



Katsa™ Drivetrain Gearboxes

Highest Reliability and Efficiency





Katsa Oy - Company Introduction

Katsa is a Finnish company specialized in designing and manufacturing gearboxes, gear components and provide gearbox refurbishment- / modernization services.

Katsa Gearbox Business Unit offers innovative gearbox solutions for following business sectors:

- Power-Take-Off Gearboxes and Clutches for working machines and marine applications
- Drivetrain Transfer Gearboxes and Electric Drivetrain Gearboxes for utility- and defence vehicles
- Turning Devices with high output torque
- Special Vehicle Winches
- Tailored Gearboxes for the most demanding applications

Katsa Gear Component manufacturing has manufacturing capabilities for gear components up to Ø1500mm including gear grinding and in-house heat treatment. Katsa's modern machinery includes latest technology in gear component manufacturing, such as 5-axis machining, high-accuracy gear profile & cylindrical grinding and balancing capability for high speed components.

Katsa Service offers a wide range of after-sales services for mechanical power transmission systems. These include spare parts, reverse engineering, gearbox refurbishment and modernization projects.

Katsa™ Vehicle Drivetrain Gearboxes

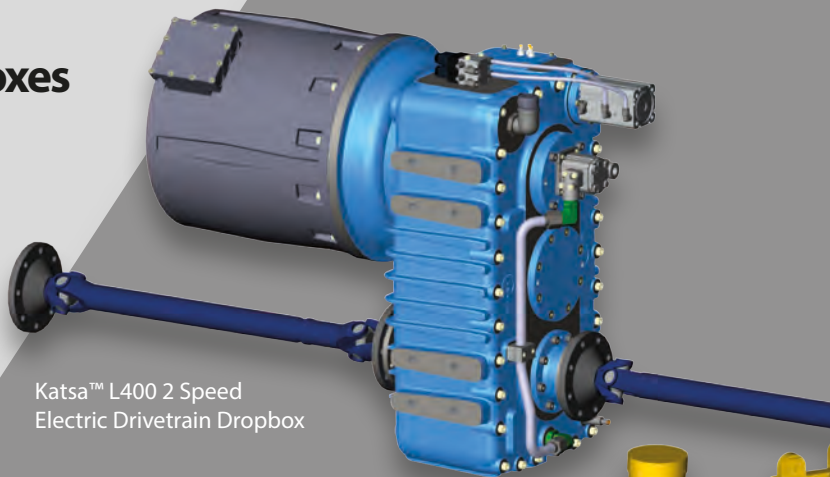
Introduction

Electric Drivetrain Gearboxes

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- **Page 8-9:** 2AL250 Single Speed Electric Drivetrain Dropbox
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Traditional Drivetrain Gearboxes

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Katsa™ L400 2 Speed
Electric Drivetrain Dropbox



Katsa™ L430 Drivetrain
PTO Upbox

L200 2 Speed Electric Drivetrain Transmission

Compact 2-Speed Electric Drivetrain Transmission with direct E Motor integration.

General Description

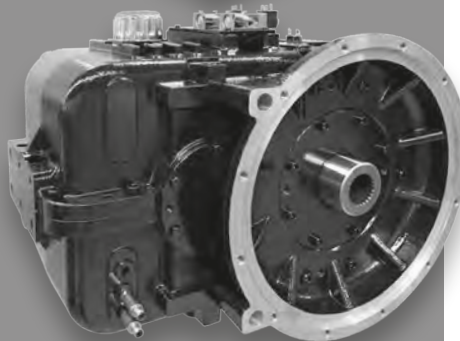
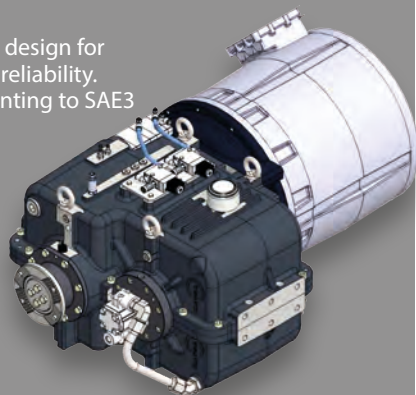
- Compact and lightweight design for highest performance and reliability.
- Direct Electric Motor Mounting to SAE3
- Pneumatic Gear Change with Synchronizer
- Aluminium Housing for High Thermal Capacity

Lubrication

- Pressure Lubrication
- Internal oil sump
- Integrated oil pump

Optional Accessory

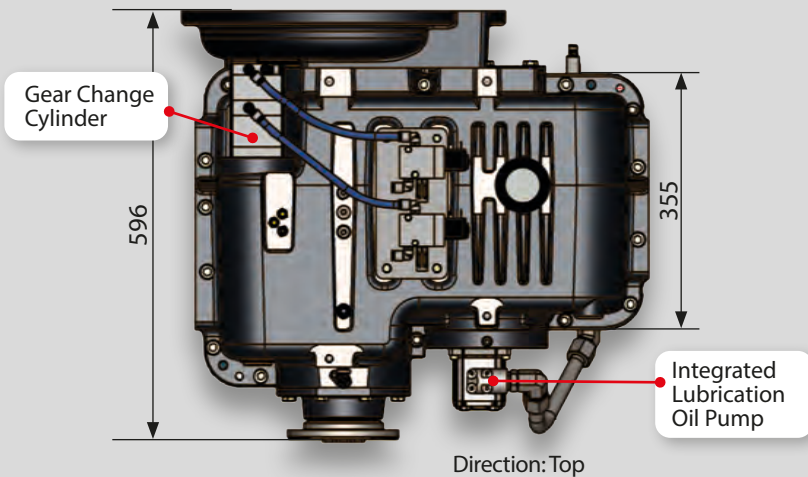
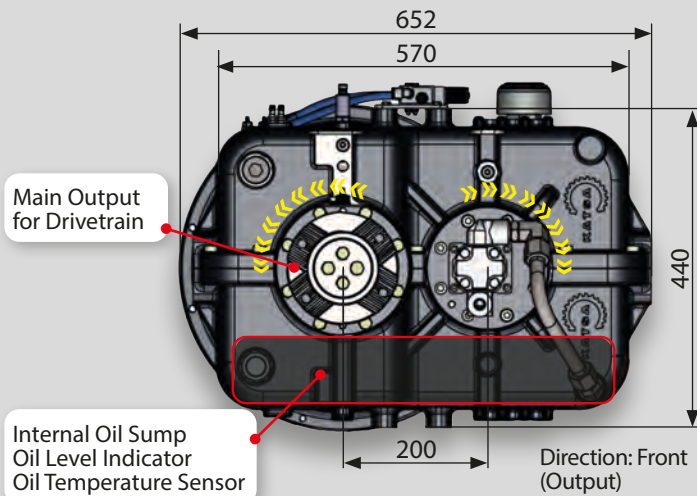
- Oil Filter & Cooler
- KAre Katsa Remote Condition Monitoring System



