & without implements

SI = Independent suspension
S = Single suspension



Independent suspension

Single suspension

Carraro Twin Shift
Power Shift Dual Clutch

The current Carraro transmission range includes solutions capable of:

- **Decreasing Power Loss**
  (Clutch – Gear – Oil Level & Flow)
- **Ensuring optimal drivability**
  even under demanding conditions
  (Clutch Thermal Management)
- **Managing various Engine Power requirements based on the Tractor's Use**
  (Power Management).
  This solution offers the optimal combination of Traction and PTO Power, thus resulting in best in class Productivity and Efficiency for Utility and Specialty Tractors

Moreover, due to its benefits, Carraro selected the Power Shift Dual Clutch Architecture for the Premium version of its 60-180 HP transmissions, known as the **Carraro Twin Shift** ™.

The **Carraro Twin Shift Module** consists of **8 Power Shift Speeds** combined with 3 or 4 Ranges, thus providing for a total of up to 32 Speeds, even in the smaller transaxle unit. In each of the new DCT models, the 8 Speeds can be shifted without any torque loss, thus resulting in an **ideal Speed Spread** for **exceptional Productivity** with any application, **competitive with the best CVT solutions**.
The Power Shift Dual Clutch architecture is increasingly being utilised in Automotive applications due to its fast shifting response and improved efficiency with respect to the traditional automatic scheme. Its main difference is that it reduces the number of wet clutches required at the same number of Power Shift Speeds, thus minimising power loss. Carraro used this feature to create a Module with the same lay-out that can be scaled based on the rated power.

The **Twin Shift Module** offers **8 Power Shift Speeds using just 2 double wet clutches, which are electronically controlled** along with the rest of the transaxle, and ultimately together with the Engine itself, in order to optimise the performance of the entire tractor Powertrain.

The **Twin Shift** versions are interchangeable with other Carraro Transaxles with the same power rating, and are completely managed by the proprietary Carraro ECU (fully compliant in terms of Functional Safety), which is not only capable of acting as the Master ECU for the entire Powertrain, but can also control additional tractor functions, such as the rear lift and other auxiliaries.

The **Carraro Twin Shift** ™ units offer rapid shifting response, full power shift, and best in class power loss, thus ensuring the **best possible combination of Fuel Efficiency and Productivity for every application**.

Electronic Control Unit

Carraro offers a complete family of proprietary ECUs that are specifically designed to manage its electronically controlled Modules and Transmissions. Thanks to its profound applicational understanding and internal electronic control know-how, the company has developed its SW entirely in-house, while its HW is produced externally in accordance with Carraro's technical specifications. These ECUs are designed to optimise the overall System performance by governing the mechanical, hydraulic, and electronic modules together in the best possible manner.
The SW is extremely versatile, as its parameters can be fully configured and customised to suit each application.
All Carraro ECUs offer high I/O and CPU capacities, and are therefore capable of managing not only the Carraro Drivetrain, but also additional vehicle functions as well, including the Rear Lift, the Power Take Off, and other auxiliaries.
Moreover, their versatility and robustness also support their use as Vehicle ECUs.
The most recent units have been developed to ensure Functional Safety Compliance (ISO25119, ISO13849), and are capable of supporting various CAN protocols, including XCP, SAE J1939 and KWP2000.

	TRAX	SAX	TEQ2 NEW	TEQ2 RDX NEW
APPLICATION				
	Transmission and Suspension Systems under ECU monitoring Warnings and error signals to detect failure conditions and excessive working parameters Data exchange support according to CAN protocols as SAE J1939 and KWP2000. Alternative ECU service interface through proprietary RS232 protocol.		Transmission Systems under ECU monitoring Compliant with ISO13849 for a performance level PL=d (equivalent to IEC/EN61508 SIL2). Support Safety Certification of the systems if needed. Designed to provide calculation capacity adequate to control system & transmissions with top features Support several CAN protocols as XCP, SAE J1939 and KWP2000.	
HW FEATURES				
	32 bit CPU 256KB ROM 16KB RAM		32 bit main CPU 1MB ROM 64KB RAM Auxiliary CPU to monitor main CPU activities	
SW FEATURES				
	Configurable according application needs. Setup parameters available for maximum operating comfort and proper vehicle responsiveness.		Model based application software design structured to balance transmissions control and customer requirements.	
INTERFACE				
Nominal supply voltage	12 Vdc	12 Vdc	12 - 24 Vdc	12 - 24 Vdc
Analog inputs	Up to 5 (voltage/current/ resistance, software configurable inputs)	Up to 3 (voltage/current/ resistance, software configurable inputs)	Up to 20 (voltage/current/ resistance, software configurable inputs)	Up to 20 (voltage/current/resistance, software configurable inputs)
Digital inputs	Up to 16 (pull-up/pull-down, software configurable inputs)	Up to 7 (pull-up/pull-down, software configurable inputs)	Up to 54 (pull-up/pull-down, software configurable inputs)	Up to 44 (pull-up/pull-down, software configurable inputs)
Frequency inputs	Up to 3 (pull-up software configurable)	Up to 2 (pull-up software configurable)	Up to 8 (pull-up software configurable / magneto-resistive sensors support)	Up to 6 (pull-up software configurable)
PWM outputs	Up to 4 (all High side + Low side)	Up to 2 (all High side + Low side)	Up to 8 (High side / High side + Low side)	Up to 6 (High side / High side + Low side)
Digital outputs	Up to 12 (High side / Low side)	Up to 5 (High side / Low side)	Up to 26 (High side / Low side)	Up to 14 (High side / Low side)
Output supply	5 Vdc	5 Vdc	5 Vdc - 8 Vdc	5 Vdc - 8 Vdc
Communication	1 RS232 asincronous, 1 CAN bus compliant with CAN 2.0b specifications (SAE J1939 / ISO 11783 / ISO 11898)	1 RS232 asincronous, 1 CAN bus compliant with CAN 2.0b specifications (SAE J1939 / ISO 11783 / ISO 11898)	1 RS232 asincronous, 2 CAN bus compliant with CAN 2.0b specifications (SAE J1939 / ISO 11783 / ISO 11898)	1 RS232 asincronous, 2 CAN bus compliant with CAN 2.0b specifications (SAE J1939 / ISO 11783 / ISO 11898)
GENERAL				
Operating temperature	-40/+85 °C	-40/+85 °C	-40/+85 °C	-40/+85 °C
Protection rating	IP67	IP67	IP67	IP67
Electrical connections	56 pins board mounted	24 pins board mounted	121 pins board mounted	121 pins board mounted
Housing material	High temperature nylon (black)	High temperature nylon (black)	Aluminium	Aluminium
Dimensions [for reference only]	193 x 40 x 145 cm	119 x 35 x 133 cm	285 x 50 x 230 mm	285 x 50 x 230 mm
Weight [for reference only]	0.420 Kg	0.250 Kg	2.1 Kg	2.1 Kg

T40 Agricultural transaxle

This lightweight and reliable unit developed for tractors up to 40 HP is also ideal for paddy field use, with a speed distribution that allows for the optimal use of a wide range of 3-point linkage or towed implements, and is even equipped with Single or Double Clutch for independent PTO control, thus rendering it ideal for jobs involving balers, rotary cultivators, and more.

