

Prüfbericht-Nr.: <i>Test report no.:</i>	NN26ERQZ 001	Auftrags-Nr.: <i>Order no.:</i>	326195874	Seite 1 von 30 Page 1 of 30
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	2734482	Auftragsdatum: <i>Order date:</i>	2026-06-22	
Auftraggeber: <i>Client:</i>	Foshan Shengmino Automobile Industry Co., Ltd 9th Floor, Building 5, Jixin Digital Intelligence Park, No. 10 Hetian Road, Gujian Village, Daliang, Shunde District, Foshan City, 528300 Guangdong P.R. China			
Prüfgegenstand: <i>Test item:</i>	EPAC Bicycles			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	S600PRO			
Auftrags-Inhalt: <i>Order content:</i>	Test report			
Prüfgrundlage: <i>Test specification:</i>	EN 15194:2017+A1:2023 Cycles - Electrically power assisted cycles - EPAC Bicycles Exclude clause 4.3.22 - Performance levels (PLrs) for control system of EPACs			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2026-07-06			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A004360291			
Prüfzeitraum: <i>Testing period:</i>	2026-07-06 - 2026-08-12			
Ort der Prüfung: <i>Place of testing:</i>	Suzhou			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Suzhou) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i>	2026-08-25		Ausstellungsdatum: <i>Issue date:</i> 2026-08-25	
Stellung / Position:	John He / PE	Stellung / Position:	Nan Jiang / Authorizer	
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * Legend: P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

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Produktbeschreibung
Product description

1	Produktdetails Product details	EPAC Bicycle with a rear mounted assisted motor.
2	Maße / Gewicht Dimensions / Weight	Weight: 33.35 kg. Maximum saddle height: 1020 mm.
3	Bedienelemente Operating elements	Electrically power assisted cycle.
4	Ausstattung / Zubehör Equipment / Accessories	Battery charger.
5	Verwendete Materialien Used materials	Frame: Aluminum.
6	Sonstiges Other	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
7	Prüfmusterbereitstellung: Test sample obtaining	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:

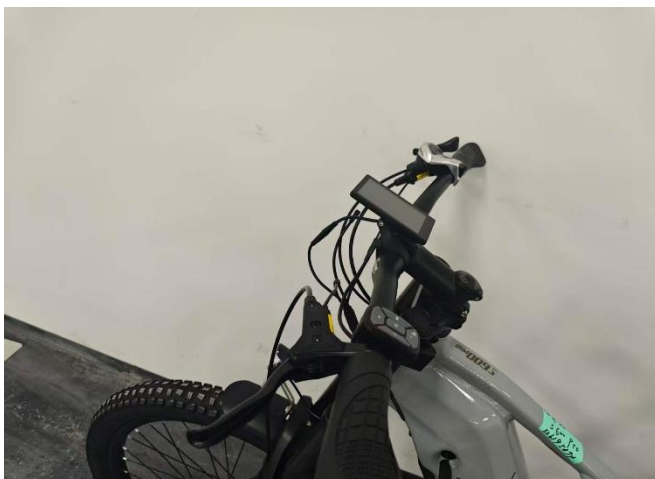
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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen/ Measuring results - Remarks	Ergebnis Result
1	Scope		
2	Normative references		
3	Terms and definitions		
4	Safety requirements and/or protective measures		
4.1	General EPAC shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards, which are not dealt with by this document. It includes evaluation of such risks for all relevant components. Means shall be provided to the user to prevent an unauthorized use of the EPAC e.g. key, locks, electronic control device.	Relevant information not provided from client.	P
4.2	Electrical requirements		
4.2.1	Electric circuit The electrical control system shall be designed so that, should it malfunction in a hazardous manner, it shall switch off power to the electric motor without causing a hazardous situation and it requires user interaction to switch on again. NOTE The mechanical brakes serve as an emergency stop device and provide fast and safe stopping in emergency situations.	The electrical control system meets the requirement.	P
4.2.2	Controls and symbols If symbols are used, their meaning shall be described in the instructions for use. "On" "Off" symbols, lightings symbols, start-up assistance symbols, audible warning device symbols design shall be in accordance with those described in Annex H and Annex I. A master control device shall be fitted to switch on and shut off the assistance, which shall be apparent, easy to reach and unmistakable. This master control device shall be activated by voluntary action to enable all assistance modes (start up and pedalling) before use of the EPAC.	"On" "Off" symbol used, A button on the display. The master control device activated by voluntary action.	P

