

# Product data sheet

Specifications



## Variable speed drive, Altivar Machine ATV340, 5.5 kW Heavy Duty, 400 V, 3 phases, Ethernet

ATV340U55N4E

### Main

Range of product	Altivar Machine ATV340
Product or component type	Variable speed drive
Product specific application	Machine
Variant	Standard version
Mounting mode	Cabinet mount
Communication port protocol	EtherNet/IP Modbus TCP Modbus serial
Network number of phases	3 phases
Supply frequency	50...60 Hz +/- 5 %
[Us] rated supply voltage	380...480 V - 15...10 %
Nominal output current	12.7 A
Motor power kW	7.5 kW for normal duty 5.5 kW for heavy duty
Motor power hp	10 hp for normal duty 7 hp for heavy duty
EMC filter	Class C3 EMC filter integrated
IP degree of protection	IP20

### Complementary

Discrete input number	5
Discrete input type	PTI programmable as pulse input: 0...30 kHz, 24 V DC (30 V) DI1...DI5 safe torque off, 24 V DC (30 V), impedance: 3.5 kOhm programmable
Number of preset speeds	16 preset speeds
Discrete output number	2.0
Discrete output type	Programmable output DQ1, DQ2 30 V DC 100 mA
Analogue input number	2
Analogue input type	A11 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits A11 software-configurable temperature probe or water level sensor A11 software-configurable voltage: 0...10 V DC, impedance: 31.5 kOhm, resolution 12 bits A12 software-configurable voltage: - 10...10 V DC, impedance: 31.5 kOhm, resolution 12 bits
Analogue output number	2
Analogue output type	Software-configurable voltage AQ1: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1: 0...20 mA impedance 500 Ohm, resolution 10 bits

<b>Relay output number</b>	2
<b>Output voltage</b>	<= power supply voltage
<b>Relay output type</b>	Relay outputs R1A Relay outputs R1C electrical durability 100000 cycles Relay outputs R2A Relay outputs R2C electrical durability 100000 cycles
<b>Maximum switching current</b>	Relay output R1C on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1C on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC Relay output R2C on resistive load, cos phi = 1: 5 A at 250 V AC Relay output R2C on resistive load, cos phi = 1: 5 A at 30 V DC Relay output R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC
<b>Minimum switching current</b>	Relay output R1B: 5 mA at 24 V DC Relay output R2C: 5 mA at 24 V DC
<b>Physical interface</b>	2-wire RS 485
<b>Connector type</b>	3 RJ45
<b>Method of access</b>	Slave Modbus RTU Slave Modbus TCP
<b>Transmission rate</b>	4.8 kbit/s 9.6 kbit/s 19.2 kbit/s 38.4 kbit/s
<b>Transmission frame</b>	RTU
<b>Number of addresses</b>	1...247
<b>Data format</b>	8 bits, configurable odd, even or no parity
<b>Type of polarization</b>	No impedance
<b>4 quadrant operation possible</b>	True
<b>Asynchronous motor control profile</b>	Optimized torque mode Constant torque standard Variable torque standard
<b>Synchronous motor control profile</b>	Reluctance motor Permanent magnet motor
<b>Pollution degree</b>	2 conforming to EN/IEC 61800-5-1
<b>Maximum output frequency</b>	0.599 kHz
<b>Acceleration and deceleration ramps</b>	Linear adjustable separately from 0.01...9999 s S, U or customized
<b>Motor slip compensation</b>	Automatic whatever the load Can be suppressed Adjustable Not available in permanent magnet motor law
<b>Switching frequency</b>	2...16 kHz adjustable 7...16 kHz with derating factor
<b>Nominal switching frequency</b>	4 kHz
<b>Braking to standstill</b>	By DC injection
<b>Brake chopper integrated</b>	True
<b>Line current</b>	15.3 A at 380 V (normal duty) 12.2 A at 480 V (normal duty) 20.0 A at 380 V (heavy duty) 16.0 A at 480 V (heavy duty)  20 A at 380 V without line choke (heavy duty) 16 A at 480 V without line choke (heavy duty) 15.3 A at 380 V with external line choke (normal duty) 12.2 A at 480 V with external line choke (normal duty) 11.6 A at 380 V with external line choke (heavy duty) 9.4 A at 480 V with external line choke (heavy duty)
<b>Maximum input current</b>	20.0 A
<b>Maximum output voltage</b>	480 V
<b>Apparent power</b>	12.1 kVA at 480 V (normal duty)