Gearbox

- Mechanical constant mesh unit with a compact two-axis lay-out
- Standard SAE 3 clutch housing
- Available in 2 configurations:
  - 8 forward plus 2 reverse speeds, “collar shift” gears, synchro reverser
  - 8 forward plus 8 reverse speeds, “collar shift” gears, synchro reverser
- Speed distribution from 2.6 to 32 km/h

Rear Axle

- Heavy Duty, double reduction: bevel gear set and drop final reduction
- “Ball & Ramp” wet brakes, mechanically actuated, contained in the main housing close to the differential, virtually maintenance free
- 100% differential lock, pedal-controlled

Power Take Off & Rear Lift

- 11 kN capacity hydraulic rear lift, position and mixed control type
- 540 and 540/540E PTO speed, controlled by a Single or Double Clutch for independent PTO control

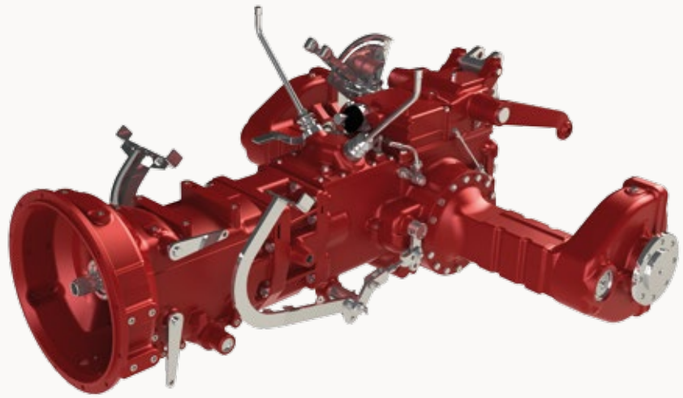
Options

- SAE 4 & SAE 5 Clutch housing interface
- Waterproof sealing for “rice puddling” field work
- Front 4WD Axle output

APPLICATION DATA		T40 Standard
*Power rating	HP	38
Max input speed	rpm	2400
Torque rating	Nm	120
Torque rating raise factor		25%
Ballast weight	Kg	1900
Max rear tire size		13.6R28
Max index radius (m)*		0.625
Top speed	Km/h	30

* = Gross Power ECER 24

VERSION DATA		Mechanical T40 Standard
Configuration		8F+2R 8F+8R
Fwd/Rew		Synchro
High/Low		No
Ranges		2
Shifting		Collar
Gears		4
Gear No.		Collar
Input reduction No.		No
Min speed	Km/h	N/A
4WD Axle PTO		Dog Clutch
Pump PTO on TRSM		No
Flange to Flange distance	rpm	1250 1368
Differential lock		Mechanical by pedal
Power	HP	40
Speed No.		1
Speed	rpm	540 / 1000
Ground Speed PTO		No
Rear Lift Type		Mechanical
Max lift capacity	kN	11



T50 Agricultural transaxle

This lightweight unit for **Utility** and **Standard Tractors** up to 50 HP is also ideal for paddy field use, and is available in several versions, from the basic collar shift, to the fully-synchronised version, with multiple speed configurations to ensure maximum productivity using a wide range of implements, equipped with Single or Double Clutch for independent PTO control, ideal for jobs involving balers, rotary cultivators, and more.

Gearbox

- Standard SAE 3 clutch housing
- Two-axis lay-out with compact dimensions
- Available in 3 configurations:
  - 8 forward plus 2 reverse speeds, “collar shift” gears and synchro reverser
  - 8 forward plus 8 reverse speeds, “collar shift” or synchro gears and synchro reverser
  - 16 forward plus 16 reverse speeds, with synchro gears, synchro reverser and synchro High-Low
- Speed distribution from 2.6 to 40 km/h

Rear Axle

- Double reduction, with bevel gear set and inboard planetary or drop final reduction
- “Ball & Ramp” wet brakes, mechanically actuated, contained in the main housing close to the differential, virtually maintenance free
- 100% differential lock, pedal-controlled

Power Take Off & Rear Lift

- 11 kN capacity hydraulic rear lift, position and mixed control type
- 540 and 540/540E PTO speed, controlled by a Single or Double Clutch for independent PTO control

Options

- 2700 Input RPM
- SAE 4 & SAE 5 Clutch housing interface
- Waterproof sealing for “rice puddling” field work
- Front 4WD Axle output
- Shift by Carraro Cable Command

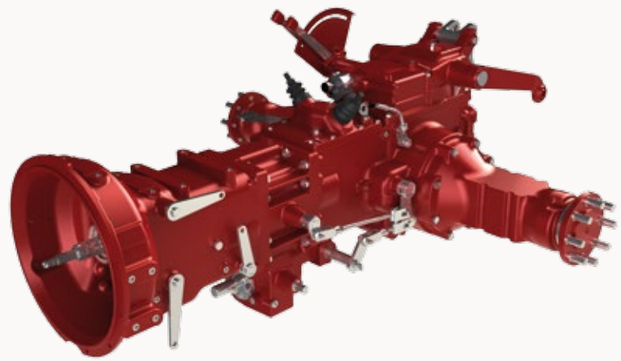
Augmented Contents > Mechanical differential system

APPLICATION DATA		T50 Utility	T50 Standard
*Power rating	HP	50	45
Max input speed	rpm	2400 2700	2400 2700
Torque rating	Nm	158	148
Torque rating raise factor		25%	25%
Ballast weight	Kg	2250	2100
Max rear tire size		13.6R28	13.6R28
Max index radius (m)*		0.625	0.625
Top speed	Km/h	30 (40)	30 (40)

* = Gross Power ECER 24

VERSION DATA		Mechanical T50 Utility T50 Standard	
Configuration		8F+2R	8F+2R 8F+8R 16F+16R •
Fwd/Rew		Synchro	Synchro
High/Low		No	Synchro
Ranges		2	2
Shifting		Collar	Collar
Gears		4	4
Gear No.		Collar	Synchro
Input reduction No.		No	No
Min speed	Km/h	N/A	N/A
4WD Axle PTO		Dog Clutch	Dog Clutch
Pump PTO on TRSM		No	No
Flange to Flange distance	rpm	1250 1368	1250 1368
Differential lock		Mechanical by pedal	Mechanical by pedal
Power	HP	40	50
Speed No.		1	1 or 2
Speed	rpm	540 / 1000	540 / 1000
Ground Speed PTO		No	Yes
Rear Lift Type		Mechanical	Mechanical
Max lift capacity	kN	11	11

• = Under Development



T100 Agricultural transaxle

This compact and versatile unit, which was developed for **Specialty** (Vineyard – Orchard), **Utility** and **Standard Tractors** up to 100 HP, is available in several versions, from the basic synchronised version to the Power Shift Dual Clutch (Carraro Twin Shift™) version controlled by **TEQ2 Carraro ECU**, with up to 48 Forward Speeds to ensure optimal productivity and fuel efficiency with every usage application. It's available with a smooth and effective Power Shuttle function for optimal Front Loader work, and is equipped with an independently controlled rear PTO for jobs involving balers or rotary cultivators, and a Ground Drive PTO (GDPTO) for driven implements like motor trailers, for optimal traction on slopes or muddy terrain.