Technical Specifications

Input Power Max.	400 kW
Input Speed Nom. / Max.	1500 rpm / 3600 rpm
Centre Distance	200 mm
Input Connection Options	<ul style="list-style-type: none">• Electric Motor Flange SAE 3 (Direct Integration)• Customized Driveshaft Connection
Main Output	<ul style="list-style-type: none">• T150 Driveshaft Flange, ISO8667• On request XS T180 or SAE Flanges
Output Torque Max.	<ul style="list-style-type: none">• Standard synchronizer max. 5400Nm• Heavy duty synchronizer max. 11 000Nm
Weight	~210 kg (Aluminium Housing)

Input Speed = 2. Gear Speed	1. Gear Speed $i = 2$	1. Gear Speed $i = 4$
1500 rpm	750 rpm	375 rpm
2000 rpm	1000 rpm	500 rpm
2500 rpm	1250 rpm	625 rpm
3000 rpm	1500 rpm	750 rpm
3500 rpm	1750 rpm	875 rpm

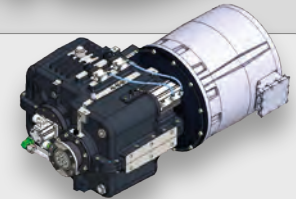
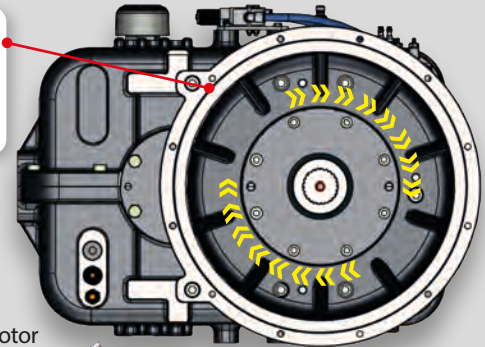


Dimensions and Technical Features

- Direction of rotation indicated with arrows
- Dimensions in millimetres (mm)

Main Input
SAE 3 Flange
For Electric
Motor
Integration

Direction:
From Electric Motor



Horizontal Orientation: Right or Left handed

Available Orientations

Vertical Orientation:
Inline with
E motor



Vertical Orientation:
200 mm Drop
for Output



L400 2 Speed Electric Drivetrain Dropbox

Compact 2 Speed Electric Drivetrain Dropbox with direct E Motor integration.

General Description

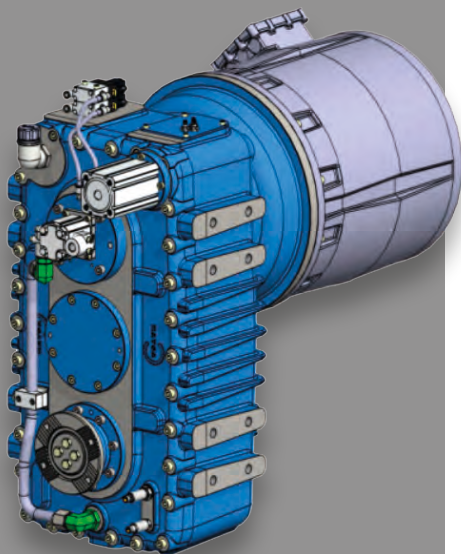
- Compact and lightweight design for highest performance and reliability.
- Direct Electric Motor Mounting to SAE3
- Pneumatic Gear Change with Synchronizer