13.3 kVA at 480 V (heavy duty)

<b>Maximum transient current</b>	18.2 A during 60 s (normal duty) 19.1 A during 60 s (heavy duty) 22.3 A during 2 s (normal duty) 22.9 A during 2 s (heavy duty)
<b>Electrical connection</b>	Screw terminal, clamping capacity: 4...6 mm <sup>2</sup> for DC bus Screw terminal, clamping capacity: 0.2...2.5 mm <sup>2</sup> for control Screw terminal, clamping capacity: 1.5...6 mm <sup>2</sup> for line side Screw terminal, clamping capacity: 1.5...6 mm <sup>2</sup> for motor
<b>Prospective line I<sub>sc</sub></b>	22 kA
<b>Base load current at high overload</b>	12.7 A
<b>Base load current at low overload</b>	16.5 A
<b>Power dissipation in W</b>	Natural convection: 134 W at 380 V, switching frequency 4 kHz (heavy duty) Forced convection: 134 W at 380 V, switching frequency 4 kHz (heavy duty) Natural convection: 164 W at 380 V, switching frequency 4 kHz (normal duty) Forced convection: 164 W at 380 V, switching frequency 4 kHz (normal duty)  DC bus: screw terminal 4...6 mm <sup>2</sup> /AWG 12...AWG 10 Control: screw terminal 0.2...2.5 mm <sup>2</sup> /AWG 24...AWG 12 Line side: screw terminal 1.5...6 mm <sup>2</sup> /AWG 14...AWG 10 Motor: screw terminal 1.5...6 mm <sup>2</sup> /AWG 14...AWG 10
<b>With safety function Safely Limited Speed (SLS)</b>	True
<b>With safety function Safe brake management (SBC/SBT)</b>	True
<b>With safety function Safe Operating Stop (SOS)</b>	False
<b>With safety function Safe Position (SP)</b>	False
<b>With safety function Safe programmable logic</b>	False
<b>With safety function Safe Speed Monitor (SSM)</b>	False
<b>With safety function Safe Stop 1 (SS1)</b>	True
<b>With sft fct Safe Stop 2 (SS2)</b>	False
<b>With safety function Safe torque off (STO)</b>	True
<b>With safety function Safely Limited Position (SLP)</b>	False
<b>With safety function Safe Direction (SDI)</b>	False
<b>Protection type</b>	Thermal protection: motor Safe torque off: motor Motor phase loss: motor Thermal protection: drive Safe torque off: drive Overheating: drive Overcurrent: drive Output overcurrent between motor phase and earth: drive Output overcurrent between motor phases: drive Short-circuit between motor phase and earth: drive Short-circuit between motor phases: drive Motor phase loss: drive DC Bus overvoltage: drive Line supply overvoltage: drive Line supply undervoltage: drive Input supply loss: drive Exceeding limit speed: drive Break on the control circuit: drive
<b>Width</b>	110.0 mm
<b>Height</b>	270.0 mm
<b>Depth</b>	234.0 mm