Gearbox

- Standard SAE 3 clutch housing
- Two-axis lay-out with compact size
- Available in 3 versions:
  - **Mechanical:** up to 24 forward plus 24 reverse speeds, with synchro: Gears, High/Low and Reverser
  - **Basic Power Shift Dual Clutch:** up to 48 forward plus 24 reverse speeds, with synchro Gears and Reverser, Power High/Low or Power High/Medium/Low (3 PS Gears)
  - **Power Shift Dual Clutch:** Carraro Twin Shift ™ 24 forward plus 24 reverse speeds, with 8 Power Shift Gears, Power Reverser, Power Synchro Ranges, and optional Creeper unit. Power Shift Dual Clutch Technology for optimal fuel efficiency
- Speed distribution from 0.25 (with Creeper) to **50 km/h** at low engine speed (1800 RPM)

Rear Axle

- Double reduction type, with bevel gear set and inboard planetary or drop final reduction
- Final Reduction: inboard planetary or drop gear High/Low Crop Type
- Flange to Flange: Extra Narrow (Vineyard), Narrow (Orchard), Standard (Utility/Standard)
- "Ball & Ramp" wet brakes, mechanically actuated, contained in the main housing close to the differential, virtually maintenance free
- 100% diff. lock, pedal or electro-hydraulically controlled

Power Take Off & Rear Lift

- 26 kN capacity hydraulic rear lift (35 kN Carraro Twin Shift ™), mechanical position and mixed control or electronic control
- 540/540E /1000 RPM PTO (up to 3 speeds), mechanically controlled independently by a Double Clutch, or else electro-hydraulically by a Wet Clutch

Options

- Clutch housing with special length and interface to match various tractor wheel bases
- Dedicated Electronic Control Unit with optimised hydraulic control block transmission
- Transmission ECU with available I/O to control further tractor functions
- Intelligent Power Management for ECU Controlled Versions for optimal PTO and Traction Power use
- Hydraulic brake control with suspended pedals for tractors with cabs, etc.
- 4WD Axle output: Easy-shift System/Multidisc Wet Clutch
- 32 (35) kN hydraulic rear lift capacity
- Rear Lift with draft, position, and mixed control hydraulic lift, complete with descent speed and sensitivity control or full electronic control
- Ground drive rear power take-off (GDPTO)
- Auxiliary PTO Pump on transmission
- Shift by Carraro Cable Command (for Mechanical and Basic Power Shift)

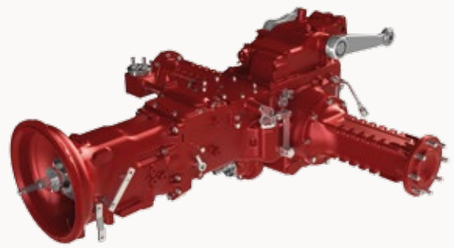
Augmented Contents > Dual clutch concept

APPLICATION DATA		T100 Speciality	T100 Utility	T100 Standard
*Power rating	HP	100 (110 with IPM)	90 (100 with IPM)	80 (90 with IPM)
Max input speed	rpm	2400	2400	2400
Torque rating	Nm	360	310	302
Torque rating raise factor		30%	30%	27%
Ballast weight	Kg	3650	3820	3820
Max rear tire size		16.9R28	16.9R30	16.9R30
Max index radius (m)*		0.675	0.700	0.700
Top speed	Km/h	40	40 50 (PS only)	40 50 (PS only)

* = Gross Power ECER 24

VERSION DATA		Mechanical T100 Speciality T100 Utility T100 Standard	Basic Power Shift T100 Speciality T100 Utility T100 Standard	Carraro Twin Shift ™ NEW T100 Speciality T100 Utility T100 Standard
Configuration		8F+8R 12F+12R 24F+24R	24F+24R PHL 24F+12R PHL-PR 48+24R PHL-PR • 36F+36R PHML •	24F+24R PS DCT •
Fwd/Rew		Synchro	Power Shuttle	Power Shuttle
High/Low		Synchro	Wet Clutch H-L Wet Clutch H-M-L	
Ranges		3	3	3
Shifting		Collar	Collar	Power Synchro
Gears		4	4	8 PS
Gear shifting		Synchro	Synchro	Power Shift DCT
Creeper		No	No	Yes
Min speed	Km/h	N/A	N/A	0,25
4WD Axle PTO		Dog Clutch Wet Clutch	Dog Clutch Wet Clutch	Wet Clutch
Pump PTO on TRSM			Option	Option
Flange to Flange distance	mm	Vineyard: 890/970 Orchard: 1240 Standard: 1540	Vineyard: 890/970 Orchard: 1240 Standard: 1540	Vineyard: 890/970 Orchard: 1240 Standard: 1540
Differential lock		Mechanical by pedal	Mechanical by pedal	Electro-Hydraulical
Power	HP	110 (90)	110 (90)	110 (90)
Speed No.		2	2	3
Speed	rpm	540 / 1000E or 1000	540 / 1000E or 1000	540 / 540E / 1000
Ground Speed PTO		Yes	Yes	Yes
Rear Lift Type		Mechanical/Electronic	Mechanical/Electronic	Electronic
Lift capacity	kN	26	26	35
Optional	kN	32	32	-

• = Under Development



T120 Agricultural transaxle

This compact unit, which was developed for **Utility** and **Standard Tractors** up to 120 HP, is available in several versions, from the basic synchronised version to the Power Shift Dual Clutch (Carraro Twin Shift™) version controlled by **TEQ2 Carraro ECU**, with up to 32 Forward and Reverse Speeds for optimal productivity and fuel efficiency with every usage application. It's available with a smooth and effective Power Shuttle function for optimal Front Loader work, and is even equipped with an independently controlled rear PTO for jobs involving balers and rotary cultivators, as well as a Ground Drive PTO (GDPTO) for driven implements like motor trailers, for optimal traction on slopes or muddy terrain.

