



# **GINAF**

HydroAxle<sup>+</sup>



Manoeuvrability



Payload



Traction



Safety



# Traction on Demand

In multiple situations, rear-wheel drive alone is insufficient to cope with the traction demands, e.g. when driving on construction sites, off-road terrain, unpaved, sloped, sandy, snow-covered and gravel roads. The GINAF HydroAxle<sup>+</sup> system provides the solution to the lack of performance by offering additional traction of the front axle. The system features an intuitive interface for the driver, which allows the driver to enable the HydroAxle<sup>+</sup> with a push of a button. The system is primarily designed for vehicles that spend most of their time on paved roads, but require enhanced traction capabilities in off-road terrain.

## System Operation

HydroAxle<sup>+</sup> is a hydraulic front-wheel-drive propulsion system that can be operated simultaneously with the driven rear axle(s), meant as supporting system in case the rear wheels loose traction. The system can complement the rear-wheel-drive from very low speed up to approximately 25 km/h. The system is easily switched on and off with one push of a button: the hydro motors will start operating.

The system distinguishes the following 3 modes in which it operates:

### 1. System switched off:

The system is in freewheeling mode, which means the pistons are retracted, so the front wheels rotate freely. In this mode, there is no wear on the hydro motor, the internal friction is reduced and consequently the truck's fuel consumption is reduced. A small oil flow lubricates the hydro motors.

### 2. System switched on:

A. Standby mode: When the system is switched on, but the conditions of active driving are not fulfilled, e.g. because of the acceleration pedal is not operated or the vehicle is braking, HydroAxle<sup>+</sup> goes into standby mode. If a transmission gear is selected, the pump displacement will be set to deliver the correct volume flow to synchronize the hydro motors with the rear wheels.

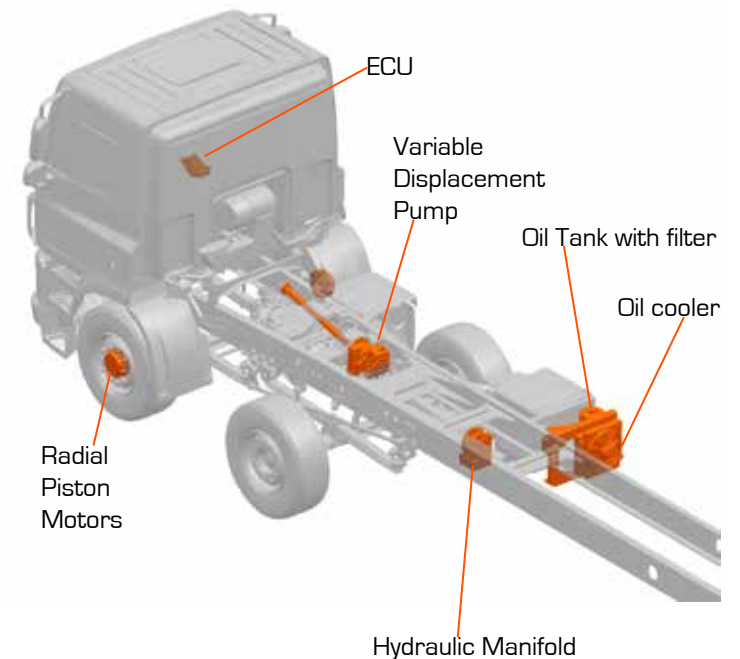
B. Active mode: If all requirements of active driving are met, e.g. a gear is selected, the clutch is closed and the accelerator pedal is pressed, the system builds up pressure and actively drives the front wheels. The pump displacement will be controlled to synchronize front wheel speed with rear wheel speed.

### 3. Hydrostatic Driving: [Option]

The HydroAxle<sup>+</sup> pump is driven by a clutch independent PTO, and therefore offers the possibility to drive fully hydraulically on the front wheels. Vehicle speed in this mode can be controlled by the acceleration pedal, which allows to drive continuously at slower speeds than would be possible with a closed clutch in first gear. This is ideal in many situations, e.g. when matching the slow, constant speed with another machine/vehicle. The PTO can be used for other features during this mode, e.g. a walking floor.