<b>Net weight</b>	2.9 kg
<b>Continuous output current</b>	16.5 A at 4 kHz for normal duty 12.7 A at 4 kHz for heavy duty
<b>Environment</b>	
<b>Operating altitude</b>	<= 3000 m with current derating above 1000m
<b>Operating position</b>	Vertical +/- 10 degree
<b>Product certifications</b>	UL CSA TÜV EAC CTick
<b>Marking</b>	CE
<b>Standards</b>	EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 60721-3 IEC 61508 IEC 13849-1 UL 618000-5-1 UL 508C
<b>Assembly style</b>	With heat sink
<b>Electromagnetic compatibility</b>	Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
<b>Environmental class (during operation)</b>	Class 3C3 according to IEC 60721-3-3 Class 3S3 according to IEC 60721-3-3
<b>Maximum acceleration under shock impact (during operation)</b>	70 m/s <sup>2</sup> at 22 ms
<b>Maximum acceleration under vibrational stress (during operation)</b>	5 m/s <sup>2</sup> at 9...200 Hz
<b>Maximum deflection under vibratory load (during operation)</b>	1.5 mm at 2...9 Hz
<b>Permitted relative humidity (during operation)</b>	Class 3K5 according to EN 60721-3
<b>Volume of cooling air</b>	76.0 m <sup>3</sup> /h
<b>Type of cooling</b>	Forced convection
<b>Overvoltage category</b>	Class III
<b>Regulation loop</b>	Adjustable PID regulator
<b>Noise level</b>	46.6 dB  2
<b>Ambient air transport temperature</b>	-40...70 °C
<b>Ambient air temperature for operation</b>	-15...50 °C without derating (vertical position) 50...60 °C with derating factor (vertical position)
<b>Ambient air temperature for storage</b>	-40...70 °C
<b>Isolation</b>	Between power and control terminals

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	13.200 cm

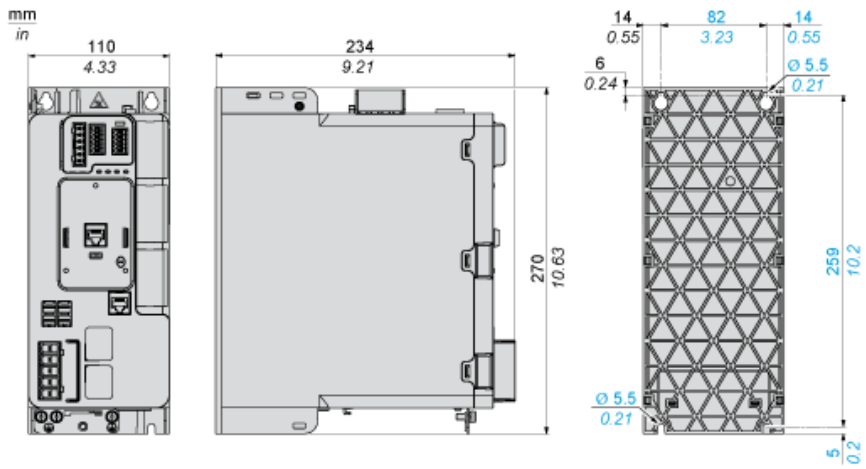
Package 1 Width	37.000 cm
Package 1 Length	32.000 cm
Package 1 Weight	3.810 kg
Unit Type of Package 2	P06
Number of Units in Package 2	10
Package 2 Height	75.000 cm
Package 2 Width	60.000 cm
Package 2 Length	80.000 cm
Package 2 Weight	50.900 kg

## Offer Sustainability

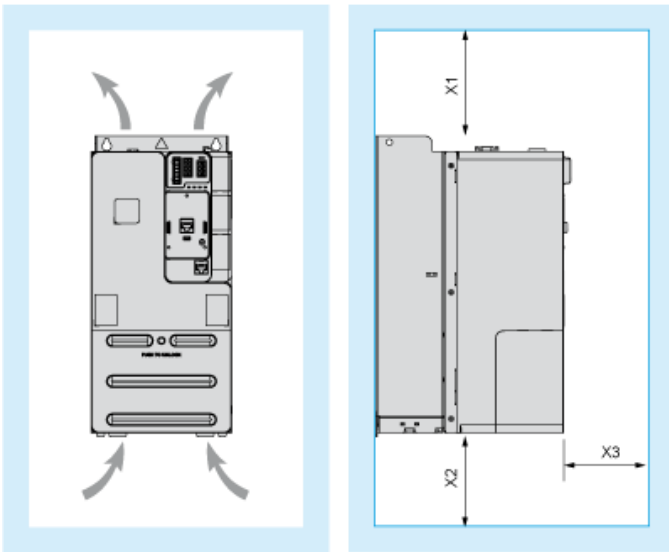
Sustainable offer status	Green Premium product
REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
China RoHS Regulation	<a href="#">China RoHS declaration</a>
RoHS exemption information	Yes
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End of Life Information</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
Upgradeability	Upgraded components available

