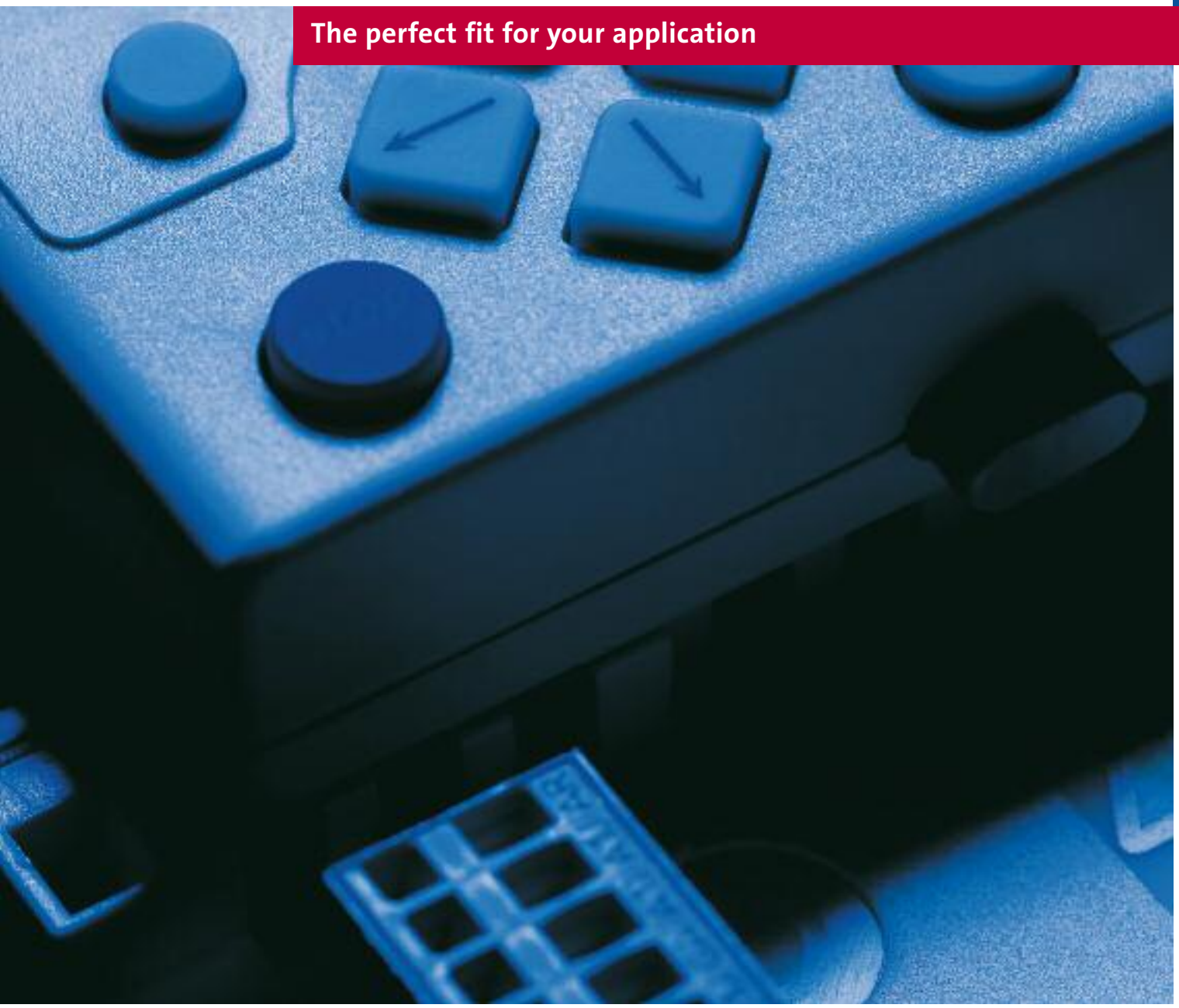
SAMT
Specialised Air Motors and Transmission

L-force
Inverter Drives 8400

The perfect fit for your application



Lenze

L-force | 8400 Inverter Drives

Cost efficiency, saving time and improving quality are the challenges of the future. Lenze is meeting these challenges with L-force – the drive and automation family with wide-ranging solutions and compatible interfaces and components. L-force means faster project planning and commissioning, enhanced performance and flexibility in production.