Gearbox

- Standard SAE 3 clutch housing
- Compact Two-axis lay-out
- Available in 3 versions:
  - **Mechanical:** up to 24 forward plus 24 reverse speeds with synchro: Gears, High/Low and Reverser
  - **Basic Power Shift Dual Clutch:** up to 24 forward plus 24 reverse speeds with synchro Gears and Reverser, Power High/Low (2 PS Gears)
  - **Power Shift Dual Clutch:** Carraro Twin Shift ™ 32 forward plus 32 reverse speeds with 8 Power Shift Gears, Power Reverser, Power Synchro Ranges, and optional Creeper unit. Power Shift Dual Clutch Technology for optimal fuel efficiency
- Speed distribution from 0.25 (with Creeper) to **50 km/h** at low engine regime (1800 RPM)
- 4WD Axle output:
  - Easy-shift System
  - Multidisc Wet Clutch

Rear Axle

- Double reduction type with bevel gear set and inboard planetary final reduction
- Inboard Final Reduction, planetary Type
- Flange to Flange: Standard for Utility/Standard Tractors
- “Ball & Ramp” wet brakes, mechanically actuated, contained in the main housing close to the differential, virtually maintenance free
- 100% differential lock, electro-hydraulically controlled

Power Take Off & Rear Lift

- Integrated 45 kN hydraulic rear lift capacity, electronically controlled
- 540/540E/1000E /1000 RPM PTO (up to 3 speeds), mechanically controlled independently by a Double Clutch or else electro-hydraulically by a Wet Clutch

Options

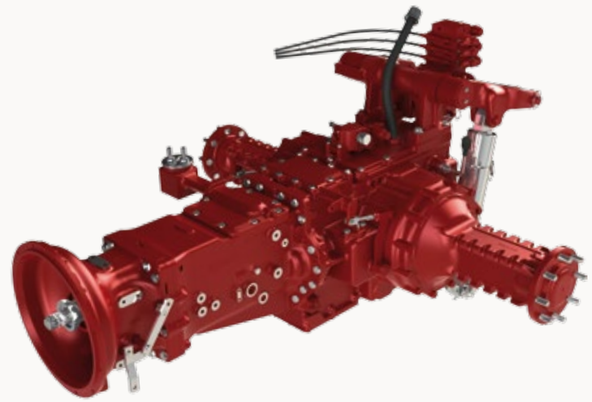
- Electronic Control Unit with optimised hydraulic control block transmission
- Transmission ECU with available I/O to control further tractor functions
- Clutch housing with special length and interface
- Hydraulic brake control with suspended pedals for tractors with cabs, etc
- Ground drive rear power take-off (GDPTO)
- Auxiliary PTO Pump on transmission
- Shift by Carraro Cable Command (for Mechanical and Basic Power Shift)

APPLICATION DATA		T120 Utility	T120 Standard
*Power rating	**HP**	120	115
Max input speed	**rpm**	2400	2400
Torque rating	**Nm**	495	495
Torque rating raise factor		35%	35%
Ballast weight	**Kg**	5700	5700
Max rear tire size		18.4R34	18.4R34
Max index radius (m)*		0.775	0.775
Top speed	**Km/h**	40 50 (PS only)	40 50 (PS only)

* = Gross Power ECER 24

VERSION DATA		Mechanical T120 Utility T120 Standard	Basic Power Shift T120 Utility T120 Standard	Carraro Twin Shift ™ NEW T120 Utility T120 Standard
Configuration		8F+8R 12F+12R	24F+24R PHL 24F+12R PHL-PR •	24F+24R PS DCT •
Fwd/Rew		Synchro	Power Shuttle	Power Shuttle
High/Low		Synchro	Wet Clutch H-L	N/A
Ranges		3	3	3
Shifting		Collar	Collar	Power Synchro
Gears		4	4	8 PS
Gear shifting		Synchro	Synchro	Power Shift DCT
Creeper		No	No	Yes
Min speed	**Km/h**	N/A	N/A	0.25
4WD Axle PTO		Wet Clutch	Wet Clutch	Wet Clutch
Pump PTO on TRSM		No	Option	Option
Flange to Flange distance	**mm**	1540	1540	1540
Differential lock		Electro-Hydraulical	Electro-Hydraulical	Electro-Hydraulical
Power	**HP**	115	115	115
Speed No.		2	2	3
Speed	**rpm**	540 / 750 / 1000	540 / 750 / 1000	540 / 750 / 1000
Ground Speed PTO		Yes	Yes	Yes
Rear Lift Type		Electronic	Electronic	Electronic
Lift capacity	**kN**	45	45	45

• = Under Development



T150 Agricultural transaxle

Designed for **Standard Open Field Tractors** with up to 150 HP, in configurations ranging from a basic Power High-Low version to the Power Shift Dual Clutch (Carraro Twin Shift™) version controlled by **TEQ2 Carraro ECU**, both with up to 32 Forward and Reverse Speeds for optimal productivity and fuel efficiency with every application, this model is available with a smooth and effective Power Shuttle function for optimal Front Loader work, and is equipped with an independently controlled rear PTO for jobs involving balers and rotary cultivators, as well as Ground Drive PTO (GDPTO) for driven implements like motor trailers, for optimal traction on slopes or muddy terrain.

Gearbox

- Standard SAE 3 clutch housing, with easy tractor installation
- Available in 2 versions:
  - **Basic Power Shift Dual Clutch:** 32 forward plus 32 reverse speeds, with synchro Gears and Reverser, Power High/Low (2 Power Shift Gears)
  - **Power Shift Dual Clutch:** Carraro Twin Shift ™ 32 forward plus 32 reverse speeds, with 8 Power Shift Gears, Power Reverser, Power Synchro Ranges and optional Creeper unit. Power Shift Dual Clutch Technology for optimal fuel efficiency
- Speed distribution from 0.25 (with Creeper) to **60 km/h**
- 4WD Axle output engaged by the multidisc Wet Clutch

Rear Axle

- Double reduction type with bevel gear set and inboard planetary final reduction
- Inboard Final Reduction, planetary type
- Flange to Flange for Standard Tractors
- Hydraulically actuated wet brakes contained in the main housing close to the differential, virtually maintenance free
- 100% differential lock, electro-hydraulically controlled

Power Take Off & Rear Lift

- Integrated 60 kN capacity hydraulic rear lift, electronically controlled
- 540/540E/1000E/1000 RPM PTO (up to 4 speeds), electro-hydraulically controlled by a Wet multidisc Clutch

Options

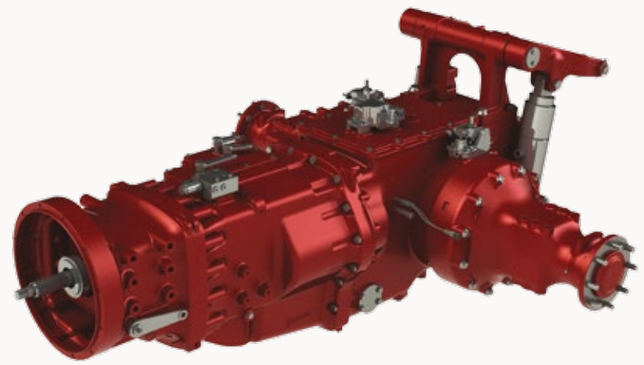
- Electronic Control Unit with optimised hydraulic control block transmission
- Transmission ECU with available I/O to control further tractor functions
- Hydraulic brake control with suspended pedals for tractors with cabs, etc
- Ground drive rear power take-off (GDPTO)
- Auxiliary PTO Pump on transmission

