

# Variable transmission for heavy electric trucks SVT350

IN CONCEPT PHASE

## 1 Specifications

A continuously variable automatic transmission providing all climbing and acceleration requirements plus a top speed defined by the motor power, suitable for heavy electric trucks or buses, combinable with a gear reduction

### AUTOMATIC VARIABLE TRANSMISSION: FEATURES

Compact transmission offering continuously variable ratios

Fast & accurate control of transmission ratio by electronic control unit

Control unit manages continuously the optimal speed of the driving motor

Exceptionally high overall transmission efficiency

No torque or efficiency dip during ratio variation

Unnoticeable delay on request for ratio change

Very few components, robust construction

Nearly silent operation

Equally functioning in 4 quadrants: driving & braking, both rotation senses

Input shaft and input side customizable for a direct fit on the driving motor

Hydraulic actuation (not shown yet) placed next to transmission

Options:

- Parking brake
- Deliverable with or without gear reduction. Gear reduction can be offset or planetary  
Rotation direction relative to input shaft:  
without gear reduction: opposite  
with gear reduction: same
- Unnoticeable connection or disconnection to a direct drive (only in combination with planetary gear reduction) Direct drive is a 1:1 ratio with nearly 100% efficiency

### TECHNICAL SPECIFICATIONS (PRELIMINARY)

Model name	SVT350
Design application	Driving electric trucks or buses
Transmission length (incl. – excl. reduction gear )	530 (incl.) – 457 (excl.) mm
Transmission outer diameter	422 - 379 mm
Transmission weight (incl. – excl. reduction gear)	xx (incl.) – 80 to 100 (excl.) kg
Highest speed ratio (*) <u>without</u> reduction gear	3.006 (torque ratio 0.333)
Lowest speed ratio <u>without</u> reduction gear	0.422 (torque ratio 2.370)
Highest speed ratio <u>with</u> reduction gear	1.156 (torque ratio 0.865)

Lowest speed ratio <u>with</u> reduction gear	0.162 (torque ratio 6.161)
Ratio spread	7.123
Max output torque before gear reduction	4607 Nm
Max output torque after gear reduction	11 978 Nm
Design input torque	2060 Nm
Design power level	270 kW
Overall efficiency: max – weighed over driving cycle	98.1 – 96.5 % without reduction gear
Reaction time on ratio change request	57 ms
Typical inaccuracy on dynamic ratio request	0.15 % = 1.5 RPM output error on 1000 RPM input
Typical inaccuracy on static ratio request	0.00 to 0.05 %
Design life of 44 ton truck in xx driving cycle	not yet defined km

(\*) Speed ratio = transmission output speed divided by its input speed

## 2 Dimensions

Preliminary design is shown on SVT WRAP drawing, inclusive planetary gear reduction  
 Remark that the final housings have reinforcement ribs, all within the dimensions of the wrap drawing.

