


# DRIVELINES FOR CONSTRUCTION MACHINES

 **MADE IN GERMANY**

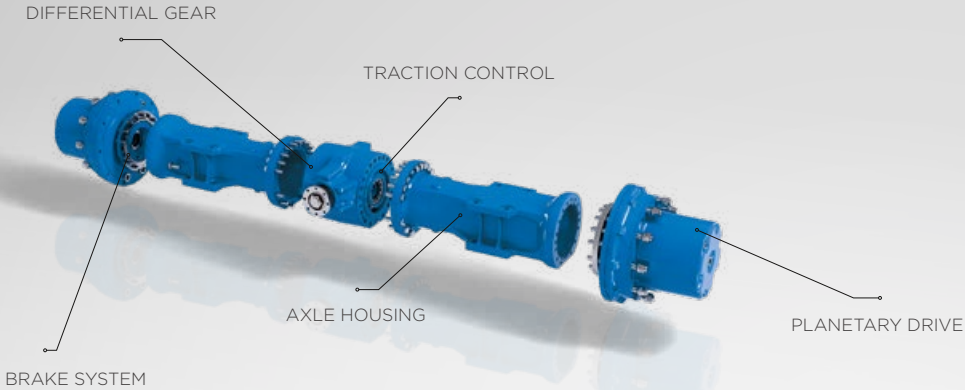


## FOR YOUR HEAVY DUTY PLAYGROUNDS

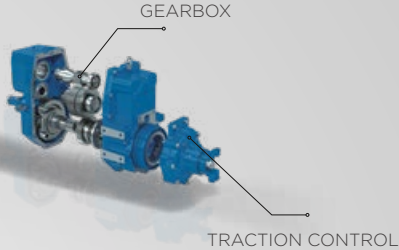
 **NAF • MODULAR-MINDED AXLES**

[NAFAXLES.COM](http://NAFAXLES.COM)

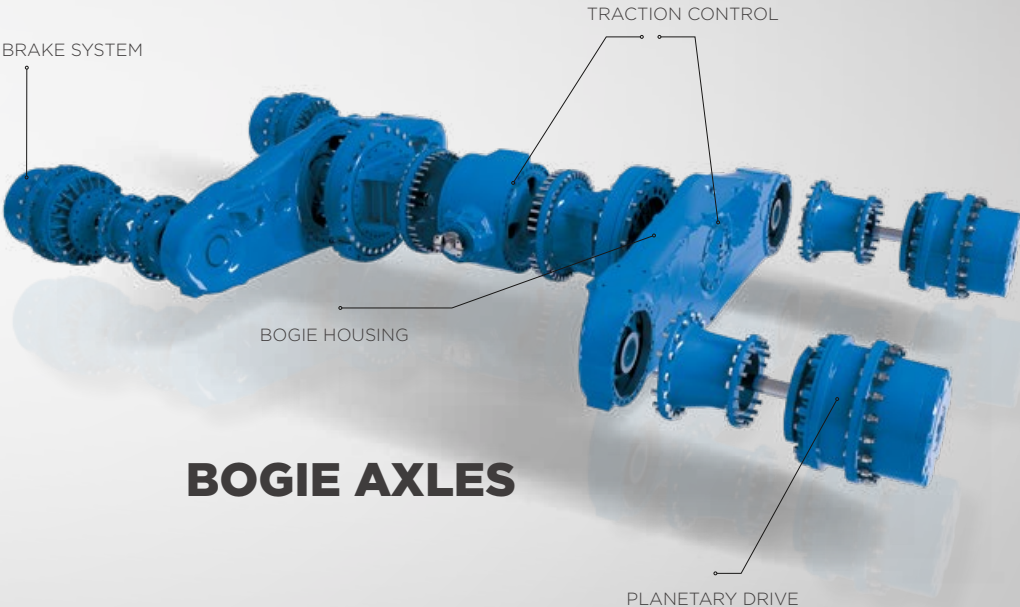
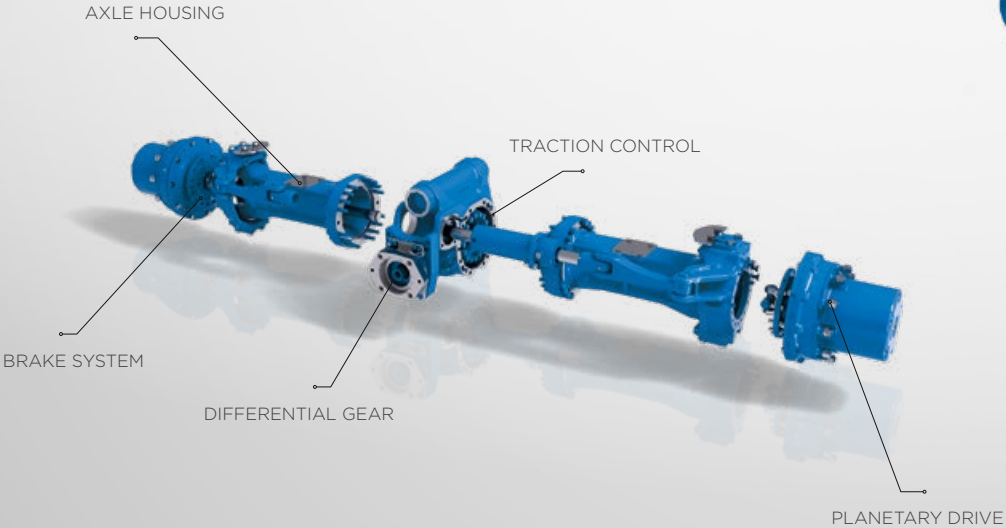
# RIGID AXLES



