

Direct drive traction motor

DDTM-100

With 8,000 systems across the globe, BAE Systems is continually advancing electric solutions for transit with more efficient systems and components. Our direct drive traction motor (DDTM-100) is one of these innovations, providing transit operators with a highly efficient and reliable traction motor targeted for light and medium vehicle applications. DDTM is a quiet, compact, lightweight system designed for 12m buses in Europe, paratransit buses, and 30'-35' buses in North America. Its simple, yet flexible design needs no major maintenance; its useful design life is 15 years with no major overhaul expected.

The DDTM, when used with our integrated starter generator (ISG), provides propulsion and power for the entire vehicle. With direct drive there is no gearbox reducing spin losses, making for a more efficient system. With no shifting the ride is smooth and jerk-free.

The DDTM is the sole source of propulsion for the vehicle and is sized accordingly, providing high power and excellent low-end starting torque. Our electrically-driven system, along with electric accessories, enables stop/start, depot drive, and electric-range modes of travel. What's more, our electric propulsion delivers exceptional acceleration, performance on steep grades, and efficiency by returning energy to the batteries during regenerative braking. The ISG is coupled directly to the engine crankshaft, resulting in a compact, bearingless design. The generator is sized to convert all engine crankshaft power to electrical power for use by the system, providing sufficient power for sustained highway operation at 65 mph. The high efficiency, permanent magnet generator also provides ample power for all electric accessories with Series-E and Series-ER hybrid electric systems. This compact system design and packaging makes it easily adaptable to multiple bus models and simple to install. The components can be installed "in-line" (T-drive) or "transverse" (V-drive). The simple design of the system reduces the cost of maintenance as well as the overall life cycle cost.



DDTM-100



Integrated Starter Generator (ISG)

Features

- Meets all transit industry standard performance requirements
- Mechanically simple; long life
- Integrated starter generator – eliminates conventional starter wear
- Sensorless ISG for improved reliability
- Excellent low-end torque and high power-to-weight ratio
- Direct drive traction motor improves power density and system efficiency, which is key to pure EV installations

Benefits

- Reduced maintenance
- Compact and flexible, installs either T-drive or V-drive.
- Reliable with low lifecycle cost
- Supports more-electric and all-electric drive modes
- Available for HD shuttle, transit, and paratransit
- Completely high-voltage protected for safety
- Water ethylene glycol cooled, no separate oil cooler required



		Traction Motor Ratings	
		DDTM	
Power Peak Intermittent Continuous		260 hp (195 kW) 1100 - 3000 rpm 228 hp (170 kW) 1100 - 4100 rpm 161hp (120 kW) 1200 - 4100 rpm	
Torque Peak Intermittent Continuous		1575 ft-lbs (2100 Nm) 0 - 400 rpm 1125 ft-lbs (1500 Nm) 0 - 1000 rpm 750 ft-lbs (1000 Nm) 0 - 1200 rpm	
Speed Operational Overspeed		0 - 4100 rpm 4500 rpm	
Physical Length (end of shaft) Width Height Weight (wet)		21.8 in (554 mm) 24.2 in (615 mm) 26.0 in (595 mm) 424 lbs (192kg)	
Cooling		water ethylene (or propylene)-glycol, 70 C (160 F) max, 38lpm (10 gpm)/Internal ATF, mechanical oil pump, internal filter, cooler, oil sump	
Operating Temperature		-40° to 185°F (-40° to 85°C) / Local external ambient	
Vehicle GVWR up to		41,000 lbs (18.6 mT) @ 45 mph (72 kph)	
		Traction Generator Ratings	
		DDTM	
Power Continuous		194 hp (145 kW) @ 2100 rpm	
Torque Continuous		486 ft-lbs (660 Nm) 0 – 2100 rpm	
Speed		0–2100 rpm 2700 rpm	
Physical Length (beyond FWH) Width Weight (wet)		6 in (155 mm) 23.6 in (600 mm) 23.6 in (600 mm) 237 lbs (107 kg) /+26 lbs (12 kg) for Ring Gear	
Cooling		Jacket water ethylene (or propylene) - glycol 185° F (85° C) max, 10 gpm (38lpm)	
Operating Temperature		-40° to 185°F (-40° to 85°C) / Local external ambient	

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