APPLICATION DATA		T150 Standard
*Power rating	HP	150
Max input speed	rpm	2400
Torque rating	Nm	615
Torque rating raise factor		40%
Ballast weight	Kg	6900
Max rear tire size		18.4R38
Max index radius (m)*		0.825
Top speed	Km/h	50

* = Gross Power ECER 24

VERSION DATA		Power Shift NEW T150 Standard	Carraro Twin Shift ™ NEW T150 Standard
Configuration		32F+32R PHL •	32F+32R PS DCT •
Fwd/Rew		Synchro	Power Shuttle
High/Low		Wet Clutch H-L	
Ranges		4	4
Shifting		Synchro	Power Synchro
Gears		4	8
Gear shifting		Synchro	Power Shift DCT
Creeper			Yes
Min speed	Km/h		0.25
4WD Axle PTO		Wet Clutch	Wet Clutch
Pump PTO on TRSM		Option	Option
Flange to Flange distance	mm	1640	1640
Differential lock		Electro-Hydraulical	Electro-Hydraulical
Power	HP	140	140
Speed No.		4	4
Speed	rpm	540 / 540E / 1000 / 1000E	540 / 540E / 1000 / 1000E
Ground Speed PTO		Yes	Yes
Rear Lift Type		Electronic	Electronic
Max lift capacity	kN	60	60

• = Under Development



T180 Agricultural transaxle

Designed for **Standard Open Field Tractors** with up to 180 HP, in configurations ranging from a basic Power High-Low version to the Power Shift Dual Clutch (Carraro Twin Shift™) version controlled by **TEQ2 Carraro ECU**, both with up to 32 Forward and Reverse Speeds for optimal productivity and fuel efficiency with every application, this model is available with a smooth and effective Power Shuttle function for optimal Front Loader work, and is equipped with an independently controlled rear PTO for jobs involving balers and rotary cultivators, as well as Ground Drive PTO (GDPTO) for driven implements like motor trailers, for optimal traction on slopes or muddy terrain.

Gearbox

- Standard SAE 3 clutch housing, with easy tractor installation
- Proposed in 2 versions:
  - **Basic Power Shift Dual Clutch:** 32 forward plus 32 reverse speeds, with synchro Gears and Reverser, Power High/Low (2 Power Shift Gears)
  - **Power Shift Dual Clutch:** Carraro Twin Shift ™ 32 forward plus 32 reverse speeds, with 8 Power Shift Gears, Power Reverser, Power Synchro Ranges and optional Creeper unit. Power Shift Dual Clutch Technology for optimal fuel efficiency
- Speed distribution from 0.25 (with Creeper) to **60 km/h**
- 4WD Axle output engaged by multidisc Wet Clutch

Rear Axle

- Double reduction type with bevel gear set and inboard planetary final reduction
- Inboard Final Reduction, planetary type
- Flange to Flange for Standard Tractors
- Hydraulically actuated wet brakes in the main housing close to the differential, virtually maintenance free
- 100% differential lock, electro-hydraulically controlled

Power Take Off & Rear Lift

- Integrated 75 kN capacity hydraulic rear lift, electronically controlled
- 540/540E/1000E /1000 RPM PTO (up to 4 speeds), electro-hydraulically controlled by a Wet multidisc Clutch

Options

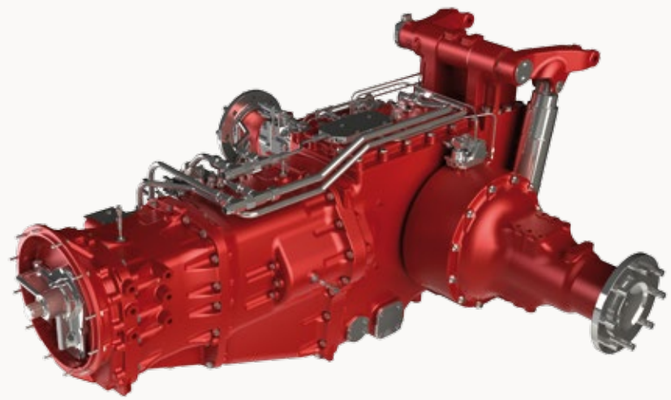
- Electronic Control Unit with optimised hydraulic control block transmission
- Transmission ECU with available I/O to control additional tractor functions
- Hydraulic brake control with suspended pedals for tractors with cabs, etc
- Ground drive rear power take-off (GDPTO)
- Auxiliary PTO Pump on transmission

APPLICATION DATA		T180 Standard
*Power rating	**HP**	180
Max input speed	**rpm**	2400
Torque rating	**Nm**	670
Torque rating raise factor		40%
Ballast weight	**Kg**	8250
Max rear tire size		20.8R38
Max index radius (m)*		0.875
Top speed	**Km/h**	50 60