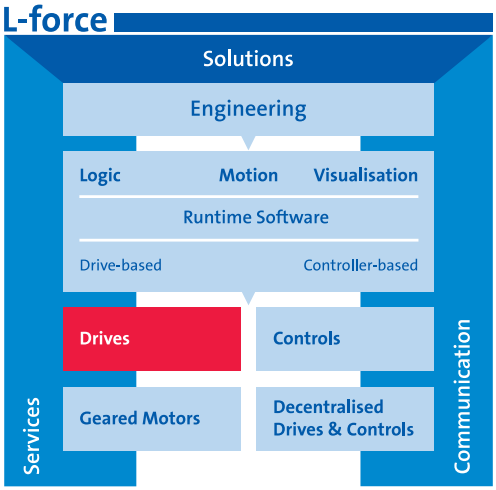
We call it Rightsizing: The Inverter Drives 8400 have been designed for consistent process optimisation – throughout all phases of the value-added chain. They reduce your outlay from selection onwards, via project planning, production and commissioning and beyond to service.

Rightsized for a diverse range of applications

Do you want to control or regulate motors, or operate a positioning with or without feedback? Then select the inverter that precisely meets your requirements from the Inverter Drives 8400 scaled solution space. What's more, that is all from a power range of 0.25 kW to 45 kW.

There is no doubt that you'll find the right product for you, as the 8400 inverter series with various levels of functionality offers the ideal choice for a wide range of applications.

While the BaseLine is the ideal solution for simple applications, the TopLine features servo qualities and thereby meets the strict requirements placed on dynamics and precision.



8400 BaseLine

8400 | The Rightsizing principle

Rightsized for increased productivity
The functionality and drive behaviour of the 8400 series– BaseLine, StateLine, HighLine and TopLine – develop consistently from one to the next which makes your selection process simple. The diagnostics connections and tools, operation and parameter settings are all identical for each design. The strengths of the 8400 series really prove their superiority when you use different models in your application.

Rightsized for the future
Upgrades at a later date are no problem. If the features of a StateLine no longer suffice, you can easily replace it with a HighLine – without having to redesign your control cabinet. Combined with environmentally-friendly production, compliant with ISO 14001 and RoHS – this makes the series future-proof.

Rightsized for quick start-up
The inverters are supplied fully pre-assembled including integrated shield connections. This reduces the time required for set-up prior to assembly. Simply select predefined applications to tailor the frequency inverter to meet the requirements of your application. In the simplest case, all you need to do is set two parameters: "application" and "setpoint source".

Rightsized for optimum operation
When developing human machine interfaces we never lose sight of the importance of the human element. Whether you are working with a keypad or on a PC, you will be supported by intuitive user menus.

Rightsized for fast service
Diagnostics and parameter setting using remote maintenance make for quick and cost-effective service all over the world. A memory module, integrated shield sheets and pluggable terminals mean that drives can be replaced quickly and easily, thereby reducing machine downtimes.

8400 StateLine

8400 HighLine

8400 TopLine

Technology | The equipment

Pluggable mains connection*

Pluggable connection DC-bus connection
(400 V types)

Pluggable relay connection*

Communication module*
optional

Safety engineering (STO)*
optional

Memory module
- ▶ pluggable
- ▶ contains all drive data

L-force Diagnostics interface
for USB adapter with PC connection or keypad

Pluggable control terminals*
with spring contacts

On-board CANopen
- ▶ DS301-compliant
- ▶ T plug

Integrated shield connection*
for the motor cable

Integrated shield connection
for control cables

Pluggable motor connection*

* for 8400 StateLine, HighLine and TopLine

The memory module
All drive settings of 8400 are stored in a chip on the pluggable memory module. It is also possible to copy these settings to additional memory modules. The advantage for you is much faster commissioning, especially when building series production machines. The memory module also guarantees rapid and problem-free drive replacement.