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4.2.3	Batteries The battery shall comply with EN 50604-1:2016 and EN 50604-1:2016/A1:2021. At the moment of the publication of this standard, EN 50604-1 is only applicable for secondary lithium batteries, and only risks related to these batteries were taken into account.	Model: LN-JY-48V; EN 50604-1: 2016+A1: 2021 test report submitted by customer. Report No.:CN25G6N6 001	P
4.2.4	Battery charger Chargers for EPAC are considered to be operated in a residential (household) environment. NOTE 1 For integrated battery charger with a 230V a.c. input the charger and the EPAC and for external battery charger supplied with an EPAC the requirements of the Low Voltage Directive are applicable. NOTE 2 For external chargers with d.c. output less than 42,4 Volt, e.g. IEN 60335-2-29:2021/A1:2021" is applicable.	External battery charger. Model: LBC053546020; EN 60335-2-29:2021/A1:2021 test report submitted by client: CN220WMB 001.	P
4.2.5	Electric cables and connections		
4.2.5.1	General All connectors for cable and wire shall be selected to prevent corrosion of electrical contact conductance.		
4.2.5.2	Requirements Cable and plug temperature shall be lower than that specified by the manufacturer of the cables and plugs. Damage to cable and plug insulation shall be prevented. The cable cross sections shall be selected in accordance to EN 60335-1:2012, Table 11. If these requirements are not met, a temperature rise test shall be performed, in accordance to 4.2.5.3. NOTE Cables used exclusively for communication lines are excluded.	Temperature rise test was performed. Tested with positive result.	P

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4.2.6	Wiring Requirements on wiring shall be checked according to the following sequence at an ambient room temperature (20 ± 5) °C. a) Wire ways shall be smooth and free from sharp edges. b) Wires shall be protected so that they do not come into contact with burrs, cooling fins or similar sharp edges that may cause damage to their insulation. Holes in metal through which insulated wires pass shall have smooth well-rounded surfaces or be provided with bushings. c) Wiring shall be effectively prevented from coming into contact with moving parts. Compliance with a), b), c) shall be checked by inspection. d) Separate parts of the EPAC that can move in normal use or during user maintenance relative to each other, shall not cause undue stress to electrical connections and internal conductors, including those providing ground continuity. If an open coil spring is used to protect wire, it shall be correctly installed and insulated. Flexible metallic tubes shall not cause damage to the insulation of the conductors contained within them. Compliance with d) shall be checked by inspection and by the following test method. If flexing occurs in normal use, the appliance is placed in its normal operational position and is supplied at rated voltage under normal operation. The movable part is moved backwards and forwards through the largest angle permitted by its construction, so that the conductor is flexed. For conductors that are flexed in normal use, flex movable part for 10 000 cycles at a test frequency of 0,5 Hz. For conductors that are flexed during user maintenance, flex the movable part for 100 cycles at the same frequency.	Checked ok. Checked ok. Checked ok. Checked ok. Open coil spring is not used. Tested with positive result. Tested with positive result.	P

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4.2.7	Power cables and conduits Conduit entries, cable entries and knockouts shall be constructed or located so that the introduction of the conduit or cable does not reduce the protection measures adopted by the manufacturer. Compliance is checked by inspection. Guidance for power cables size selection is given in HD 60364-5-52:2011, 5.22.1.2, 523.1523.3 and Table A. The insulation of internal wiring shall withstand the electrical stress likely to occur in normal use. The wiring and its connections shall withstand the electrical strength test. The test voltage expressed in V shall be equal to $(500 + 2 \times U_r)$ for 2 min and applied between live parts and other metal parts only. NOTE U_r is the rated voltage.	Checked ok. Tested with positive result.	P
4.2.8	External and internal electrical connections Electrical connection shall comply with HD 60364-5-52:2011, 526.1 and 526.2.	Checked ok.	P
4.2.9	Moisture resistance The electrical components of a fully assembled EPAC shall be tested and shall comply with IPX4 requirements according to EN 60529:1991.	Tested with positive result.	P