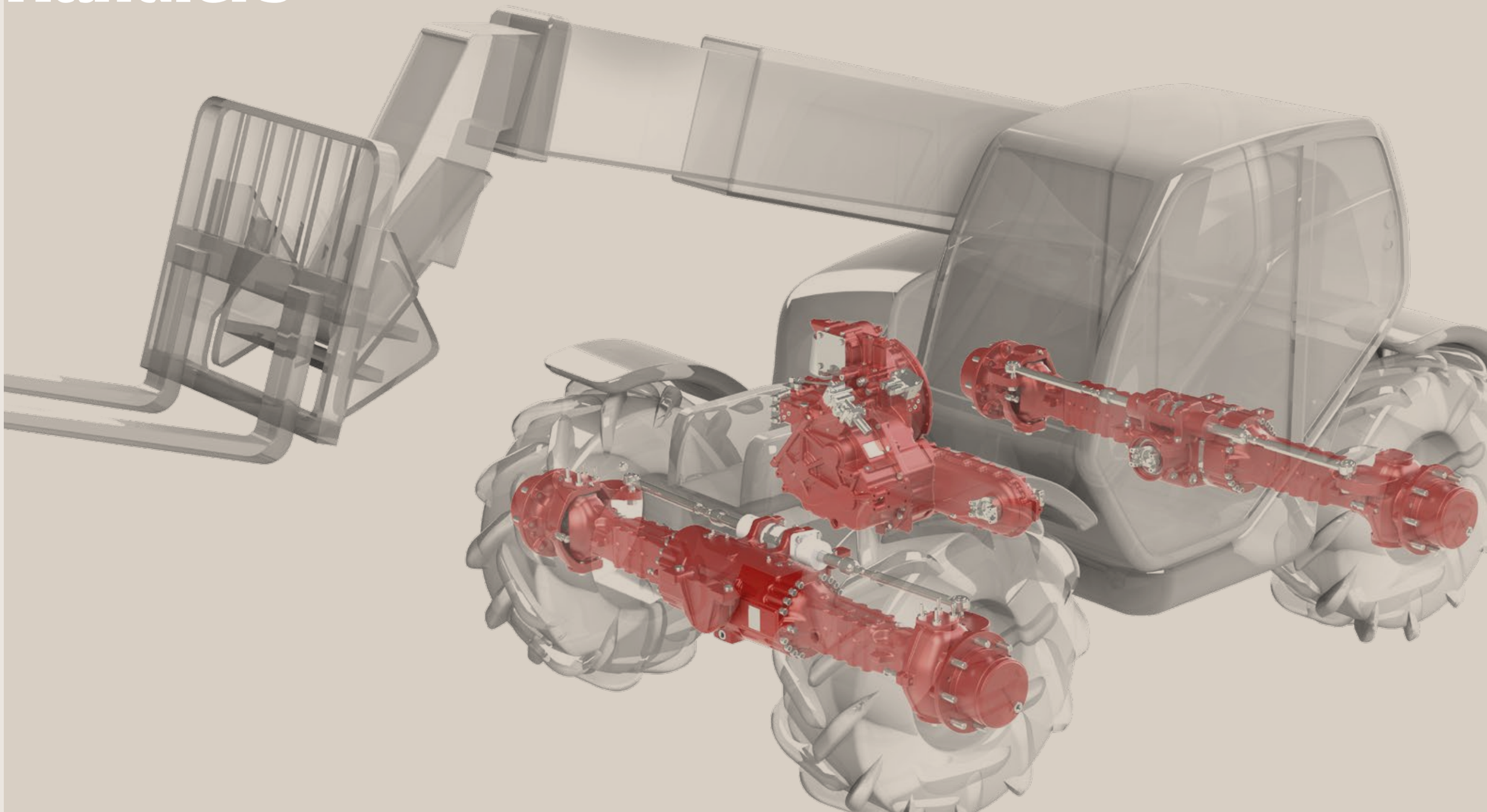
* = Gross Power ECER 24

VERSION DATA		Basic Power Shift NEW T180 Standard	Carraro Twin Shift ™ NEW T180 Standard
Configuration		32F+32R PHL •	32F+32R PS DCT
Fwd/Rew		Synchro	Power Shuttle
High/Low		Wet Clutch H-L	
Ranges		4	4
Shifting		Synchro	Power Synchro
Gears		4	8
Gear shifting		Synchro	Power Shift DCT
Creeper			Yes
Min speed	**Km/h**		0.25
4WD Axle PTO		Wet Clutch	Wet Clutch
Pump PTO on TRSM		Option	Option
Flange to Flange distance	**mm**	1890	1890
Differential lock		Electro-Hydraulical	Electro-Hydraulical
Power	**HP**	180	180
Speed No.		3	3
Speed	**rpm**	540 / 540E / 1000 / 1000E	540 / 540E / 1000
Ground Speed PTO		Yes	Yes
Rear Lift Type		Electronic	Electronic
Max lift capacity	**kN**	75	75

• = Under Development



Drivelines for Telescopic Handlers



Telescopic Boom Handler Drivelines
Telescopic Boom Handler Axles

Carraro now offers a complete range of drivelines for Telescopic Handlers, and in addition to further expanding its range of axle variants, has also introduced a series of new transmission models, both for hydrostatic and torque converter machines. For all the products, special attention has been dedicated to developing solutions to minimise power loss.

All the axle models are available in multiple configurations, with thread settings, differential locks, service and parking brakes, and sensors capable of satisfying virtually every usage application.
The axle range is complemented by various hydrostatic and torque converter gearbox solutions, ranging from the basic single speed to the electronically-controlled 6 speed versions, which take advantage of Carraro's full Drivetrain system control.
Carraro's product range features optimised axle solutions for Agricultural Telescopic Boom Handlers, with lifting capacities ranging from 1 to 5 tonnes. The configuration options, which are available for our lighter and more compact machines, as well as heavier and larger machines, include the axle structure, which is available in multiple flange-to-flange dimensions for each model, numerous ratio and differential lock configurations, multiple brakes configurations (from the dry disc to wet inboard types, both for service and parking), and various sensor arrangements (steering, load, speed).
The latest generation of products include significant improvements in terms of mechanical efficiency, as well as an optimised steering system to improve manoeuvrability and reduce tyre wear.
Furthermore, all Carraro axles are equipped with a state-of-the-art seal design in order to ensure longer service intervals, even under the most gruelling working conditions.

Options

- Dry Caliper Disc Input Brakes (smaller axle models)
- Self Locking (Limited Slip) or 100% Differential Lock, Electro-Hydraulically operated operated
- Steering sensor
- Speed Sensor
- LSI

		26.09	26.16	26.20	26.25
Unladen vehicle weight	kg	3500	4400	7000	7500
Flange to Flange	mm	1270 1400 1530	1270 1400 1530 1640	1580 1680 1800 1900	1580 1680 1800 1900
Whell Mounting dimension		n° 6 M18 x 1.5 on 205 mm ø	n° 8 M18 x 1.5 on 275 mm ø	n° 8 M18 x 1.5 on 275 mm ø	n° 8 M18 x 1.5 on 275 mm ø
Wheel Peak Drive Torque	kNm	12	22	29,4	34
Dynamic Load Capacity	kN	45	50	70	75
Static Load Capacity	kN	112.5	125	175	187.5
Differential		Open Limited slip 100% Hydraulic lock	Open Limited slip 100% Hydraulic lock	Open Limited slip 100% Hydraulic lock	Open Limited slip 100% Hydraulic lock
Max. Steering Angle		40°	40°	45°	45°
Service Brakes		Dry Caliper at Axle Input Wet Disc	Dry Caliper at Axle Input Wet Disc	Dry Caliper at Axle Input Wet Disc	Dry Caliper at Axle Input Wet Disc
Parking Brake		Dry Caliper at Axle Input Wet Disc SAHR	Dry Caliper at Axle Input Wet Disc SAHR	Dry Caliper at Axle Input Wet Disc SAHR	Dry Caliper at Axle Input Wet Disc SAHR
Vehicle Frame Mounting		Pads Trunnion ACP	Pads Trunnion ACP	Pads Trunnion ACP	Pads Trunnion ACP

		26.27	26.32	26.43
Unladen vehicle weight	kg	8500	10500	12500
Flange to Flange	mm	1920 2050	1950	1950
Whell Mounting dimension		n° 8 M18 x 1.5 on 275 mm ø	n° 10 M22 x 1.5 on 335 mm ø	n° 10 M22 x 1.5 on 335 mm ø
Wheel Peak Drive Torque	kNm	34	45	50
Dynamic Load Capacity	kN	88	105	120
Static Load Capacity	kN	220	262.5	300
Differential		Open Limited slip 100% Hydraulic lock	Open Limited slip 100% Hydraulic lock	Open Limited slip 100% Hydraulic lock
Max. Steering Angle		55°	55°	55°
Service Brakes		Wet Disc	Wet Disc	Wet Disc
Parking Brake		Dry Caliper at Axle Input Wet Disc SAHR	Dry Caliper at Axle Input Wet Disc SAHR	Dry Caliper at Axle Input Wet Disc SAHR
Vehicle Frame Mounting		Pads Trunnion ACP	Pads Trunnion ACP	Pads Trunnion ACP

Telescopic Boom Handler Torque Converter Transmissions

The range of Carraro Telescopic Boom Handler Products is completed with a Range of Transmissions for both Hydrostatic and Torque Converter vehicles.