# GEARBOXES



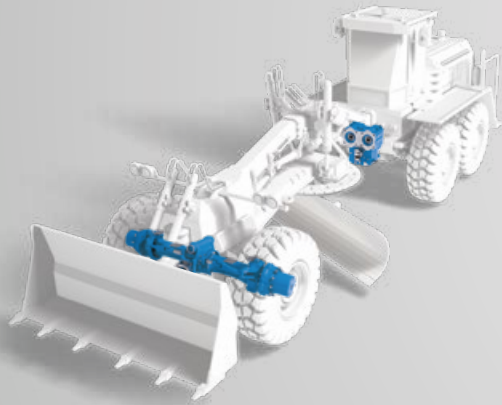
# STEERING AXLES



# BOGIE AXLES

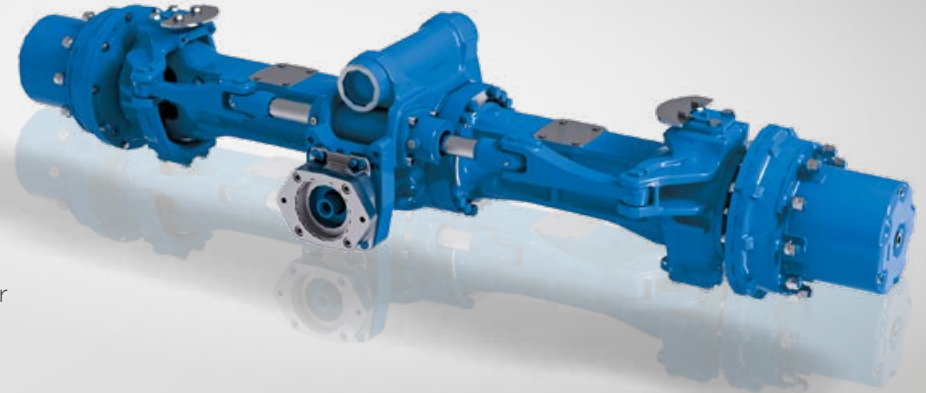


# HIGH SPEED PLANETARY STEERING AXLES / GEARBOXES WITH HYDROSTATIC DRIVE



## Product features

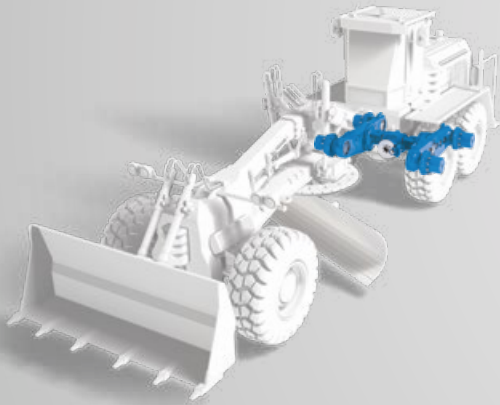
- > Especially designed for high speed
- > NAF's patented Turbo Brake
- > Optional with differential lock systems
- > Various installation/mounting options
- > Wide range of axle loads and sizes
- > Direct or central drive
- > Optional for directly attached hydro or e-motor



TYPE		LAP AXLE	VGZ XX GEARBOX	TYPE		GEARBOX	MOTORGRADER
No.		55xx		No.		VGZ 86	
Static axle load		300 kN		Hydraulic motors		110	
Dynamic axle load		160 kN @ 40 kph		1st Gear*		$i = 4.346 / 4.745 / 5.017$	
Operational or loaded machine weight		Up to 35 metric tons		2nd Gear*		$i = 1.8 / 1.976 / 2.089$	
Drive flange		DIN/MECHANICS/SPICER in different sizes		Output torque		10500 Nm	
Driven by		Directly attached gearbox or hydraulic/electric motor		Input speed		4500 RPM	
Optional brakes		Oil-immersed disc brake as service or parking brake		Optional		Rear axle disconnect, parking brake	
Differential locks		NoSpin® / dog clutch		* others available			
Axle width:		2100-2752 mm					
Flange-to-flange:		1742-2285 mm					