## Components



# Advantages of the HydroAxle<sup>+</sup>

- ✓ Traction on demand: one push solution to drive forward and in reverse
- ✓ Cost Efficient: low fuel consumption and payload benefits
- ✓ Gearboxes: possible on manual, automated and automatic transmissions.
- ✓ Bodybuilder pump can be connected to rear of HydroAxle+ pump (optional)
- ✓ No steering limitations
- ✓ High Displacement motor: 1120 cc or 1340 cc ( $\pm 20\%$  increase in drive torque)
- ✓ Fully hydraulic driving
- ✓ Creep mode: facilitates easier maneuverability.
- ✓ Safe handling in difficult terrain for improved on-time reliability and greater efficiency.
- ✓ Low weight ( $\pm 450$  kg lighter than all-wheel-drive vehicles).
- ✓ Low cab entry, chassis height does not change.
- ✓ Warranty: full DAF and GINAF warranty.
- ✓ DAF Type compatibility: see DAF Axle configuration table\* \*
- ✓ Special request: GINAF can change component locations, component configuration and system specifications if needed via GINAF POV. Contact your DAF/GINAF or contact GINAF directly: [sales@ginaf.com](mailto:sales@ginaf.com) .



\*Speed can differ depending on configuration (see Spec Sheet)

\* HydroAxle+ can be installed on 9 ton front axle (183N/187N)

# Technical Specifications

GENERAL	Type:	HydroAxle <sup>+</sup>			
	Power Supply:	DAF Engine PTO			
	Total System Weight:	Approx. 450kg			
ENGINE PTO	Type:	DAF MX Engine PTO, continuous, 13h, DIN 100mm			
	Description:	Supplies engine power directly to HydroAxle <sup>+</sup> system, clutch independent			
	Engine Type:	MX11	MX13		
	Ratio:	1,304	1,200		
PUMP		Main Pump	Boost Pump		
	Type:	Axial piston pump with variable displacement	Gear pump, fixed displacement		
	Max. Pressure:	420 bar (42,0 MPa)	20 bar (2,0 MPa)		
	Description:	Pump unit exist internally of two pumps: a main pump with variable displacement for powering the wheels, and a boost pump to adjust the swashplate of the main pump (adjusting the displacement). The boost pump also circulates oil to lubricate the wheel motors when the system is switched off.			
MANIFOLD	Type:	Hydraulic valve block			
	Description:	Controls hydraulic oil flow to enable different system modes.			
	Valves:	Cartridge type valves			
	Sensors:	The valve block contains two pressure sensors and a temperature sensor.			
MOTORS	Type:	Radial piston motor			
	Description:	Radial piston motor with 8 pistons. The pistons are hydraulically pressed against a cam track to provide rotational movement of front wheels.			
	Model	1120 cc	1340 cc (optional)		
COOLER	Type:	Heat exchanger with electric fan			
	Description:	Oil cooler with mechanical thermostat and electric cooling fan with (optional) automatically reverses the airflow direction to clean to cooler unit.			
MAX. SPEED*	Front Tires	MX11	MX13		
		1120 cc	1340 cc (optional)	1120 cc	1340 cc (optional)
	315/80R22,5:	28,9km/h	24,1km/h	26,6km/h	22,2km/h
	385/65R22,5:	28,6km/h	23,9km/h	26,3km/h	22,0km/h
	385/55R22,5:	26,8km/h	22,4km/h	24,6km/h	20,6km/h

\*Actual speed can differ, depending on chosen transmission and rear axle reduction

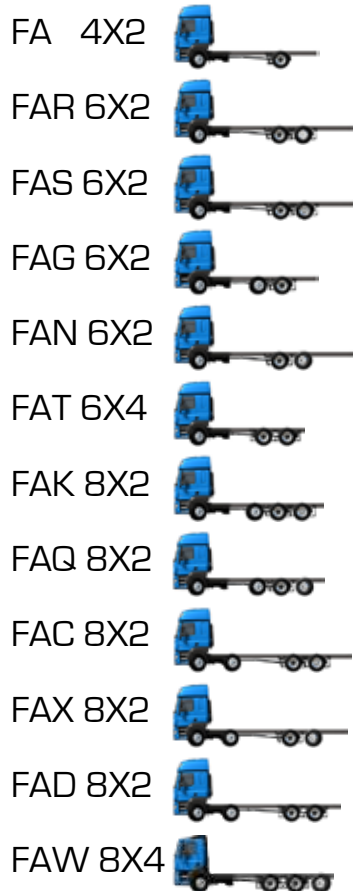


# DAF Axle Configuration for HydroAxle<sup>+</sup>

## Axle Configuration DAF

Listed below are all the DAF chassis suitable for a HydroAxle<sup>+</sup> installation\*. Also, we can install HydroAxle<sup>+</sup> on most GINAF vehicles. To learn more about our vehicles, please visit our website, [www.ginaf.com](http://www.ginaf.com), or ask your DAF/GINAF dealer.

### Rigid Chassis



### Tractor Unit



## Field of Application

The HydroAxle<sup>+</sup> can be used in a numerous amount of situations. Some applications are shown below. All these vehicles benefit from increased traction or manoeuvring capabilities in creep mode.



\*HydroAxle<sup>+</sup> can be installed on 9 ton front axle (183N/187N)

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