The **Torque Converter Range** includes all the Full Powershift Units for both Speed Shifting and Forward/Reverse Shuttling. They're available in Centre and Side Drive configurations, and with 4 to 6 speeds to accommodate all vehicle lay-outs and uses.
These units have been developed for use with basic electro-hydraulic control, or with full Electronic control with Carraro's proprietary ECU. Torque Converter Lock-up solutions are available as an option in order to greatly improve the vehicle's fuel efficiency and productivity. All of these models guarantee smooth, precise, and reliable functionality for all typical TBH jobs, even under severe working conditions.

Options

- Parking brake: wet oil disc SAHR
- ECU for autoshift version
- Customized ECU control parameters
- TC lock up

			TCH100 Center Drive	TCH90 NEW Side Drive		TCH110 • Side Drive			
*Power rating		kW	95	85		110			
Max input torque		Nm	850	700		850			
Rated engine speed		rpm	2400	2400		2400			
Maximum input speed		rpm	2530	2640		2640			
Charge pump type			Gear	Gerotor		Gerotor			
Engine flywheel interface			SAE 3	SAE 3		SAE 3			
Output flange type			Yoke 1410	Yoke 1410		Yoke 1480			
Output axis position from engine	Off-set	mm	0	656.5		656.5			
	Drop	mm	350	226.5		226.5			
PTO pump interface			SAE C - 4 bolts	SAE C - 4 bolts		SAE C - 4 bolts			
PTO torque		Nm	350	300		400			
Torque converter size		mm	300	280		300			
Speed gear			4Fwd + 3Rev	4Fwd + 3Rev		6Fwd + 3Rev		4Fwd + 3Rev	
Fwd speed gear ratio	xx:1	1	4.43	3.59	4.31	3.59	4.31	3.59	4.31
		2	2.69	1.66	1.99	2.54	3.05	1.66	1.99
		3	1.23	0.84	1.01	1.66	1.99	0.84	1.01
		4	0.65	0.60	0.71	1.18	1.41	0.60	0.71
		5	–	–	–	0.84	1.01	–	–
		6	–	–	–	0.60	0.71	–	–
Rev speed gear ratio	xx:1	1	4.43	3.60	4.33	3.60	4.33	3.60	4.33
		2	2.69	1.67	2.00	1.67	2.00	1.67	2.00
		3	1.23	0.84	1.01	0.84	1.01	0.84	1.01
4WD ratio	xx:1		1.1:1	1:1		1:1		1:1	
Shifting control			ECU	Manual		ECU		Manual	
Reverser			Power reverser	Power reverser		Power reverser		Power reverser	
Gear shifting			Power-Shift	Power-Shift		Power-Shift		Power-Shift	
Clutches modulations			ECU modulation	Mech-Hydr		ECU modulation		Mech-Hydr	
MFD connection			Permanent/Disconnect	Permanent		Permanent		Permanent	
Parking brake option			Wet SAHR and Manual	None		None		None	
Spin-on filter option			Vertical or remote	Vertical		Vertical		Vertical	
Electric system voltage		V	12	12		12		12	
Rear axle differential lock solenoid			Available	None		None		None	
Power brake in/out ports		bar	15 nominal	16 nominal		16 nominal		16 nominal	
Inching			Option	None		Option		None	
TC Lock-Up			Direct Drive Option	None		None		Option	
Speed sensor			Standard	Option		Standard		Option	
Temperature sensor			Standard	Option		Standard		Option	
Pressure switch			Standard	Option		Standard		Option	
Electric harness			Option	None		Option		None	

• = Under Development

Center Drive

Side Drive

Telescopic Boom Handler Hydrostatic Transmissions

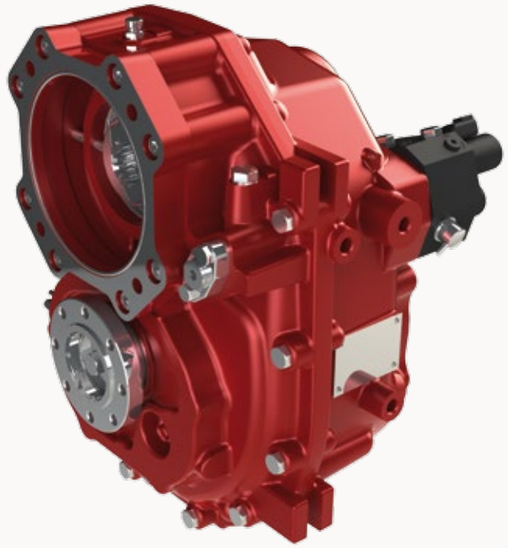
The range of Carraro Telescopic Boom Handler products is completed with a Range of Transmissions for both Hydrostatic and Torque Converter vehicles.

The **Hydrostatic Models** range from the extremely compact Gearboxes, which are perfectly suited to the installation requirements of smaller machines, to the fully electronically-controlled, on-the-fly shifting (Speedshift) versions, which are designed for the larger and higher performance machines. All the Hydrostatic Units are designed to minimised power loss, and to be easily installed in every vehicle lay-out, either directly mounted on the axles or in remote locations. Their large number of available ratios allow for optimised speed/torque values with almost every application. In the 2 Speeds Unit Range, Carraro has also developed its **SpeedShift Version**, which combines the Auto-Shift function (thru the simultaneous electronic control of Hydrostatic and Gearbox Shifting), with best possible efficiency. Like for all its models, Carraro is also capable of providing complete control systems (SW & HW) for these units as well.