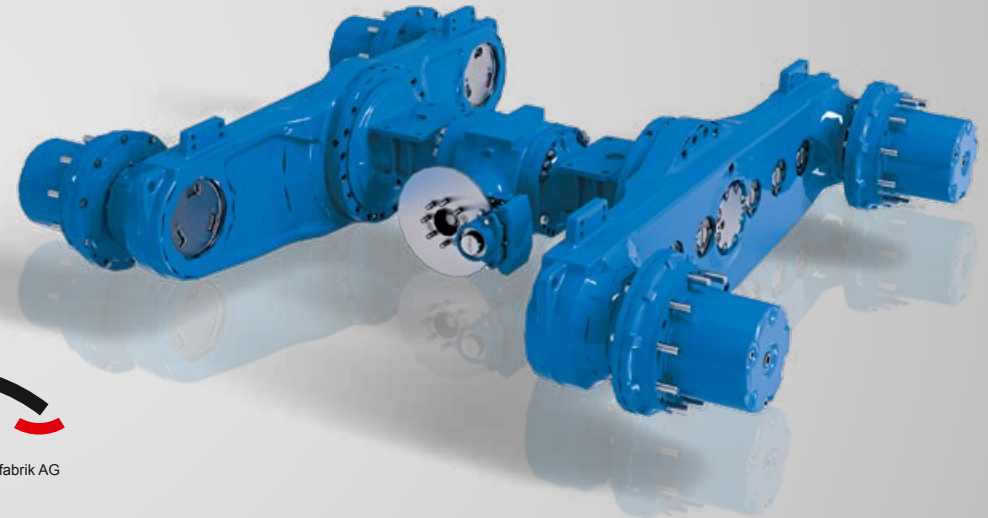
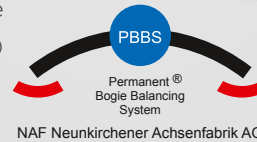


# HIGH SPEED PLANETARY BOGIE AXLES



## Product features

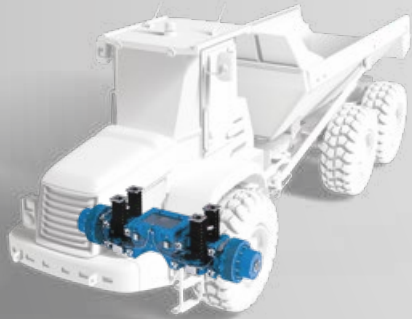
- > No offset
- > Travel speeds up to 65 km/h
- > NAF's patented Turbo Brake
- > Optional differential lock system
- > Optional parking brake
- > Optional Permanent Bogie Balancing System (PBBS®)



TYPE	TAP AXLE					MOTORGRADER
	No.	55xx	75xx	76xx	77xx	
Static axle load		200 kN	230 kN	260 kN	280 kN	360 kN
Dynamic axle load		Up to 120 kN @ 40 kph	Up to 135 kN @ 40 kph	Up to 165 kN @ 40 kph	Up to 180 kN @ 40 kph	Up to 280 kN @ 40 kph
Operational or loaded machine weight		15 metric tons	17 metric tons	19 metric tons	25 metric tons	32 metric tons
Drive flange	DIN/MECHANICS/SPICER in different sizes					
Brake	NAF Turbo Brake/versatile brake solutions with regard to function and point of installation					
Differential locks	MDDL/NoSpin*/dog clutch					
<p>Axle width: 2360-3176 mm            Flange-to-flange: 1920-2678 mm            Bolt circle: 335-500 mm            Wheel base: 1540-1960 mm            Offset: 0 mm</p>						