Dimensions

Views: Front - Left - Rear



**Clearance**



**Dimensions in mm**

X1	X2	X3
≥ 100	≥ 100	≥ 60

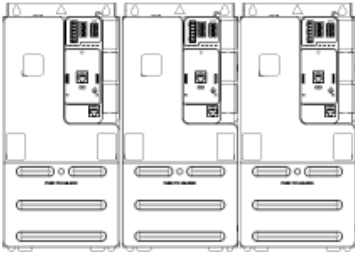
**Dimensions in in.**

X1	X2	X3
≥ 3.94	≥ 3.94	≥ 2.36

**Mounting Types**

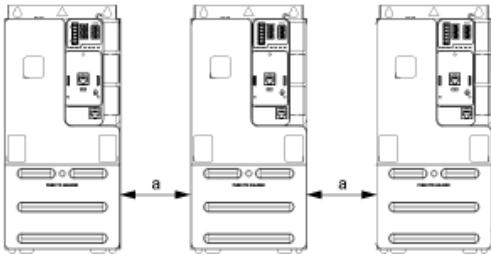
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**Mounting Type A: Side by Side IP20**



Possible, at ambient temperature  $\leq 50\text{ }^{\circ}\text{C}$  (122  $^{\circ}\text{F}$ )

**Mounting Type B: Individual IP20**



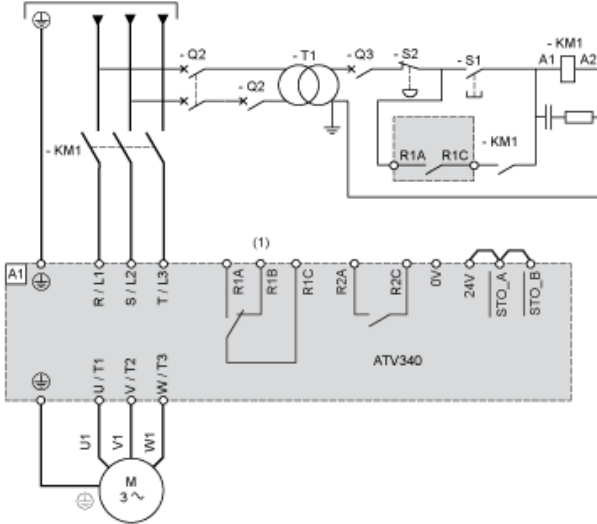
$a \geq 50\text{ mm}$  (1.97 in.) from 50...60 $^{\circ}\text{C}$ , no restriction below 50 $^{\circ}\text{C}$



### Connections and Schema

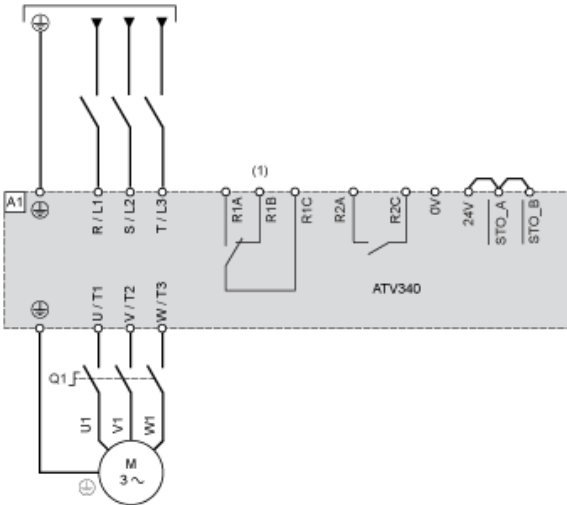
#### Three-phase Power Supply with Upstream Breaking via Line Contactor Without Safety Function STO

Connection diagrams conforming to standards ISO13849 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1.