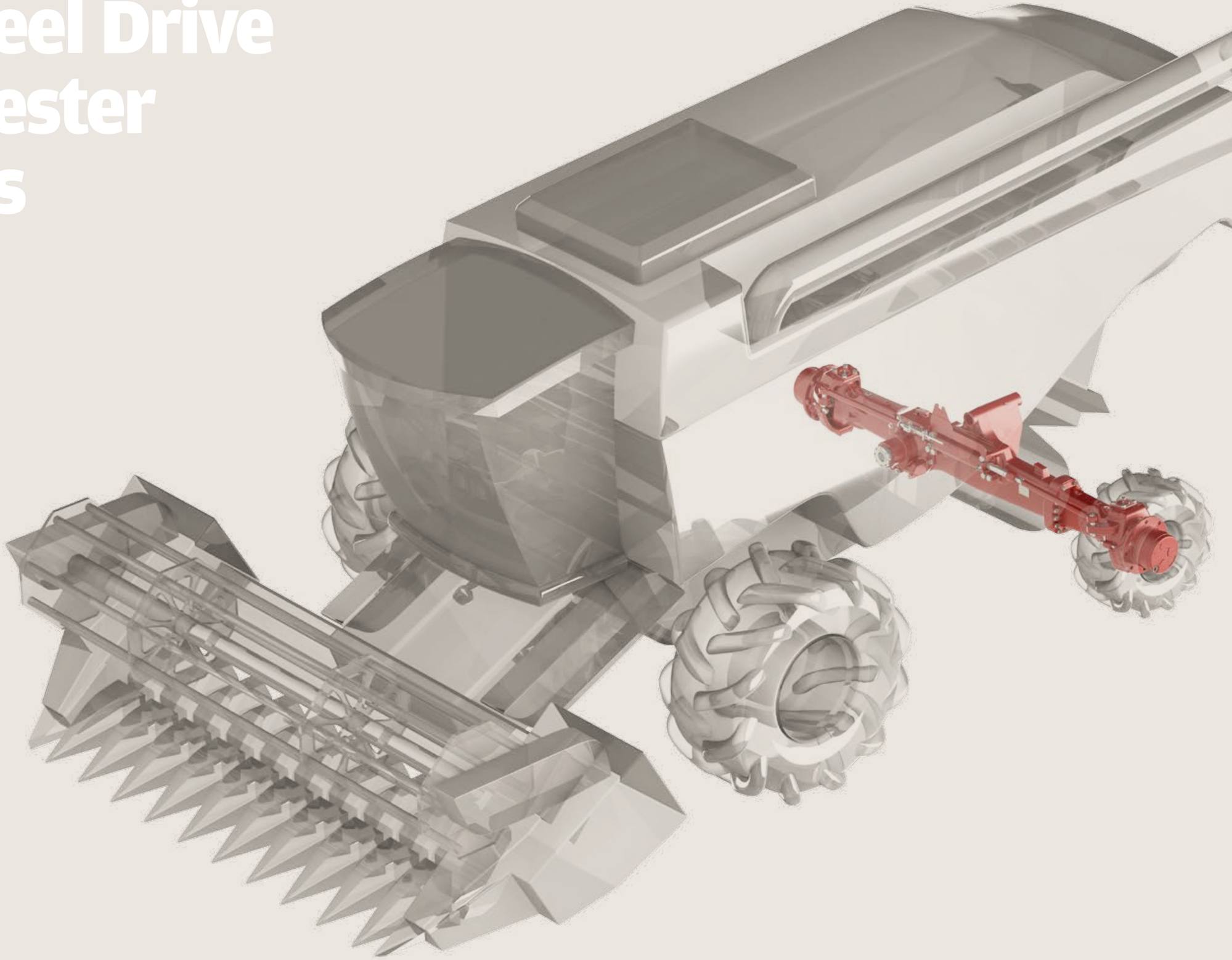
Options

- Direct or remote mounting
- ECU for shifting control
- Parking brake: TB172 Dry Disc Ball & Ramp Type, Wet SAHR Type; TB172/2 Wet SAHR Type
- Disconnect for 2nd Axle PTO: TB172 and TB172/2 Electro-Hydraulic

MODEL		TB135	TB138-2		TB172	TB172-2		TB172-2 Speedshift	
Description		Single speed Single Motor Gearbox	Dual speed Single Motor Gearbox		Single speed Single Motor Gearbox	Dual Speed Single Motor Gearbox		Dual Speed Single Motor Gearbox	
Motor Size	cc	up 60	up 80		80-160	80-160		80-160	
Max Input torque	Nm	450	510		1020	1020		1020	
Max Input speed	rpm	6000	5500		5500	5500		5500	
In/Out Centerline distance	mm	135	138.5		172	172		172	
Onput Interfaces		DIN 13010	DIN 100 x 8 holes		DIN 13010/1410	DIN 13010/1410		DIN 13010/1410	
					SAE 1410/1480	SAE 1410/1480		SAE 1410/1480	
Reduction ratios		Single Ratio	1st	2nd	Single Ratio	1st	2nd	1st	2nd
		2.3	2.75	1.163	1.196	2.971	1.129	2.971	1.129
		1.853			1.795	3.515	1.273	3.515	1.273
		3			2.027	4.286	1.359	4.286	1.359
					2.469				
					3.148				
Speed Shifting			Electro-Hydraulic Vehicle stopped			Electro-Hydraulic Vehicle stopped		Electro-Hydraulic Vehicle on the go	



Four Wheel Drive for Harvester Machines



Harvesting Machines (Drive Steering) Axles

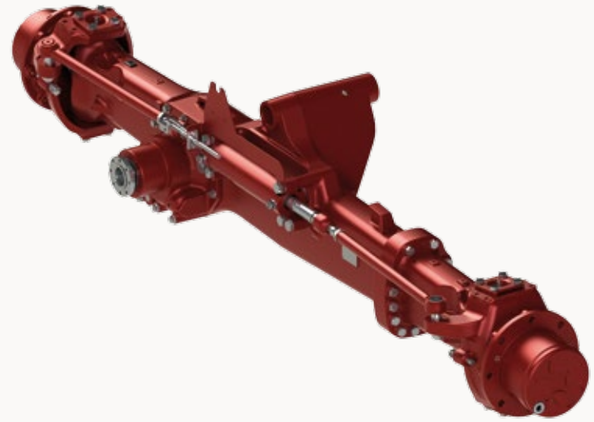
The Applications span from Forager to Cotton Picker and more in general to all Harvesting Machines requiring All Wheel Drive Traction.

The configuration of each of those axles is pretty unique, being all of those application remarkably diverse one to another in dimension, machine mounting and performance requirements. For them Carraro is able to provide **customized configurations** to meet virtually any machine application thanks to its versatile, scalable and modular architecture which uses same components of higher volume applications.
These axles have been designed for use under the most severe conditions, with a high load capacity and robust gear design, able to ensure an extended service life with improved durability. They axles allow high steering angle and optimised geometry, thus ensuring precise steering, high manoeuvrability, and minimum tyre wear. All axle models are available with multiple differential configurations, from open to 100% locked, in order to ensure optimal traction with any ground conditions.
The waterproof configuration (seal kit and protection) is also available for paddy field use to ensure an extended and reliable service life under wet conditions.
The axle design is particularly focused upon achieving Easy Field Serviceability: all new Carraro axles offer longer oil change/lubrication intervals, the use of fewer spare parts, and the decreased need for special repair tools, all with a high degree of sub-component standardisation in order to minimise spare parts storage space.

Options

- Wet Oil Brakes or Dry Caliper Disc Brakes
- Self Locking (Limited Slip) or 100% Differential Lock, Electro-Hydraulically operated
- Steering sensor
- Speed Sensor
- Long-lasting lubricated U-joints and available waterproof Seals

		20.28SD	20.43M	20.49M+TB
Peak Torque	kNm	39.2	60.2	68.6
Total Ratio		12.8:1 - 20.2:1	14.7:1 - 23.3:1	17.3:1 - 46.6:1
Dynamic Load Capacity	kN	65	100	125
Static Load Capacity	kN	162.5	250	312.5
Flange to Flange Distance	mm	2470	2242	2121
Differential		Limited slip Mechanical diff. lock Open	Limited slip Mechanical diff. lock Open	Limited slip Mechanical diff. lock Open



The Power Transmission Excellence is our Passion

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