Lubrication

- Pressure lubrication
- Internal oil sump
- Integrated oil pump

Optional Accessory

- Oil Filter & Cooler
- KAre Katsa Remote Condition Monitoring System



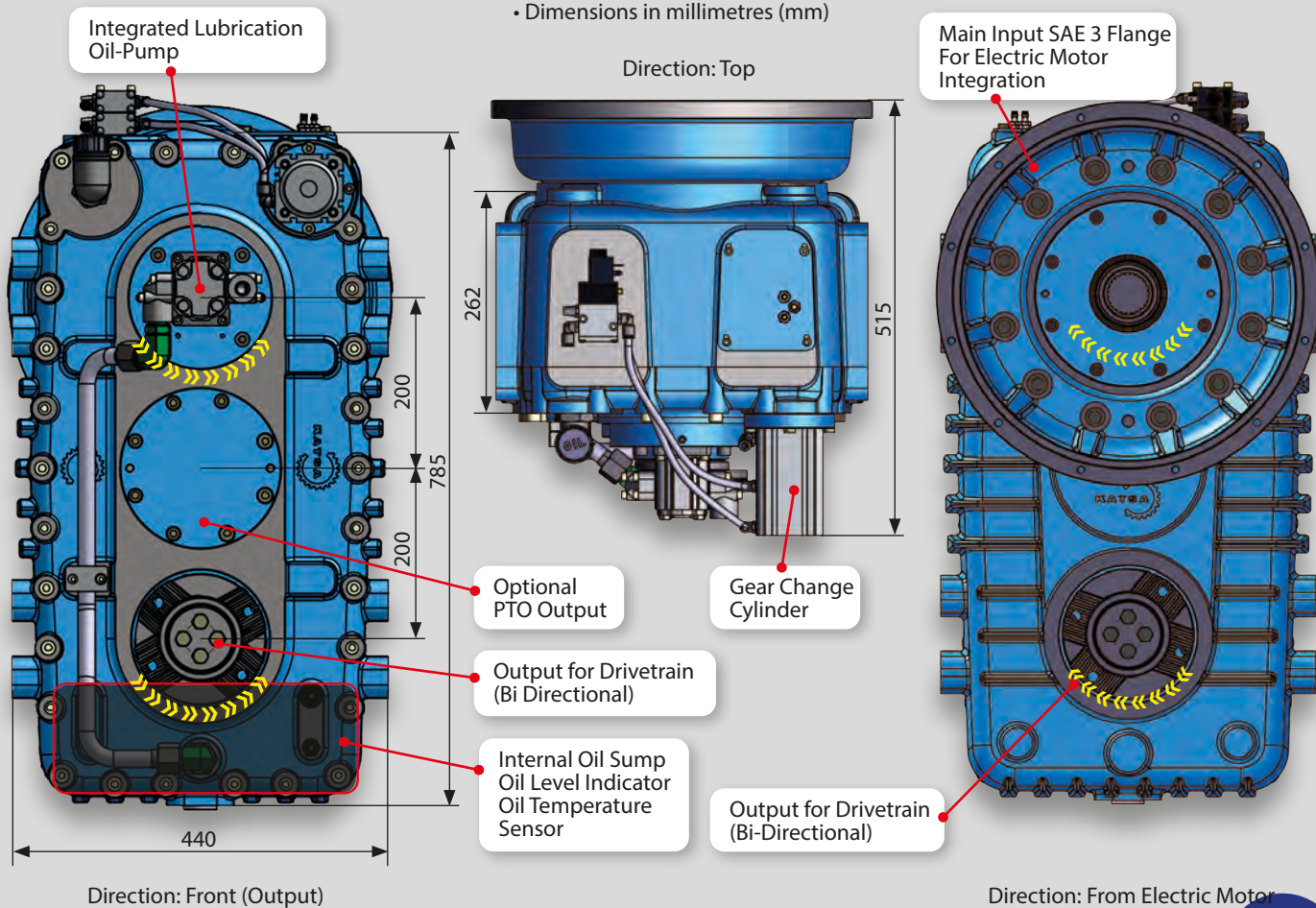
Technical Specifications

Input Power Max.	400 kW
Input Speed Max.	3500 rpm
Centre Distance	400 mm
Gear Ratios	$i = 3:1 \dots 1:1$
Input Connection Options	<ul style="list-style-type: none"> • Electric Motor Flange SAE 3 (Direct Integration) • Customized Driveshaft Connection
Main Output	<ul style="list-style-type: none"> • Driveshaft Flanges XS, T150, T180 or SAE (ISO8667) • Single or Bi Directional Drivetrain Output • Optional Differential up to 18 000 Nm Output Torque
Output Torque Max.	<ul style="list-style-type: none"> • Standard synchronizer max. 5400 Nm • Heavy duty synchronizer max. 11 000 Nm
Weight	250-300 kg

Input Speed = 2. Gear Output Speed	1. Gear Output Speed at $i = 3$	1. Gear Output Speed at $i = 2$
1500 rpm	500 rpm	750 rpm
2000 rpm	667 rpm	1000 rpm
2500 rpm	833 rpm	1250 rpm
3000 rpm	1000 rpm	1500 rpm
3500 rpm	1166 rpm	1750 rpm

Dimensions and Technical Features

- Direction of rotation indicated with arrows
- Dimensions in millimetres (mm)



2AL250 Single Speed Electric Drivetrain Dropbox

Compact Single Speed Electric Drivetrain Dropbox with direct E Motor integration.

General Description

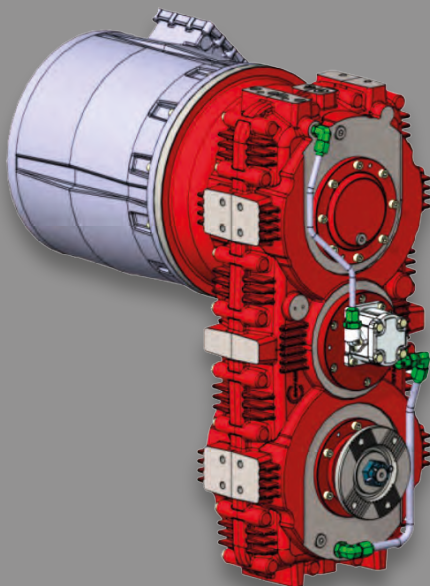
- Compact and lightweight design for highest performance and reliability.
- Direct Electric Motor Mounting to SAE3
- Aluminium Housing for High Thermal Capacity
- Optional PTOs

Lubrication

- Pressure lubrication
- Internal oil sump
- Integrated oil pump

Optional Accessory

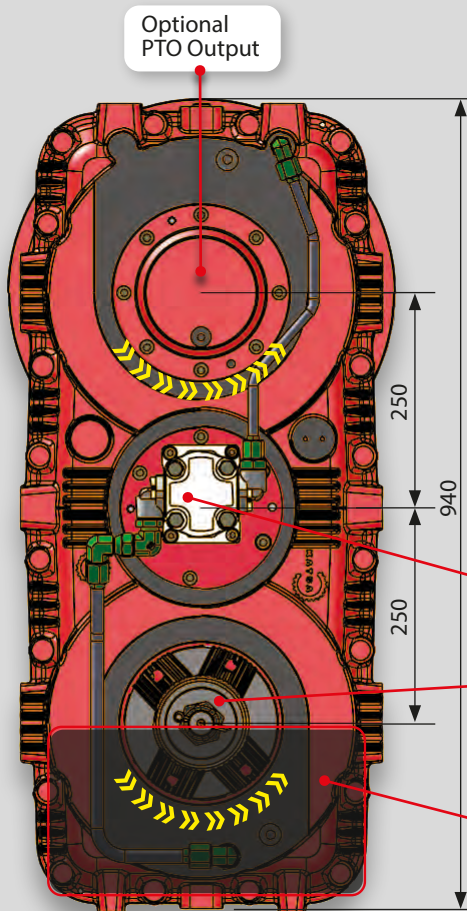
- Oil Filter & Cooler
- KAre Katsa Remote Condition Monitoring System



Technical Specifications

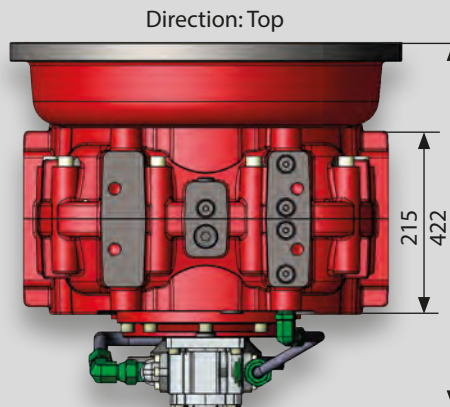
Input Power Max.	600 kW
Input Speed Nom/Max.	1500 rpm / 3500rpm
Transferrable Torque Nom. / Max	3000 Nm / 18000 Nm
Centre Distance	500 mm
Gear Ratios	$i = 1.2:1 \dots 1:1$
Input Connection	• Electric Motor Flange SAE 3 (Direct Integration)
Options	• Customized Driveshaft Connection
Main Output	• Driveshaft Flanges XS, T150, T180 or SAE (ISO8667) • Single or Bi Directional Output • Optional Differential up to 10 000 Nm Output Torque
Optional PTO's	• Pump Pad SAE B to SAE C • Shaft Connection
Weight	~230 kg (Aluminium Housing)