Online diagnostics
Every model in the Inverter Drives 8400 series features a standard, hot-pluggable interface for user-friendly operation, parameter setting and diagnostics. Both data access and parameter modification are available even during operation – whether as stand-alone device or networked via fieldbus.

Basic features of all 8400 models

- 150 % overload current (60 s)
- 45 °C operating temperature without current derating (max. 55 °C)
- IP20 enclosure
- memory module for quick commissioning and easy service
- L-force diagnostics interface for operation, parameter setting and diagnostics, even during operation
- integrated interference suppression to EN 61800-3
- shield connection for control cables
- automatic motor identification for optimum operational performance
- protection against short circuits, earth faults and motor stalling for safe operation

Compliant RoHS 2002/95/EC

BaseLine | for continuous motion

The BaseLine design is the entry-level model in terms of functionality and drive behaviour. Featuring an integrated keypad and everything you would expect from a modern frequency inverter suitable for universal use, the 8400 BaseLine is the ideal solution for applications such as conveyor drives, pumps, fans or ventilators.

In addition to the basic features, 8400 BaseLine also offers:

- 180 % overload current (3 s)
- freely assignable "user" menu
- V/f control without feedback (linear or square-law)
- sensorless vector control
- flying restart circuit
- S-ramps for smooth acceleration and braking to preserve materials
- DC braking function
- PID controller
- I^2t motor monitoring
- optional CANopen on board (up to 500 kbps)

StateLine | for controlled movement

The 8400 StateLine is intended for drive control with or without speed feedback and is also used when networking via bus systems is needed. The integrated brake management system also delivers greatly reduced wear on the service brakes. Mains switching at too high a rate is no problem for the StateLine as the input circuit is protected against overload.

The 8400 StateLine steps up from the BaseLine applications if these have to satisfy more stringent requirements. The StateLine is also perfectly suited to applications such as palletizers, extruders, filling systems or travelling/variable speed drives.

In addition to the features of the BaseLine, the 8400 StateLine also offers:

- 200 % overload current (3 s)
- slot for communication module
- CANopen on board (up to 500 kbps)
- 24 V supply for control electronics and communication independent of the mains
- shield connection for motor cable
- also suitable for use in IT systems
- protection against restart on cyclic mains switching
- V/f control with feedback
- evaluation of incremental encoder: two-track, 10 kHz
- brake management
- parameter switch-over
- switch-off positioning (without feedback)
- braking without brake resistor
- logic functions, comparator, counter, arithmetic function
- optional safety engineering (safe torque off, STO)

HighLine | the solution for positioning tasks

In addition to the features of the 8400 StateLine, the 8400 HighLine also offers integrated point-to-point positioning. This allows up to 15 target positions, including the associated travel profile (e.g. acceleration) to be stored in the inverter. The master control is responsible for selecting these position records and specifying the process. The incremental encoder signal returned is evaluated by two digital inputs.

The 8400 HighLine is also recommended for applications such as rotary indexing tables, rolling and sliding doors or positioning tasks in warehouse systems.

In addition to the features of the StateLine, the 8400 HighLine also offers:

- CANopen baud rate: up to 1,000 kbps
- point-to-point positioning
- VFC eco energy saving function
- evaluation of incremental encoder: two-track, 100 kHz
- additional terminals for digital and analog input and output signals
- frequency input (two-track, via digital inputs, 10 kHz)
- digital output 2.5 A with integrated spark suppressor, e.g. for directly controlling a 24 V service brake

TopLine | for servo applications

8400 TopLine – the inverter with servo qualities within the 8400 series. It is able to produce the high levels of dynamics and precision called for in demanding applications. In addition to a resolver input, it comes equipped with a multiple encoder input which offers an optimum connection to the range of feedback systems that can be applied. Furthermore, in addition to asynchronous motors, dynamic synchronous motors are also supported.