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4.2.10	Mechanical strength test The electrical components including the battery shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use. Compliance is checked by: — Applying impacts to the battery pack mounted on the EPAC by means of the spring hammer as specified in EN 60068-2-75:2014. The battery pack is rigidly supported and three impacts are applied to every point of the enclosure that is likely to be weak with an impact energy of $(0,7 \pm 0,05)$ J. After the test the battery pack shall show no damage that could impair compliance with this European Standard; — Detachable batteries are submitted to free fall on a rigid surface as specified in EN 22248:1992 at a height of 0,90 m in three different positions. The positions shall be one surface, one edge and one corner of the enclosure that is likely to be weak. After the test the battery pack shall show no damage that could lead to emission of dangerous substances (gas or liquid) ignition, fire or overheating. NOTE 1 Other standards and transportation regulation given in national and international regulations, give additional requirements for general design of the battery and battery pack. NOTE 2 It is advised that the bicycle manufacturer make a risk analysis for the battery and battery holder interface with regard to bicycle tip over. It may be possible for damage to occur to the battery or battery interface when the bicycle falls over (see also the Introduction).	No damage shown after three impacts by the spring hammer to the points which are likely to be weak. The battery is detachable. No damage shown after the free fall test to the three positions.	P
4.2.11	Maximum speed for which the electric motor gives assistance The electrical motor assistance shall stop when the EPAC reaches a speed of 25 km/h or lower speed if limited by design. The maximum speed of the EPAC for which the electric motor gives assistance shall not differ by more than +10 % from the maximum assistance speed indicated in the marking required by Clause 5 when determined according to the test method described in 4.2.11.2.	Maximum speed: 25.2 km/h.	P
4.2.12	Start-up assistance mode An EPAC can be equipped with a start-up assistance mode that operates up to a maximum speed of 6 km/h. This mode shall be activated by the voluntary and maintained action of the user either when riding without pedalling or when the user is pushing the cycle.	Maximum speed: 4.9 km/h.	P

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4.2.13	Power management a) When tested by the method described in 4.2.13.2 the recordings shall show that assistance shall be provided only when the cyclist pedals forward. This requirement shall be checked according to the test methods described in 4.2.13.2.3; b) assistance shall be cut off when the cyclist stops pedalling forward and the cut-off distance shall not exceed 2 m; c) If all braking devices (e.g. levers, back pedal) are equipped with cut-off switches, the cut off distance shall not exceed 5 m; d) the power output or assistance shall be progressively reduced (see Annex A) and finally cut off as the EPAC reaches the maximum assistance speed as designed. This requirement shall be checked according to the test methods described in 4.2.13.2; e) the assistance shall be progressively and smoothly managed (e.g. no hunting); f) two independent applying actions shall be required to start the electrical assistance mode (e.g. power switch and forward pedalling activation); a traffic caused stop (e.g. traffic lights) is not subject to this requirement; g) after a deactivation of the electrical assistance mode due to any hazardous electric drive malfunction, the electric drive shall not start automatically without rider intervention (pedalling is not considered as rider intervention).	Pedalling forward: Assistance provided. Cut off distance: 1.65 m. Checked Ok. Power switch and forward pedalling activation.	P
4.2.14	Maximum power measurement — Measurement at the engine shaft The maximum continuous rated power shall be measured according to EN 60034-1:2010 when the motor reaches its thermal equilibrium as specified by the manufacturer. NOTE Thermal equilibrium: temperatures of motor parts do not vary more than 2K per hour. In circumstance where the power is measured directly at the shaft of the electronic motor, the result of the measurement shall be divided by 1,10 to consider the measurement uncertainty and then divided by 1,05 to include for example the transmission losses, unless the real values of these losses are determined.	Measurement: 250W when reaching the thermal equilibrium.	P
4.2.15	Electro Magnetic Compatibility		
4.2.15.1	Emission The EPAC and ESA shall fulfil the requirements of Annex B.	Details see test report: CN26P67S 001.	P