Input Speed	Output Speed at $i = 1.20$
1500 rpm	1250 rpm
2000 rpm	1667 rpm
2500 rpm	2083 rpm
3000 rpm	2500 rpm
3500 rpm	2917 rpm



Dimensions and Technical Features

- Direction of rotation indicated with arrows
- Dimensions in millimetres (mm)



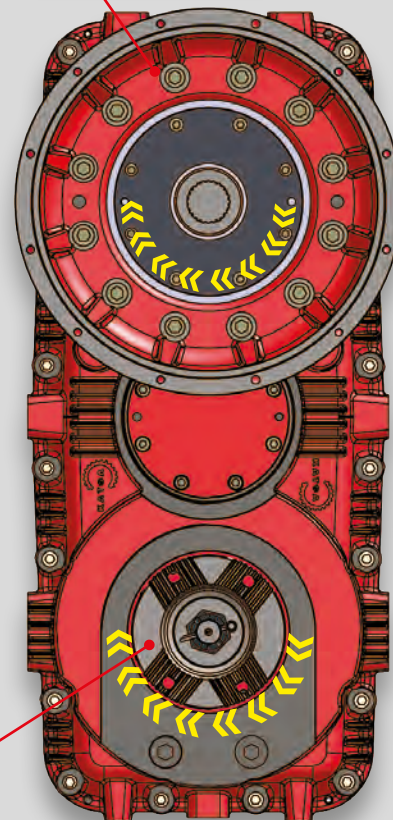
Integrated Lubrication Oil-Pump

Output for Drivetrain
(Bi Directional)

Internal Oil Sump
Oil Level Indicator
Oil Temperature
Sensor

Output for
Drivetrain
(Bi-Directional)

Main Input SAE 3 Flange
For Electric Motor
Integration



PL345 Planetary Electric Drivetrain Reduction Gearbox

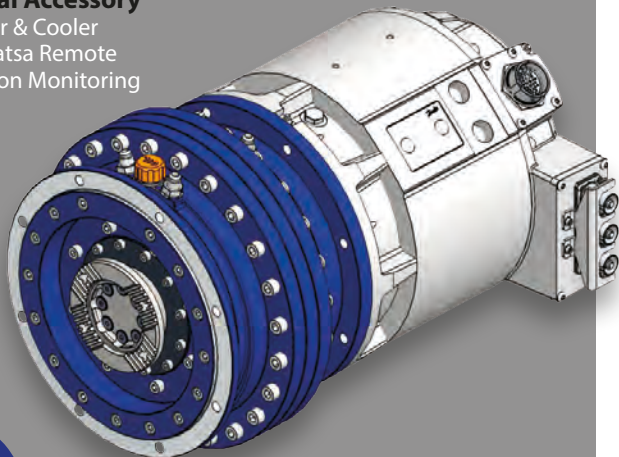
Compact Planetary Reduction Gearbox with direct E Motor integration.

General Description

- Compact and lightweight design for highest performance and reliability.
- SAE 6 female input flange for electric motor mounting as standard (other options available)
- SAE 6 male output flange as standard (other options available)
- Can be used as Front Input Gearbox with L200, L400 and 2AL250 Series
- Input and output shaft connections with splines (driveshaft flange adapters available)

Optional Accessory

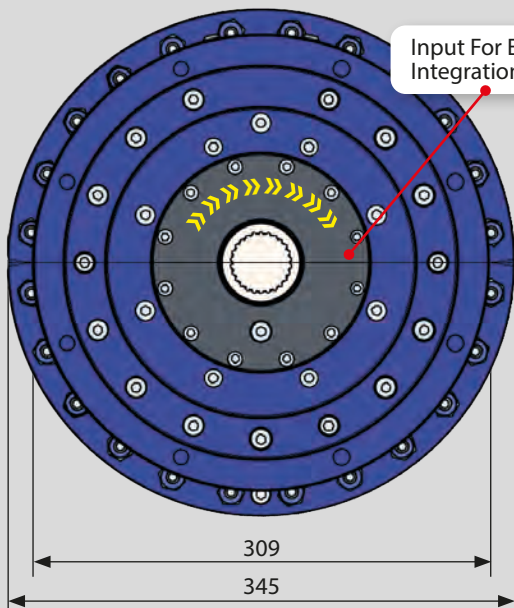
- Oil Filter & Cooler
- KaRe Katsa Remote Condition Monitoring System



Technical Specifications

Input Power Max. (At Input Speed 9000 RPM)	500 kW
Input Speed	Up to 9000 RPM (normal range 0-6000 RPM)
Output Torque (At Output Speed 1000 RPM)	<ul style="list-style-type: none">• Rated 1680 Nm• Peak 2300 Nm (depending on ratio)
Gear Ratio	<ul style="list-style-type: none">• From 3.00 : 1 to 4.95 : 1
Input Shaft Options	<ul style="list-style-type: none">• DIN 5480 N 42.00x1.50x26x9H• Other options customizable
Input Flange Options	<ul style="list-style-type: none">• SAE 6 female (standard)• Other connections customizable (> SAE 6)
Output Shaft Connection	<ul style="list-style-type: none">• Spline connection DIN 5480 N42.00x2.00x20x9H• Driveshaft Flange ISO8667 T120• Other options customizable
Output Flange Options	<ul style="list-style-type: none">• SAE 6 male (standard)• Other connections customizable (> SAE 6)
Weight	<ul style="list-style-type: none">• 75 kg with steel housing• 60 kg with aluminium housing

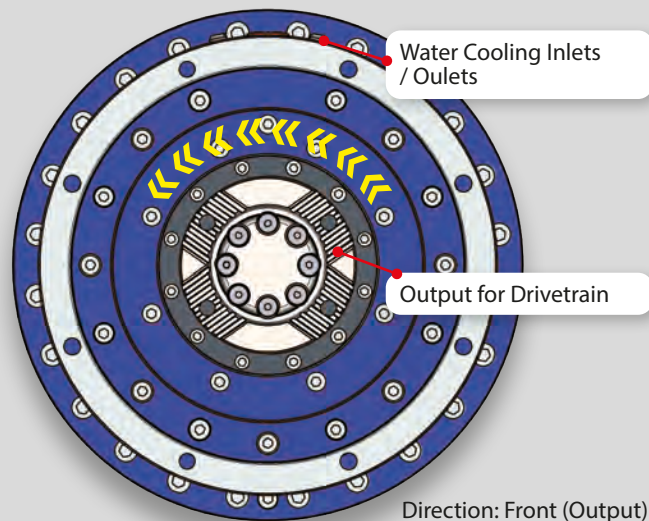
Input Speed	Output Speed at i = 3	Output Speed at i = 4.95
1000 rpm	333 rpm	202 rpm
3000 rpm	1000 rpm	606 rpm
5000 rpm	1667 rpm	1010 rpm
7000 rpm	2333 rpm	1414 rpm
9000 rpm	3000 rpm	1818 rpm