Reap the benefits of precisely tailored, cost-optimised Lenze drive units comprising finished system cables, motors and gearboxes, feedback, brakes and fans and, of course, the 8400 TopLine.

The 8400 TopLine is ideally suited to storage and retrieval units or pick-and-place applications, for instance.

In addition to the features of the HighLine, the 8400 TopLine also offers:

- Operation with synchronous motors
- Resolver input (Sub-D, 9-pole)
- Multiple encoder input (Sub-D, 15-pole) for:
  - TTL incremental encoder, two-track with zero pulse, 500 kHz
  - SSI absolute value encoder, single-turn/multi-turn
- KTY evaluation for motor temperature (configurable)

Communication | without limits

Communication modules
for fieldbus linking of StateLine, HighLine and TopLine
- PROFIBUS (DP-V1)
- EtherCAT
- PROFINET

Further communication modules are in preparation.

Remote maintenance
Access to Inverter Drives 8400 process data, parameters and application programs any time, anywhere
- telephone network or Ethernet link
- software integration could not be easier thanks to OPC technology

Accessories | to make life easy

Keypad
for fast access to parameters and operational data e.g. for commissioning purposes
- supports hot plugging
- graphics display with plain text
- backlighting
- easy user guidance
- for StateLine, HighLine and TopLine

Other accessories
can be found in our catalogue or online at **www.Lenze.com**

Diagnosis terminal
Keypad in durable housing, also suitable for installation inside a control cabinet
- supports hot plugging
- graphics display with plain text
- backlighting
- easy user guidance
- 2.5 m cable included
- IP20 enclosure; IP65 for control cabinet installation
- for StateLine, HighLine and TopLine

Engineer | Intuitive commissioning

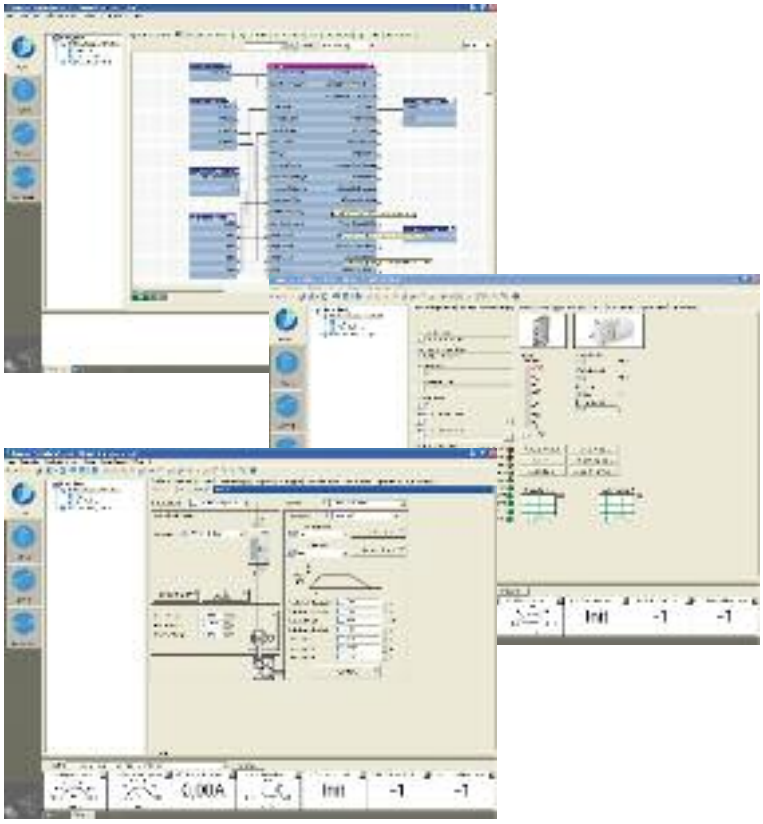
L-force Engineer
is the engineering tool for configuring, commissioning and diagnosing L-force products such as the Inverter Drives 8400. Both the StateLevel and HighLevel versions feature an intuitive user interface and transparent dialogues, with the result that the L-force Engineer is matched to the needs of the user . The main navigation section sorts important functions transparently into various views. Graphics interfaces facilitate drive parameter setting and configuration. Multi-drive engineering comes as standard with L-force Engineer StateLevel and HighLevel.