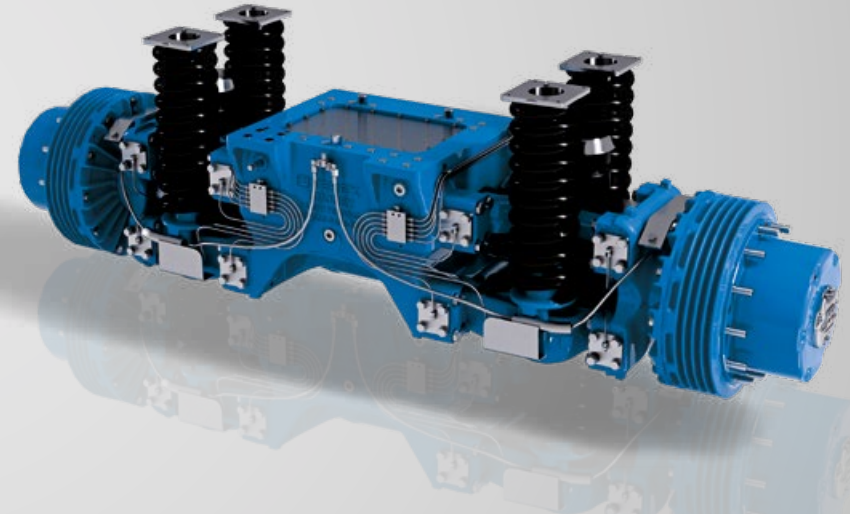


# PLANETARY INDEPENDENT WHEEL SUSPENSION AXLE



## Product features

- > Especially designed for high speed
- > NAF's patented Turbo Brake
- > Optional with differential lock systems
- > Easy maintenance
- > MDDL

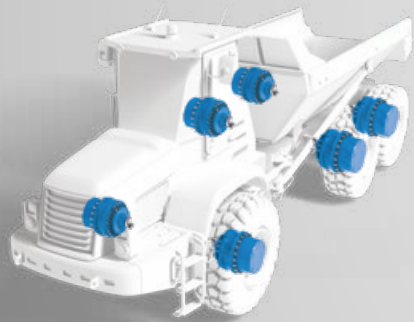


TYPE	SAF AXLE
No.	7601
Flange to flange	2320 mm
Ratio	i = 22.125 (others available)
Speed	Up to 60 km/h
Dynamic axle load	170 kN
Brake	Self-cooling oil-immersed disc brakes as service brakes
Dynamic brake torque per brake	30000 Nm
Input torque	5000 Nm
Input RPM	3600 1/min

ARTICULATED DUMP TRUCK

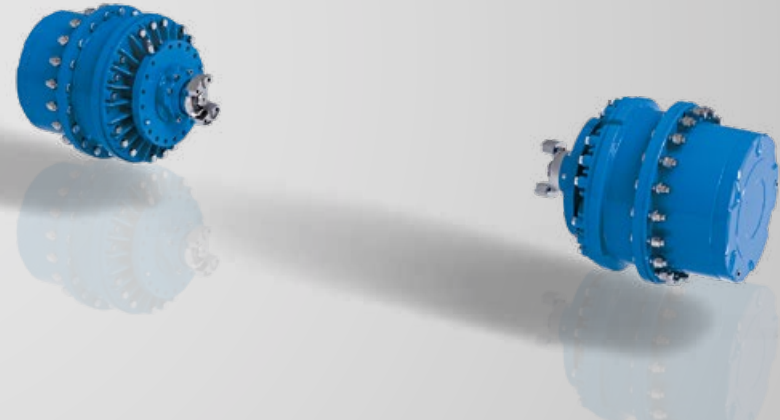


# HIGH SPEED PLANETARY HUBS



## Product features

- > Especially designed for high speed
- > NAF's patented Turbo Brake
- > Various installation/mounting options
- > Wide range of loads and sizes

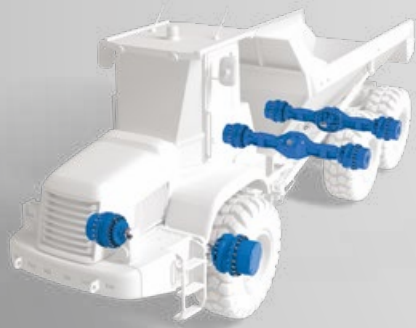


TYPE	PLG 7	PLG 8
Ratio	i = 4.667 i = 5.71 i = 6.0 i = 6.154	i = 6.0
Speed	Up to 55 km/h	
Dynamic Load	90 kN	116 kN
Brake	Self-cooling oil-immersed disc brakes as service brakes	
Dynamic brake torque	29000 Nm	48000 Nm
Input torque	11000 Nm	15000 Nm
Drive flange	DIN/MECHANICS/SPICER in different sizes or drive shaft	
Bolt circle diameter	425 mm	500 mm