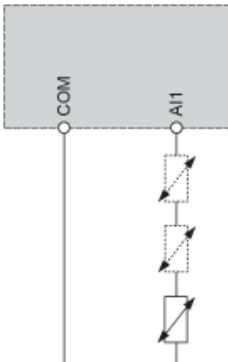
- (1) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.
- A1 : Drive
- KM1 : Line Contactor
- Q2, Q3 : Circuit breakers
- S1 : Pushbutton
- S2 : Emergency stop
- T1 : Transformer for control part

#### Three-phase Power Supply With Downstream Breaking via Switch Disconnecter



- (1) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.
- A1 : Drive
- Q1 : Switch disconnecter

#### Sensor Connection



It is possible to connect either 1 or 3 sensors on terminals A11.

**Control Block Wiring Diagram**

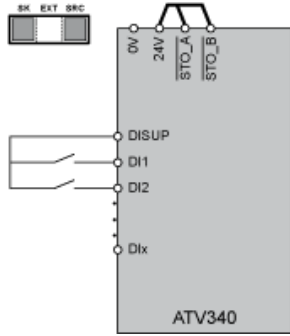


- (1) 24V supply (STO)
  - (2) STO - Safe Torque Off
  - (3) PTI - Pulse Train In
  - (4) PTO - Pulse Train Out
  - (5) Motor Encoder connection
  - (6) Digital outputs
  - (7) Digital inputs
  - (8) Analog output
  - (9) Analog input
  - (10) Differential Analog Input
  - (11) Ethernet port (only on Ethernet drive version)
- SW1 : Sink/Source switch  
R1A, R1B, R1C : Relay  
R2A, R2C : Sequence relay

**Digital Inputs Wiring**

**Digital Inputs: Internal Supply**

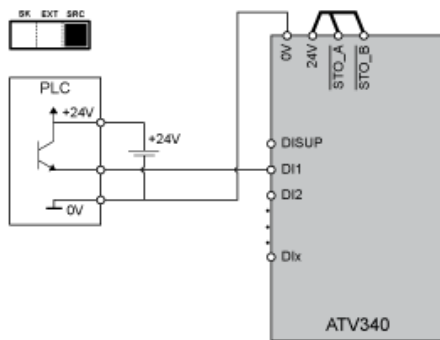
Using DISUP Signal



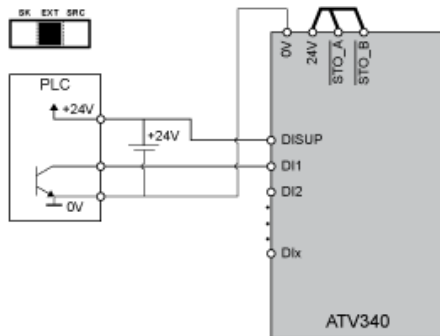
In SRC position DISUP outputs 24 V. In SK position DISUP is connected to 0 V.