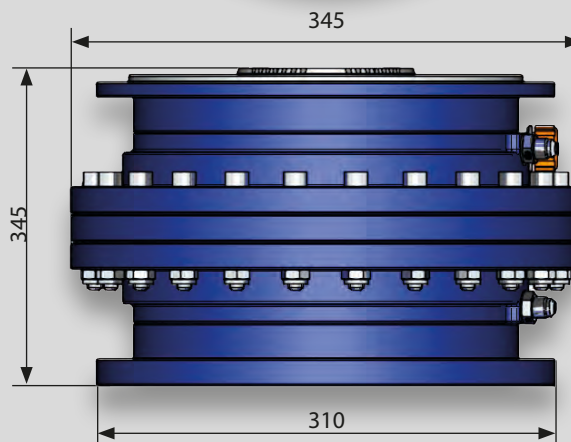
Direction: From Electric Motor (Input)

Dimensions and Technical Features

- Direction of rotation indicated with arrows
- Dimensions in millimetres (mm)



Direction: Front (Output)



Direction: Top

Katsa™ Customized Drivetrain Transfer Gearboxes

Are you planning to create a new vehicle and targeting to select standard components to keep the costs down? Katsa™ Tailored Transfer Case is the perfect link between your vehicle's transmission and driving axles...

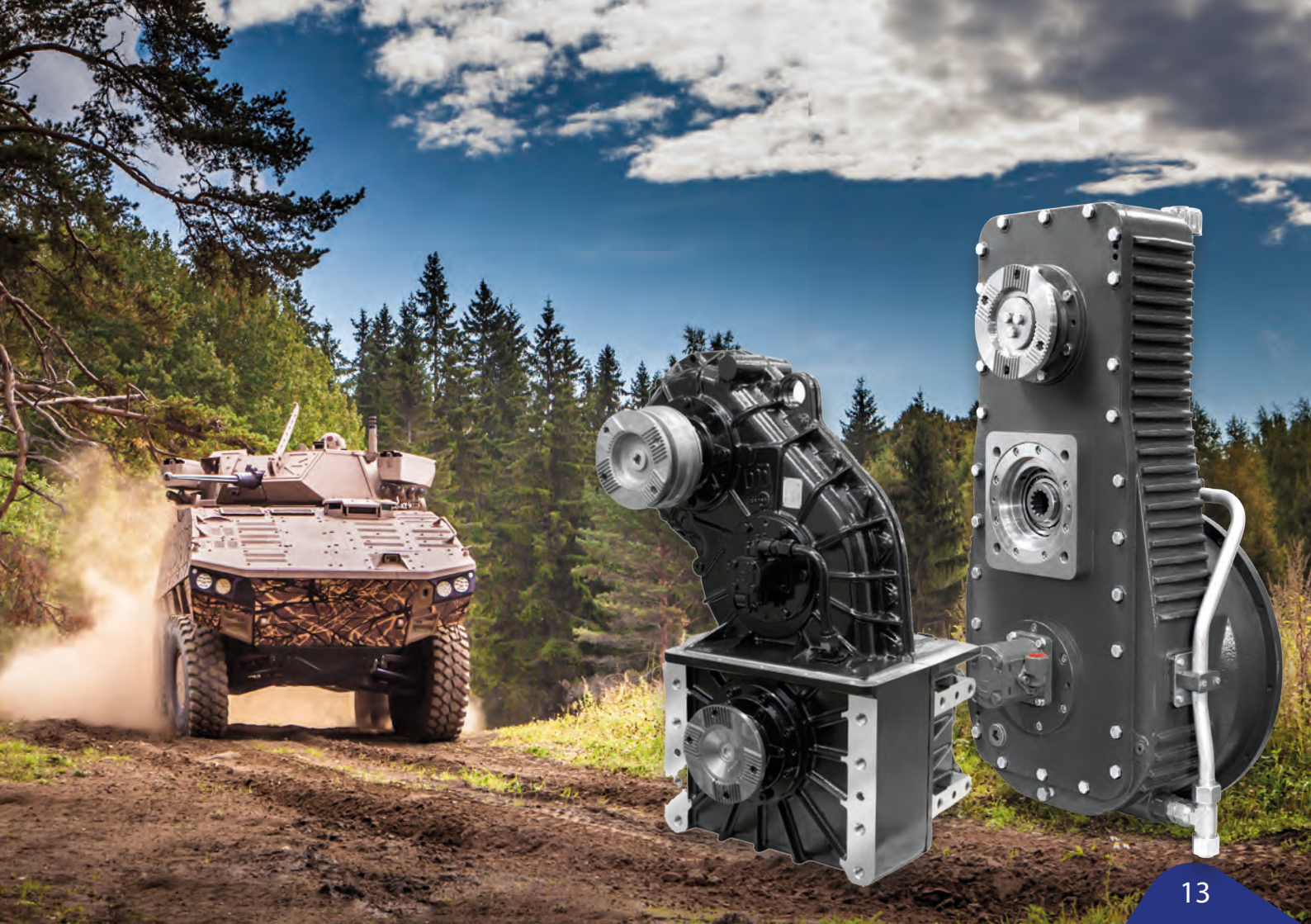
Katsa has decades of experience in supporting customers to combine power packs, typically diesel engine and main transmission, with the chosen drivetrain axles.

Successful projects with customers from business sectors like military, mining and construction, public transport and wood industry have proven our engineering knowledge and manufacturing capabilities.