ARTICULATED DUMP TRUCK

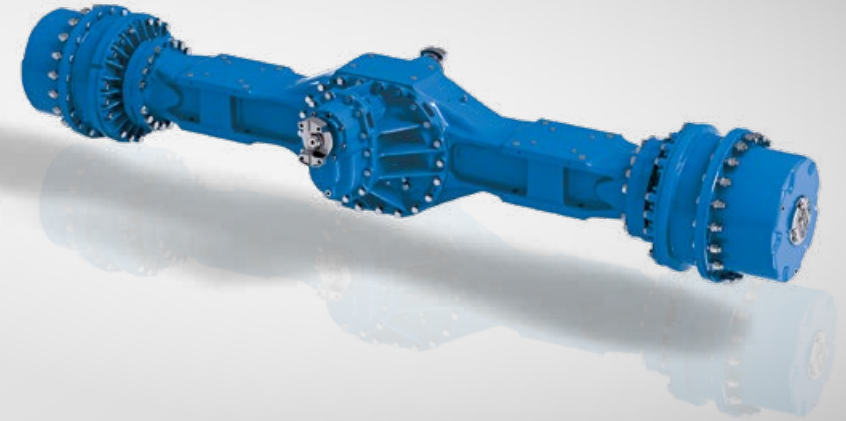


# HIGH SPEED PLANETARY RIGID AXLES



## Product features

- > Especially designed for high speed
- > NAF's patented Turbo Brake
- > Optional with differential lock systems
- > Various installation/mounting options
- > Wide range of axle loads and sizes
- > Several drive line systems
- > Easy maintenance
- > Optional parking brake



TYPE	SAP AXLE	
No.	76xx	88xx
Ratio	i = 22.12 (others available)	i = 23.4 (others available)
Operational or loaded machine weight	Up to 68 metric tons	Up to 78 metric tons
Dynamic axle load	170 kN @ 52 kph	245 kN @ 60 kph
Input torque	4100 Nm	6600 Nm
Input RPM	3600	4200
Drive flange	DIN/MECHANICS/SPICER in different sizes	
Differential lock	MDDL	
Dynamic brake torque per brake	30000 Nm	48000 Nm
Brake	Oil-immersed disc brake with options such as running on wheel speed/NAF Turbo Brake	
Driven by	Powershift transmission or hydraulic/electric motor	
Mounting	Fix	

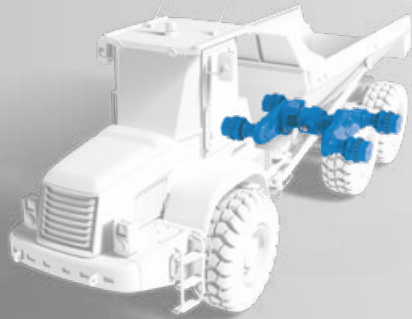
## ARTICULATED DUMP TRUCK



Axle width: 2746-3252 mm  
 Flange-to-flange: 2320-2756 mm  
 Bolt circle: 425/500 mm

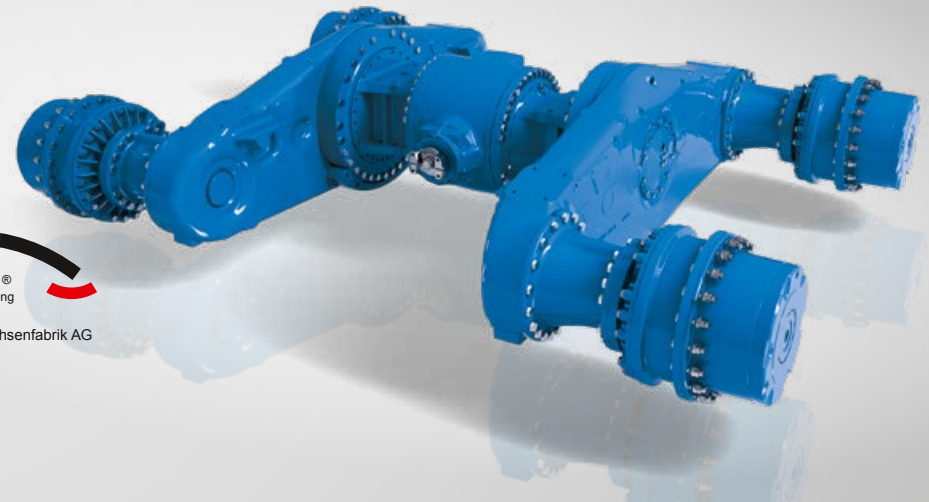
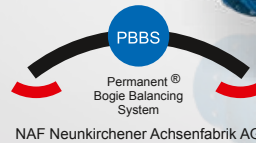


# HIGH SPEED PLANETARY BOGIE AXLES



## Product features

- > No offset
- > Travel speeds up to 65 km/h
- > NAF's patented Turbo Brake
- > Optional parking brake
- > Optional Permanent Bogie Balancing System (PBBS®)
- > Easy maintenance
- > Optional with differential lock systems