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4.2.15. 2	Immunity The EPAC and ESA shall fulfil the requirements of Annex B.	Details see test report: CN26P67S 001.	P
4.2.15. 3	Battery charger As an EPAC is not intended to be used while charging on the electric network, for integrated charger the whole EPAC plus integrated charger shall be tested for EMC according to the applicable standards based on the European EMC directive. NOTE The following European Standards are applicable for battery chargers to be used in residential environment: EN 55014-1:2017, EN 55014-2:2015, EN IEC 61000-3-2:2019, EN 61000-3-3:2013.	Test report submitted by Customer, Reference report:CN22BUBL 001.	P
4.2.16	Failure mode It shall be possible to ride the EPAC by pedalling even if the assistance failed. This requirement shall be checked as described in 4.2.16.2.	Tested with positive result.	P
4.2.17	Anti-tampering measure	Checked ok.	P
4.3	Mechanical requirements		
4.3.1	General		
4.3.2	Sharp edges Exposed edges that could come into contact with the rider's hands, legs, etc., during normal riding or normal handling and normal maintenance shall not be sharp, e.g. deburred, broken, rolled or processed with comparable techniques. NOTE It is advised to refer to ISO 13715:2017 [26].	Checked ok.	P
4.3.3	Security and strength of safety-related fasteners		
4.3.3.1	Security of screws Any screws used in the assembly of suspension systems or screws used to attach bracket attached electric generators, brake-mechanisms and mud-guards to the frame or fork, and the saddle to the seat-post shall be provided with suitable locking devices, e.g. lock-washers, lock-nuts, thread locking compound or stiff nuts. NOTE 1 The screws used to attach hub-generator are not included. NOTE 2 Fasteners used to assemble hub and disc brakes will preferably have heat-resistant locking devices.	Checked ok.	P

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4.3.3.2	Minimum failure torque The minimum failure torque of bolted joints for the fastening of handle bars, handlebar-stems, bar-ends, saddle and seat-posts shall be at least 50 % greater than the manufacturer's recommended tightening torque.	Tested with positive result.	P
4.3.3.3	Folding bicycles mechanism If provided, folding bicycle mechanism shall be designed so that EPAC can be locked for use in a simple, stable, safe way and when folded no damage shall occur to any cables. No locking mechanism shall contact the wheels or tyres during riding, and it shall be impossible to unintentionally loosen or unlock the folding mechanisms during riding.	Checked ok.	P
4.3.4	Protrusions These requirements are intended to address the hazards associated with the users of EPACs falling on projections or rigid components (e.g. handlebars, levers) on EPAC possibly causing internal injury or skin puncture. Tubes and rigid components in the form of projections which constitute a puncture hazard to the rider should be protected. The size and shape of the end protection has not been stipulated, but an adequate shape shall be given to avoid puncturing of the body. Screw threads which constitute a puncture hazard shall be limited to a protrusion length of one major diameter of the screw beyond the internally threaded mating part. NOTE Handlebar-ends are covered by the paragraph in 4.3.6.2.	Checked ok.	P
4.3.5	Brakes		
4.3.5.1	Braking-systems EPAC shall be equipped with at least two independently actuated braking-systems. At least one shall operate on the front wheel and one on the rear wheel. The braking-systems shall operate without binding and shall be capable of meeting the braking-performance requirements of 4.3.5.9. No hand shall need to be taken from the handlebar to operate the brake levers. If additional braking-systems are implemented, they shall meet the brake requirements of 4.3.5. Brake-blocks containing asbestos shall not be used.	Front: Disc brake, Rear: Disc brake. Checked ok. No additional braking-system implemented.	P