StateLevel Engineer
Supporting all the diagnostics functions they might need, StateLevel is ideal for service personnel and commissioning engineers. It can even be used to implement projects on a smaller scale with up to five target systems.

HighLevel Engineer
Also contains key functions for large projects, e.g. "establishing network", "interconnecting communication" or the function block editor. You can transfer your own documentation to the Engineer project so everything is available to you at a central point.

USB diagnostic adapter
for an isolated connection between your PC and the frequency inverter.

- supports hot plugging
- diagnostic LED for data transfer display
- connecting cables available in lengths of 2.5, 5 or 10 m
- plug and play



Technology | at a glance

Technical data

		BaseLine D	BaseLine C	StateLine C	HighLine C	TopLine C
Performance data	Mains: 1 230/240 V AC	0.25 ... 2.2 kW				0.55 ... 2.2 kW
	Mains: 3 400/500 V AC	0.37 ... 3.0 kW		0.37 ... 45.0 kW		
	Overload current	150 % (60 s) 180 % (3 s)		150 % (60 s) 200 % (3 s)		
	Max. output frequency	300 Hz		1,000 Hz		
Operating conditions	Operating temperature	–10 ... 55 °C (derating above 45 °C: 2.5 %/K)				
	Transport	–25 ... 70 °C				
	Storage	–25 ... 60 °C				
	Enclosure	IP20				

		BaseLine D	BaseLine C	StateLine C	HighLine C	TopLine C
Interfaces	Memory module	●	●	●	●	●
	L-force diagnostics interface	●	●	●	●	●
	Diagnostic LEDs	●	●	●	●	●
	CANopen on board	–	500 kbps	500 kbps	1,000 kbps	1,000 kbps
	DIP switch for CANopen (address, baud rate, bus termination)	–	–	●	●	●
	Slot for communication module	–	–	●	●	●
	DC-bus connection (400 V types)	●	●	●	●	●
	Integrated brake chopper	400 V types	400 V types	●	●	●
	External 24 V supply	–	–	●	●	●
	PTC/thermal contact input	–	–	●	●	●
	"Controller enable" digital input	●	●	●	●	●
	Programmable digital inputs (DIn)	4	4	4	7	7
	Encoder or frequency input (DI1, DI2)	–	–	10 kHz	100 kHz	100 kHz
	Additional frequency input (DI6, DI7)	–	–	–	10 kHz	10 kHz
	Relay output 250 V AC/3 A, 24 V DC/2 A ... 240 V/0.16 A	NO contact	NO contact	changeover contact	changeover contact	changeover contact
	Digital outputs (50 mA)	1	1	1	3	3
	2.5 A digital output with integrated spark suppressor	–	–	–	●	●
	Analog inputs: 0 ... +/-10 V, 0/4 ... 20 mA	1 (unipolar)	1 (unipolar)	1	2	2
	Analog outputs: 0 ... 10 V, 0/4 ... 20 mA	–	–	1 (0 ... 10 V)	2	2
	Resolver input	–	–	–	–	●
	Multiple encoder input	–	–	–	–	●