Technical Specifications

Input Power Max.	~1000 kW
Input Speed Max.	Over 4000 rpm
Transferrable Torque Max.	~40.000 Nm
Centre Distance	• Full freedom in vertical and horizontal displacement
Multiple Speed Ranges	• Pneumatically or hydraulically operated gear shifter • Automatic shifting with hydraulically operated clutches
Input Connection Options	• Driveshaft Flanges XS, T150, T180 or SAE (ISO8667) • Customized Connections
Main Output	• Driveshaft Flanges XS, T150, T180 or SAE (ISO8667) • Single or Bi Bi-Directional Output • Differentials: Conical or Planetary, lockable. Up to 40 kNm Output Torque
Optional PTO's	For Pumps, Compressor etc.
Housing Materials	Aluminium, Grey Casting etc.
Optional Accessory	• Oil-Filters & Coolers • Clutch Control Unit • KAre™ – Katsa Remote Condition Monitoring System



L430 Drivetrain PTO Upbox

Engine Mounted Power Take Off Drivetrain Upbox for Heavy Utility Vehicles

General Description

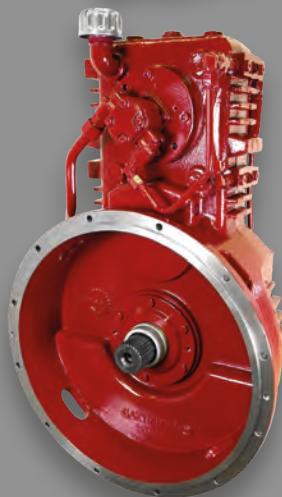
- Rigid design for highest performance and reliability.
- Direct Engine Mounting to SAE 1 14"
- Gear Components
 - Case Carburized
 - Gear Flanks Profile Grinded
- Housing Cooling Rigs & Channels for High Thermal Capacity

Lubrication

- Pressure Lubrication
- Internal oil sump
- Integrated oil pump

Optional Accessory

- Oil Filter & Cooler
- KAre Katsa Remote Condition Monitoring System



Technical Specifications

Input Power Max.	400 kW
Input Speed Nom. / Max.	1800 rpm / 2100 rpm
Centre Distance	430 mm
Input Connection	• Engine Flange SAE 1
Options	• Optional Flexible Engine Coupling
Main Output	• T150 Driveshaft Flange, ISO8667 • On request XST180 or SAE Flanges
PTO Connection Options	• Pump Pad SAE B to SAE C
Max. PTO Power 2x100 kW	• Shaft Connection
Weight	~260 kg

Engine Speed PTO #1 Speed	PTO #2 Speed Ratio i = 1.07	Main Output Speed Ratio i = 1.09
1600 rpm	1712 rpm	1744 rpm
1800 rpm	1926 rpm	1962 rpm
2000 rpm	2140 rpm	2180 rpm
Other PTO ratios on request		

Standard PTO SAE Pump Splines

ANSI B92.1 14T 12/24 DP

ANSI B92.1 8/16 13T

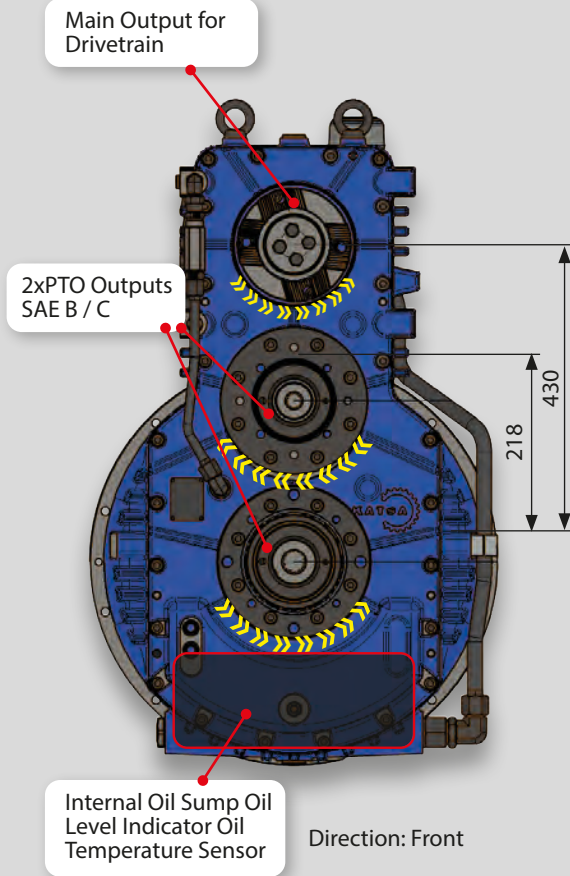
ANSI B92.1 16/32 21T

DIN5480 N40 x 2 x 19 x 9H

Other spline types on request

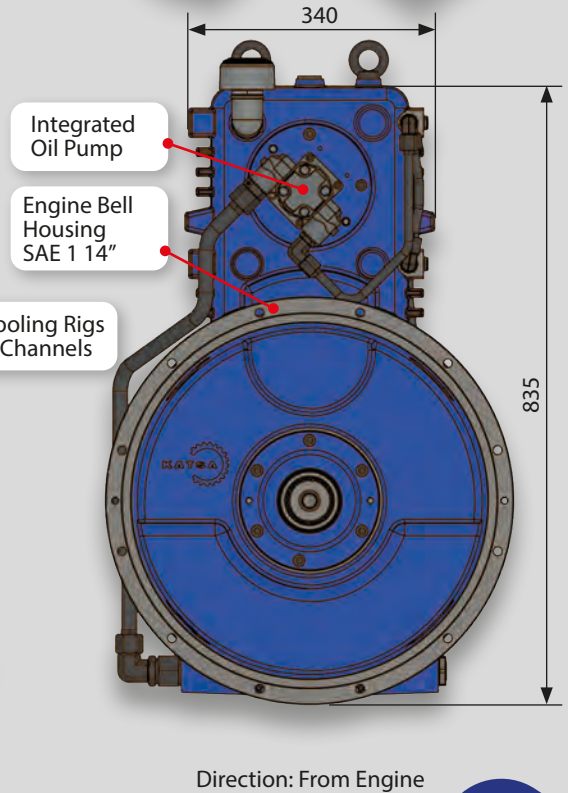
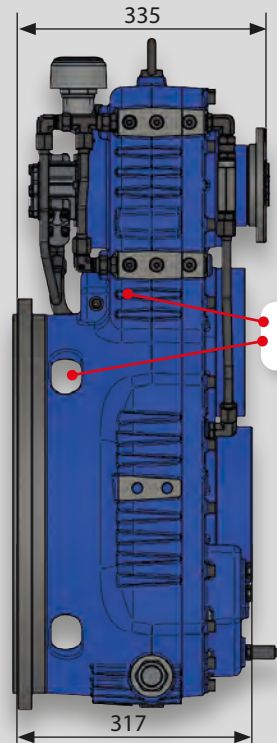
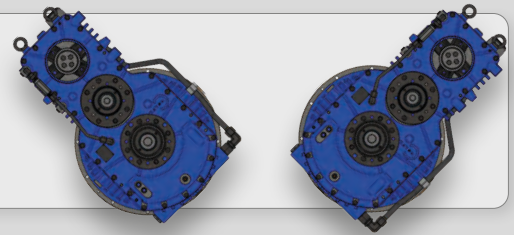
Dimensions and Technical Features

- Direction of rotation indicated with arrows
- Dimensions in millimetres (mm)



Orientation

- Max. tilt 45 Degrees Left or Right
- Tilting not allowed in Front Rear direction



2AL250 Versatile Drivetrain Transfer Gearbox

Versatile Drivetrain Transfer Gearbox with Aluminium Housing.