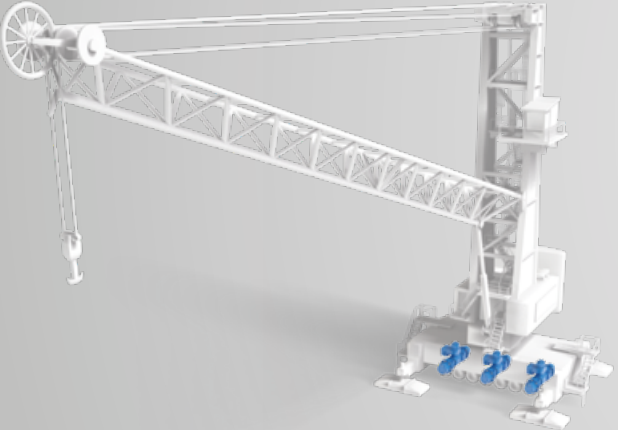


TYPE	TAP AXLE				ARTICULATED DUMP TRUCK
	76xx	77xx	78xx	89xx	
No.	76xx	77xx	78xx	89xx	
Ratio	i = 19.7 (others available)	i = 19.6 (others available)	i = 19.74 (others available)	i = 21.8 (others available)	
Dynamic brake torque per brake	30000 Nm	28500 Nm	28500 Nm	48000 Nm	
Input torque	5000 Nm	6500 Nm	6700 Nm	8200 Nm	
Input RPM	3600	3900	3900	3200	
Dynamic axle load	Up to 255 kN @ 50 kph	Up to 300 kN @ 40 kph	Up to 345 kN @ 55 kph	Up to 470 kN @ 60 kph	
Operational or loaded machine weight	40 metric tons	50 metric tons	65 metric tons	80 metric tons	
Drive flange	DIN/MECHANICS/SPICER in different sizes				
Brake	Versatile brake solutions with regard to function and point of installation				
Differential locks	MDDL/NoSpin® / dog clutch				
Driven by	Powershift transmission or hydraulic/electric motor				



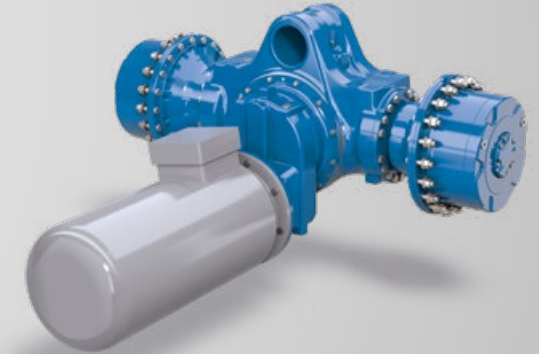


# HEAVY DUTY RIGID AXLES



## Product features

- > Planetary gear drive with Turbo Brake
- > Oil-immersed disc brake
- > MDDL, dog clutch, NoSpin®
- > Attached directly driven transfer case on the differential
- > Electric driveline solutions

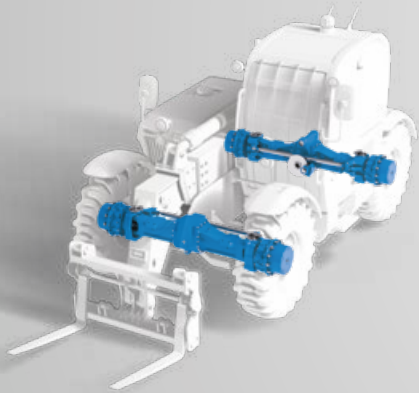


TYPE	SAP AXLE		
No.	34xx	75xx	85xx
Flange to flange	800 / 860 mm	1107 mm	1186 mm
Ratio	49.54	96.35	75.6
Speed	6 kph	6 kph	8 kph
Dynamic axle load	260 kN	415 kN	579 kN
Driven by	Directly attached hydraulic or electric motor		
Brake	Service and parking brake optional		
Input torque	500 Nm	500 Nm	500 Nm
Input RPM	1800 1/min	2000 1/min	1800 1/min

RUBBER TYRE GANTRY CRANE



# PLANETARY STEERING AND RIGID AXLES FOR VERSATILE APPLICATIONS



## Product features

- > Optional oil-immersed disc brakes or drum brakes in the wheel-ends
- > Especially designed for heavy loads
- > Versatile brake solutions with regard to function and point of installation
- > NAF's patented Turbo Brake
- > Optional parking brake
- > Optional differential lock systems
- > Different installation versions for steering cylinders
- > Various installation/mounting options
- > Wide range of axle loads and sizes
- > Several driveline systems