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4.3.5.2	Hand-operated brakes		
4.3.5.2 .1	Brake-lever position The brake levers for front and rear brakes shall be positioned according to the legislation or custom and practice of the country in which EPAC is to be sold, and EPAC manufacturer shall state in the manufacturer's instructions which levers operate the front and rear brakes (see also Clause 6 i)).	Left lever controls rear brake, Right lever controls front brake.	P
4.3.5.2 .2	Brake-lever grip dimensions	$d < 90 \text{ mm.}$	P
4.3.5.3	Attachment of brake assembly and cable requirements Cable pinch-bolts shall not sever any of the cable strands when assembled to the manufacturer's instructions. In the event of a cable failing, no part of the brake mechanism shall inadvertently inhibit the rotation of the wheel. The cable end shall either be protected with a cap that shall withstand a removal force of not less than 20 N or be otherwise treated to prevent unravelling. NOTE See 4.3.3 in relation to fasteners.	Checked ok. Disc brake.	P
4.3.5.4	Brake-levers – Position of applied force	The position of applied force is 25 mm from the free end of the brake-lever.	P
4.3.5.5	Brake-block and brake-pad assemblies – Safety test The friction material shall be securely attached to the holder, backing-plate, or shoe and there shall be no failure of the braking system or any component thereof when tested by the method specified in 4.3.5.5.2.	Tested with positive result.	P
4.3.5.6	Brake adjustment Each brake shall be equipped with an adjustment mechanism either manual or automatic. Each brake shall be capable of adjustment with or without the use of a tool to an efficient operating position until the friction material has worn to the point of requiring replacement as recommended in the manufacturer's instructions. Also, when correctly adjusted, the friction material shall not contact anything other than the intended braking surface. The brake blocks of a bicycle with rod brakes shall not come into contact with the rim of the wheels when the steering angle of the handlebars is set at 60°, nor shall the rods be bent, or be twisted after the handlebars are reset to the central position.	Manual adjustment mechanism. With the use of a tool. Checked ok. Not rod brake.	P
4.3.5.7	Hand-operated braking-system – Strength test When tested by the method described in 4.3.5.7.2, there shall be no failure of the braking-system or of any component thereof.	Tested with positive result.	P

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4.3.5.8	Back-pedal braking system – Strength test		
4.3.5.8 .1	General If a back-pedal braking system is fitted, the brake shall be actuated by the operator's foot applying force to the pedal in a direction opposite to that of the drive force. The brake mechanism shall function regardless of any drive-gear positions or adjustments. The differential between the drive and brake positions of the crank shall not exceed 60°. The measurement shall be taken with the crank held against each position with a pedal force of at least 250 N. The force shall be maintained for 1 min in each position.	No back-pedal braking system fitted.	N/A
4.3.5.8 .2	Requirement When tested in accordance with 4.3.5.8.3, there shall be no failure of the brake system or any component thereof.	No back-pedal braking system fitted.	N/A
4.3.5.9	Braking performance		
4.3.5.9 .1	General The progressive characteristics of the brake are determined by linearity measurements. A final, simple track test checks for smooth, safe, stopping characteristics. NOTE See 4.3.5.9.5.6 h) "Test method —simple track test". Conduct the braking-performance test on a fully-assembled bicycle after the brakes have been subjected to the strength test detailed in 4.3.5.7, 4.3.5.8. Before testing the bicycle, inflate the tyres and adjust the brakes all according to the manufacturer's instructions, but in the case of rim-brakes to the maximum clearance specified by the manufacturer.	Simple track test: EPAC can smooth, safely stop.	P

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4.3.5.9 .2	Requirements Where EPAC is fitted with secondary brake-levers attached to brake-levers, bar-ends or aerodynamic extensions, separate tests shall be conducted for the operation of the secondary brake-levers in addition to tests with the normal levers. When tested in accordance with 4.3.5.9.5, the bicycle shall fulfil the requirements shown in Table 1. Table 1 — Calculated braking performance value <table><tr><th>Condition</th><th>Brake in use</th><th>Minimum braking performance value, B_p</th></tr><tr><td rowspan="2">Dry</td><td>Front only</td><td>340</td></tr><tr><td>Rear only</td><td>220</td></tr><tr><td rowspan="2">Wet</td><td>Front only</td><td>220</td></tr><tr><td>Rear only</td><td>140</td></tr></table> Forces in N NOTE These values are based on the reference mass "m" (100 kg).	Condition	Brake in use	Minimum braking performance value, B_p	Dry	Front only	340	Rear only	220	Wet	Front only	220	Rear only	140	No secondary brake-lever. Braking performance value: Front brake in dry: 552 N, Rear brake in dry: 523 N, Front brake in wet: 487 N, Rear brake in wet: 433 N.	P
Condition	Brake in use	Minimum braking performance value, B_p														
Dry	Front only	340														
	Rear only	220														
Wet	Front only	220														
	Rear only	140														
4.3.5.9 .3	Linearity requirements When tested by the methods described in 4.3.5.9.5.6 c) 1) and 2), the braking force $F_{Br\ average}$ shall be linearly proportional (within $\pm 20\%$) to the progressively increasing intended operating forces $F_{Op\ intend}$. The requirement applies to braking forces $F_{Br\ average}$ equal to and greater than 80 N (according to Annex E).	The braking force is linearly proportional (within $\pm 20\%$) to the progressively increasing intended operating forces.	P													
4.3.5.9 .4	Ratio between wet and dry braking performance requirements In order to ensure safety for both wet and dry braking, the ratio of braking performance wet: dry shall be greater than 4:10. The methods for calculating this ratio are given in 4.3.5.9.5.6 g).	The ratio of braking performance wet: dry > 0.4.	P													
4.3.5.1 0	Brakes – Heat-resistance test															
4.3.5.1 0.1	General This test applies to all disc- and hub-brakes but to rim-brakes only where they are known or suspected to be manufactured from or include thermoplastic materials. Each brake on the bicycle shall be tested individually, but where the front and rear brakes are identical only one brake need be tested.															