**Digital Inputs: External Supply**

Positive Logic, Source, European Style

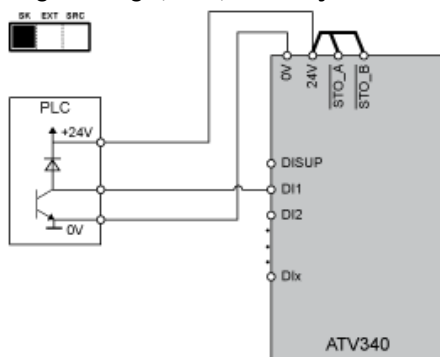


**Negative Logic, Sink, Asian Style**



**Digital Inputs: Internal supply**

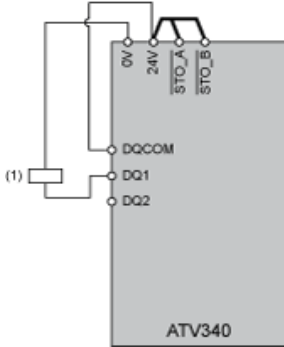
Negative Logic, Sink, Asian Style



Digital Outputs Wiring

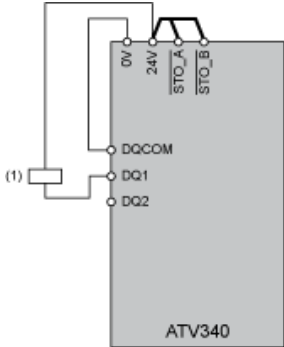
Digital Outputs: Internal Supply

Positive Logic, Source, European Style, DQCOM to +24V



(1) Relay or valve

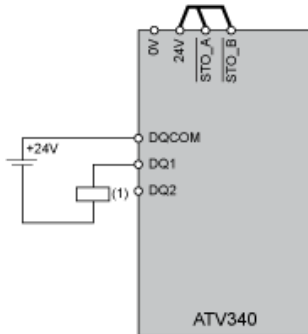
Negative Logic, Sink, Asian Style, DQCOM to 0V



(1) Relay or valve

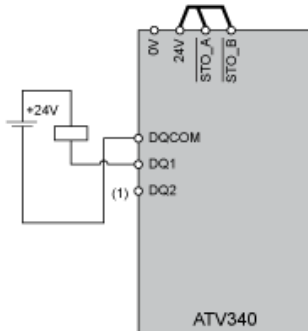
Digital Outputs: External Supply

Positive Logic, Source, European Style, DQCOM to +24V



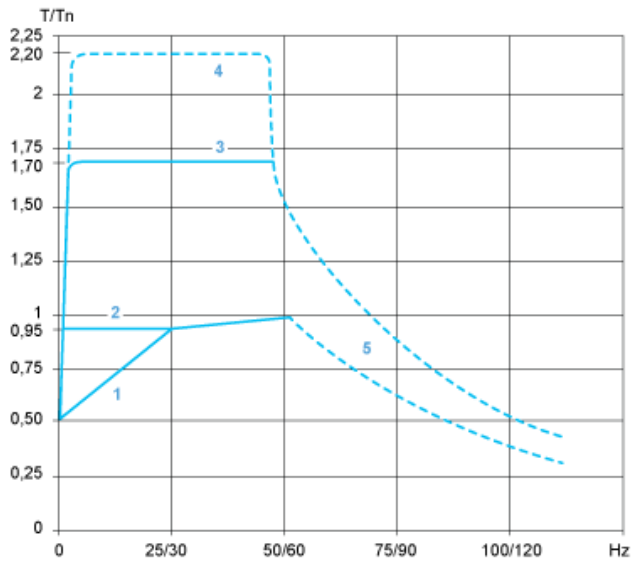
(1) Relay or valve

Negative Logic, Sink, Asian Style, DQCOM to 0V



(1) Relay or valve

Open Loop Applications



- 1 : Self-cooled motor: continuous useful torque
- 2 : Force-cooled motor: continuous useful torque
- 3 : Overtorque for 60 s maximum
- 4 : Transient overtorque for 2 s maximum
- 5 : Torque in overspeed at constant power

**Closed Loop Applications**



- 1 : Self-cooled motor: continuous useful torque
- 2 : Force-cooled motor: continuous useful torque
- 3 : Overtorque for 60 s maximum
- 4 : Transient overtorque for 2 s maximum
- 5 : Torque in overspeed at constant power

**Recommended replacement(s)**