TYPE	SAP AXLE	LAP AXLE	SAP AXLE	LAP AXLE
No.	54xx	55xx	75xx	
Ratio	i = 23.98 (others available)		i = 22.3 (others available)	
Dynamic brake torque	11800 Nm		15300 Nm	
Input torque	3000 Nm		3500 Nm	
Input RPM	3500		3000	
Dynamic axle load	160 kN @ 30 kph		250 kN @ 30 kph	
Operational or loaded machine weight	32 metric tons		50 metric tons	
Drive flange	DIN/MECHANICS/SPICER in different sizes			
Brake	Oil-immersed disc brake with options such as running on wheel speed, Simplex Drum Brake		Oil-immersed disc brake optional: parking brake	
Differential locks	NoSpin® / dog clutch		NoSpin® / dog clutch/MDDL	
Driven by	Directly attached gearbox or hydraulic/electric motor			



# GEARBOXES WITH HYDROSTATIC DRIVE




## SINGLE MOTOR HYDROSTATIC GEARBOX / HydroSync®

### Product features (VG 35 / VG 75 / VG 250)

- > Wide range of standard gearboxes shiftable in standstill
- > Various single and two speed ratios available
- > Optional parking brake and rear axle disconnect

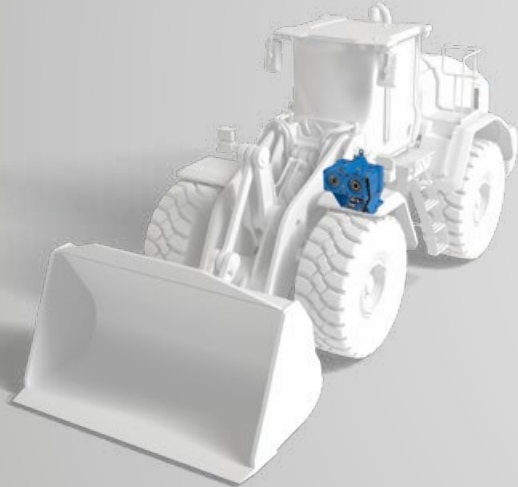
### HydroSync® product features

- > Load-free shifting procedure thanks to electro-hydraulically synchronised gears
- > Shifting procedure can be triggered on demand or automatically
- > Highly cost-efficient HydroSync® solution

TYPE	VG 250	VG 35	VG 75	HydroSync®	MULTIFUNCTIONAL APPLICATIONS
Ratio i1	4.78	1.68 - 6.31	2.64 - 6.63	3.58	
Ratio i2	1.33	0.89 - 2.13	1.06 - 2.05	1.08	
Parking brake	Optional	Optional	Optional	Optional	
Declutch system	Optional	Optional	Optional	Optional	
Differential lock	-	Optional	-	-	
Output torque [Nm]	Max. 2500	Max. 6000	Max. 8000	Max. 5000	
Hydraulic motor size 1 [max. ccm]	Up to 135	Up to 170	Up to 250	Up to 165	
Hydraulic motor size 2 [max. ccm]	-	-	-	-	
Output flange	DIN/MECHANICS/SPICER in different sizes				
Driven by	Directly attached hydraulic / electric motor / flange				



# GEARBOXES WITH HYDROSTATIC DRIVE




## DUAL MOTOR HYDROSTATIC GEARBOX / DualSync®

### Product features (VGZ 75 / VGZ 86)

- > Wide range of standard gearboxes shiftable in standstill
- > Various motor positions possible: side by side, face to face, back to back
- > Various single and two speed ratios available
- > Optional parking brake and rear axle disconnect

### DualSync® product features

- > Dual motor gearbox with hydrostatic CVT functionality
- > 2 operating modes
  - Simultaneous use of both motors for high tractive effort
  - High driving speeds with one motor drive
- > Different ratios are available for each motor
- > Diesel engine operates at most efficient rpm range
- > Fuel savings of up to 20 %

TYPE	VGZ 75	VGZ 86	DualSync®	MULTIFUNCTIONAL APPLICATIONS
Ratio i1	1.72 - 4.04	4.35 - 5.02	1.20 - 1.88	
Ratio i2	1.33 - 2.36	1.81 - 2.09	4.00 - 5.92	
Parking brake	Optional	Optional	Optional	
Declutch system	Optional	Optional	Optional	
Differential lock	-	-	-	
Output torque [Nm]	Max. 6000	Max. 10500	Max. 8900	
Hydraulic motor size 1 [max. ccm]	Up to 160	Up to 210	Up to 210	
Hydraulic motor size 2 [max. ccm]	Up to 160	Up to 210	Up to 210	
Output flange	DIN/MECHANICS/SPICER in different sizes			
Driven by	Directly attached hydraulic / electric motor / flange			



# FOR YOUR HEAVY DUTY PLAYGROUNDS

As the leading market manufacturer of drive trains for self-propelled forestry machines, NAF has been tackling a wide variety of the most extreme deployment conditions for many decades. The modular system, which has evolved from this set of requirements, covers the individual assignments that need to be met by heavy-duty vehicle manufacturers across many different sectors. With this passion, which made us the market leader for drives in forestry machines, we create your individual drive solutions.