General Description

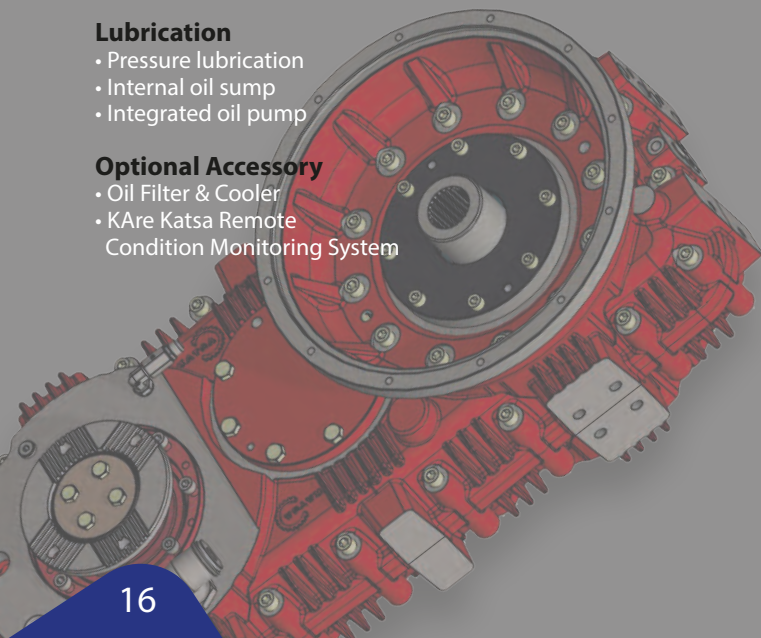
- Compact and lightweight design for highest performance and reliability.
- Versatile Design Options for Optimal Technical Configuration
- Aluminium Housing for High Thermal Capacity
- Optional PTO's

Lubrication

- Pressure lubrication
- Internal oil sump
- Integrated oil pump

Optional Accessory

- Oil Filter & Cooler
- KAre Katsa Remote Condition Monitoring System



Technical Specifications

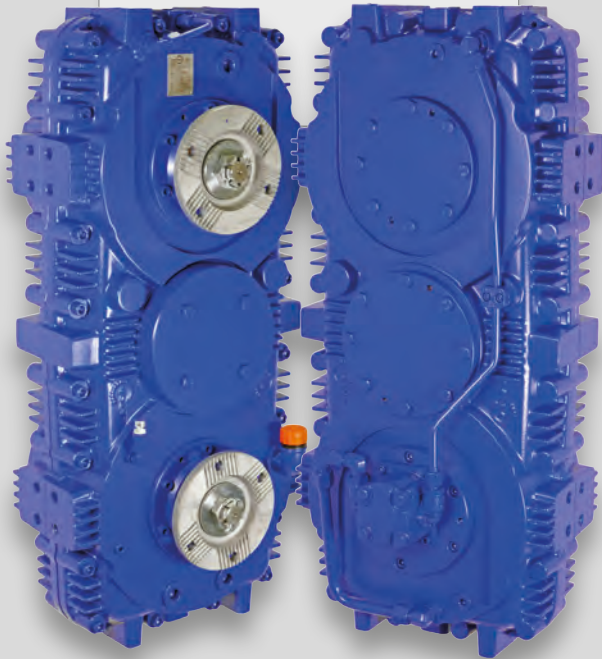
Input Power Max.	600 kW
Input Speed Nom. / Max.	1500 rpm / 3500 rpm
Transferrable Torque Nom. / Max	3000 Nm / 18000 Nm
Centre Distance	500 mm
Gear Ratios	i = 1.2:1 ... 1:1
Input Connection Options	<ul style="list-style-type: none">• Driveshaft Flanges XS, T150, T180 or SAE (ISO8667)• Engine Flange SAE 3 to SAE 1• Customized Driveshaft Connection
Main Output	<ul style="list-style-type: none">• Driveshaft Flanges XS, T150, T180 or SAE (ISO8667)• Single or Bi Directional Output• Optional Differential up to 10 000 Nm Output Torque
Optional PTO's	<ul style="list-style-type: none">• Pump Pad SAE B to SAE C• Shaft Connection
Weight	~230 kg (Aluminium Housing)

Input Speed	Output Speed at i = 1.20
1500 rpm	1250 rpm
2000 rpm	1667 rpm
2500 rpm	2083 rpm
3000 rpm	2500 rpm
3500 rpm	2917 rpm

Standard PTO SAE Pump Splines
ANSI B92.1 14T 12/24 DP
ANSI B92.1 8/16 13T
ANSI B92.1 16/32 21T
DIN5480 N40 x 2 x 19 x 9H
Other spline types on request

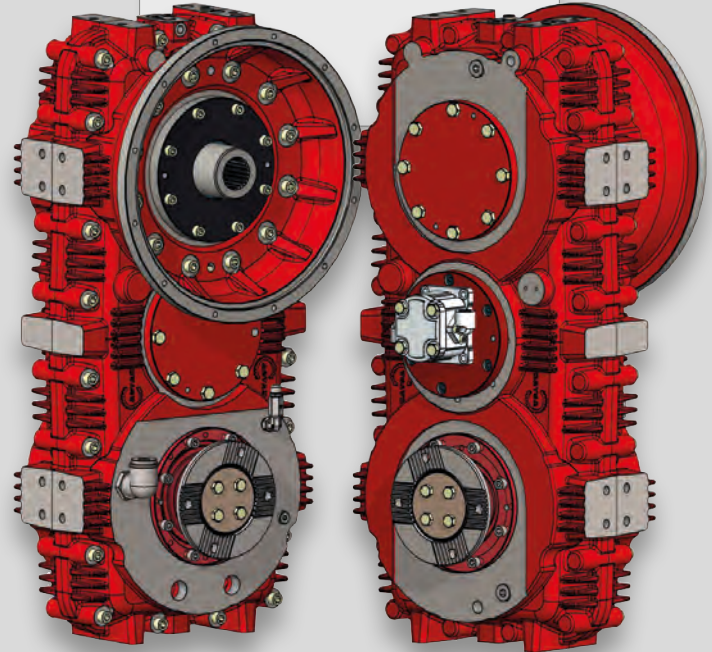
2AL250 Versatile Drivetrain Transfer Gearbox