Technology | at a glance

Technical data

		BaseLine D	BaseLine C	StateLine C	HighLine C	TopLine C
Functions	Application-oriented commissioning (predefined application)	●	●	●	●	●
	Freely assignable "User" menu	●	●	●	●	●
	Motor identification	●	●	●	●	●
	V/f control without feedback (linear or square-law)	●	●	●	●	●
	Sensorless vector control	●	●	●	●	●
	V/f control with feedback	–	–	●	●	●
	Point-to-point positioning (with or without feedback)	–	–	–	●	●
	Operation with synchronous motors	–	–	–	–	●
	Flying restart circuit	●	●	●	●	●
	S-ramps for smooth acceleration and braking	●	●	●	●	●
	I^2t motor monitoring	●	●	●	●	●
	Data logger	●	●	●	●	●
	DC-injection braking function	●	●	●	●	●
	PID controller	●	●	●	●	●
	Fixed frequencies	3	3	15	15	15
	VFC eco energy saving function	–	–	●*	●	●
	Parameter switch-over	–	–	●	●	●
	Switch-off positioning (without feedback)	–	–	●	●	●
	Braking without brake resistor	–	–	●	●	●
	Brake management for brake control with low rate of wear	–	–	●	●	●
	Inversion of motor phases	–	–	●	●	●
	Skip frequencies	–	–	●	●	●
	Ixt monitoring of frequency inverter	–	–	●	●	●
	Monitoring I/O data during operation	–	–	●	●	●
	Logic functions, comparator, counter, arithmetic function	–	–	●	●	●
	Function block interconnection for input and output signals	–	–	●	●	●
	Free function block interconnection	–	–	–	●	●
Features	Protection against short circuits, earth faults, overvoltage, motor stalling	●	●	●	●	●
	Integrated interference suppression to EN 61800-3, category C2	●	●	●	●	●
	Integrated shield connection for control cables	●	●	●	●	●
	Integrated shield connection for motor cable	–	–	●	●	●
	Protection against restart with cyclic mains switching	–	–	●	●	●
	Usability in an IT system	–	–	●	●	●
	Fan can be replaced	–	–	●	●	●
	Interference suppression to EN 61800-3, Category C1 (footprint filter)	–	–	Option	Option	Option
	Safe torque off (STO), certified to EN ISO 13849-1 (cat. 4, PL e), EN 61508/EN 62061 (SIL 3)	–	–	Option	Option	Option
	Approvals: CE, UL**, GOST-R, RoHS	●	●	●	●	●

* in preparation

** in preparation for 30, 37 and 45 kW

It's good to know | why we are there for you

"Our customers come first. Customer satisfaction is what motivates us. By thinking in terms of how we can add value for our customers we can increase productivity through reliability."

"We will provide you with exactly what you need – perfectly co-ordinated products and solutions with the right functions for your machines and installations. That is what we mean by 'quality'."

"Take advantage of our wealth of expertise. For more than 60 years now we have been gathering experience in various fields and implementing it consistently and rigorously in our products, motion functions and pre-configured solutions for industry."

"The world is our marketplace. Wherever you are in the world, we are nearby, providing you with our drive and automation solutions."

Algeria · Argentina · Australia · Austria · Belarus · Belgium · Bosnia-Herzegovina · Brazil · Bulgaria · Canada · Central America · Chile China · Colombia · Croatia · Czech Republic · Denmark · Egypt · Estonia Finland · France · Germany · Greece · Hungary · Iceland · India · Indonesia Iran · Israel · Italy · Japan · Latvia · Lebanon · Lithuania · Luxembourg Macedonia · Malaysia · Mauritius · Mexico · Morocco · Netherlands New Zealand · Norway · Philippines · Poland · Portugal · Romania Russia · Serbia-Montenegro · Singapore · Slovac Republic · Slovenia South Africa · South Korea · Spain · Sweden · Switzerland · Syria Taiwan · Thailand · Tunesia · Turkey · Ukraine · United Arab Emirates United Kingdom/Eire · USA · Vietnam

You can rely on our service. Expert advice is available 24 hours a day, 365 days a year, in more than 30 countries via our international helpline: 008000 24 Hours (008000 2446877).

SAMT
Factory 19 / 5 Lyn Parade PRESTONS NSW 2170
PH: (02) 9607 4100 FAX: (02) 9607 4200
www.tonson-motor.com.au
sales@samt.com.au

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Specialised Air Motors and Transmission
www.tonson-motor.com.au

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