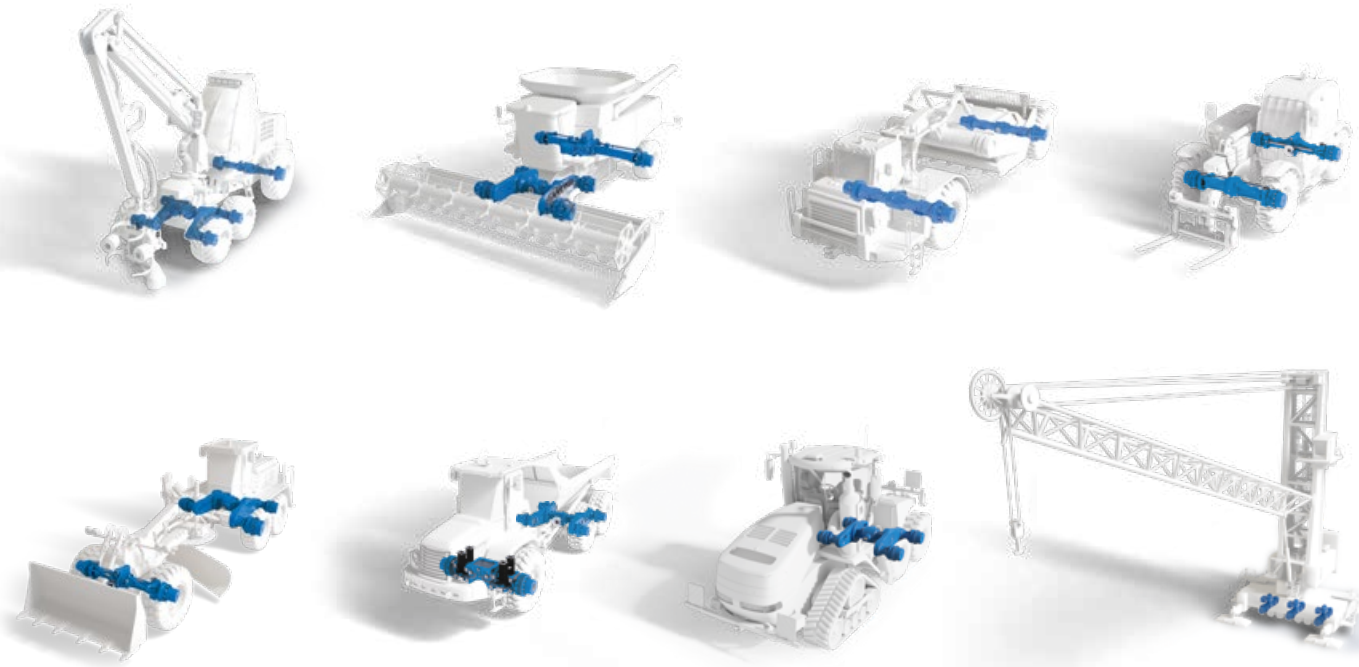


NAF AG is particularly proud of the awards given to us by our customers that honour our outstanding achievements and cooperative partnerships on all levels. This is our benchmark for all customer relations.



# FOR YOUR HEAVY DUTY PLAYGROUNDS

NAF's drive solutions are modelled for their special use and application. Our modular designs and the experience from more than 621 projects are the basis to satisfy your requirements in the most efficient way. We are pleased to present our comprehensive product portfolio!



NAF • MODULAR-MINDED AXLES



NAF is the expert for power transmission, traction and load capacity on mobile working machines. Our gears and axles create a substantial competitive advantage in the heavy-duty off-highway industry. As a system partner we have been mastering the tasks of our market-leading customers since 1960 and invest 5% of our annual turnover into research and development.

As our customer you benefit directly from our passion for innovation that guarantees your success.



# AT HOME ON **3** CONTINENTS



**48**

Supplied countries worldwide

**Over 600**

Employees in total

**28.000 m<sup>2</sup>**

of production area

**40.000**

Components sold each year

**18**

Patents and  
protected innovations

**20**

Employees working in  
R&D/PDP

## Headquarters and production

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