**Transfer Gearbox with
One sided Drivetrain
Connections**



**Example
Configurations**

**Dropbox with Engine
Mounting and
Bi Directional
Drivetrain Outputs**



Katsa™

Control Accessory

Katsa™ Clutch Control Unit

- Katsa™ Clutch Control Unit is designed to ensure smooth clutch engagement, trouble-free & safe usage and extended lifetime for Katsa's PTO Clutches.
- Control includes software-based and flexibly adjustable parameters for monitoring critical values from Clutch Input and Output sides as well as lubrication diagnostics.
- Control Unit communicates with CANbus on standard protocols SAE J1939 and CANopen.

Optional Accessory

External Clutch Control

- For Operator Panel or Control Bridge.



KAre™ –Katsa Remote

- Cloud Based Condition Monitoring and Fleet Management System



Control Unit Parameters

Speed	Input (rpm)
	Clutch/Output (rpm)
Lubrication/ Hydraulics	Lubrication Oil-Pressure (bar)
	Clutch Oil-Pressure (bar)
	Oil Temperature (°C)
Optional	Oil Level Indication
	Oil Filter Clogging Indicator

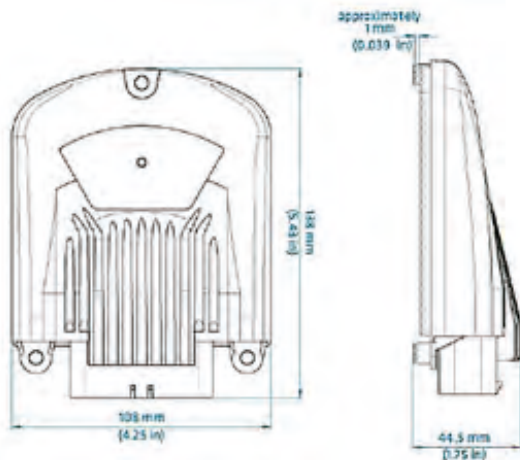
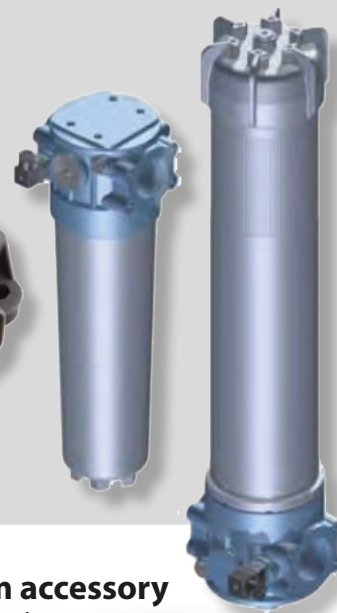
Control Terminal Cabinet

- Including Local Control



Main Controller

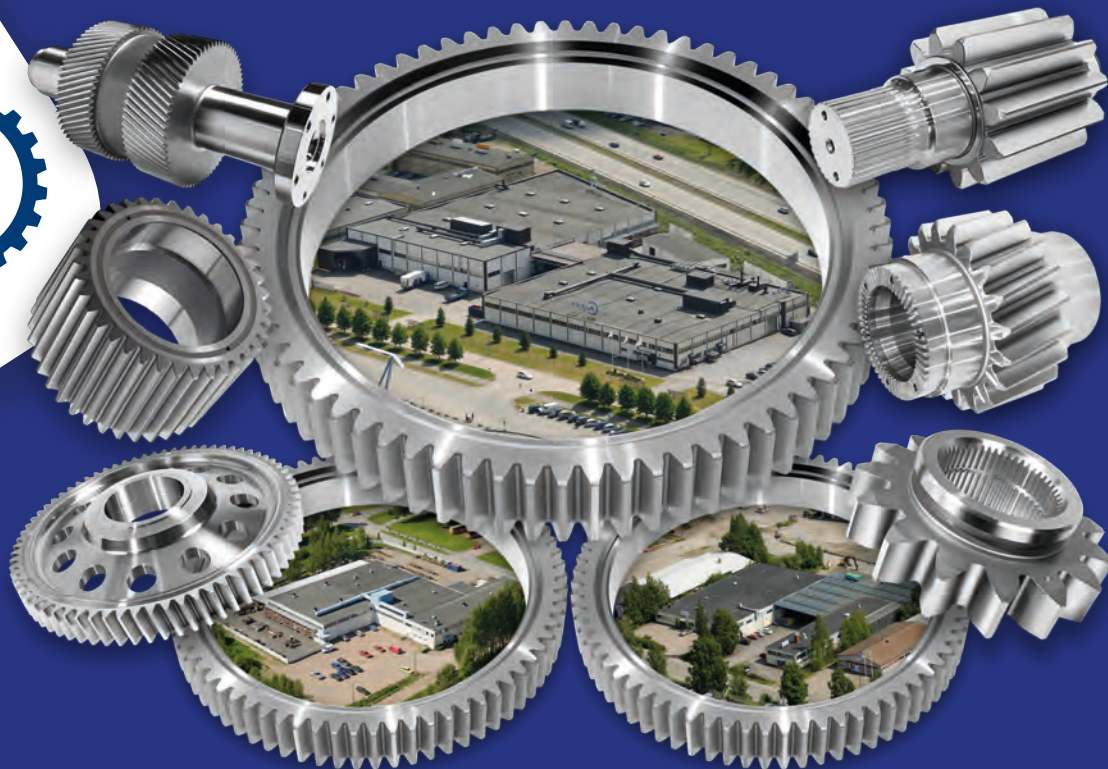
Dimensions	138 x 108 x 44,5 mm
Weight	0,44kg
Temperatures	-40 ... +85 °C
Protection Class	IP67
Power Supply	12/24 VDC M12 5-Pin



Lubrication system accessory

- Oil Filter with Clogging Indicator
- Oil Level Indicator
- Oil Cooler





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