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4.3.5.1 0.2	Requirement Throughout the test described in 4.3.5.10.3, the brake-lever shall not touch the handlebar-grip, the operating force shall not exceed 180 N, and the braking force shall not deviate outside the range 60 N to 115 N. Immediately after having been subjected to the test described in 4.3.5.10.3, the brakes shall achieve at least 60 % of the braking performance which was recorded at the highest operating force used during the performance tests 4.3.5.9.5.6 c) 1) and 2).	The front and rear brakes are identical. Front brake: Dry: 77 %, Wet: 75 %.	P
4.3.5.1 1	Back-pedal brake linearity test	No back-pedal braking system fitted.	N/A
4.3.6	Steering		
4.3.6.1	Handlebar – Dimensions	Checked Ok.	P
4.3.6.2	Handlebar grips and plugs The ends of the handlebar shall be fitted with handgrips or end plugs. When tested by the method described in 4.3.6.2.2 and 4.3.6.2.3, the handgrips or plugs shall withstand the specified removal forces.	Handlebar ends fitted with handgrips.	P
4.3.6.3	Handlebar stem – Insertion-depth mark or positive stop	See 4.3.6.3.	N/A
4.3.6.4	Handlebar stem to fork steerer – Clamping requirements	No risky part.	P
4.3.6.5	Steering stability The steering shall be free to turn through at least 60° either side of the straight-ahead position and shall exhibit no tight spots, stiffness or slackness in the bearings when correctly adjusted. A minimum of 25 % of the total mass of EPAC and rider shall act on the front wheel when the rider is holding the handlebar grips and sitting on the saddle, with the saddle and rider in their most rearward positions. NOTE Recommendations for steering geometry are given in Annex C.	Checked ok. Measurement: 33 %.	P
4.3.6.6	Steering assembly – Static strength and safety tests		
4.3.6.6 .1	Handlebar and stem assembly – Lateral bending test When tested by the method described in 4.3.6.6.1.3, there shall be no cracking or fracture of the handlebar, stem or clamp-bolt and the permanent deformation measured at the point of application of the test force shall not exceed 15 mm.	Permanent deformation: 3.8 mm.	P

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4.3.6.6 .2	Handlebar-stem – Forward bending test Requirement for Stage 1 When tested by the method described in 4.3.6.6.2.3, there shall be no visible cracks or fractures and the permanent deformation measured at the point of application of the test force and in the direction of the test force shall not exceed 10 mm. Requirement for Stage 2 When tested by the method described in 4.3.6.6.2.5, there shall be no visible cracks or fractures.	Permanent deformation: 1.3 mm. Tested with positive result.	P
4.3.6.6 .3	Handlebar to handlebar-stem – Torsional safety test When tested by the method described in 4.3.6.6.3.2, there shall be no movement of the handlebar relative to the handlebar-stem.	No movement occurred.	P
4.3.6.6 .4	Handlebar-stem to fork steerer – Torsional safety test When tested by the method described in 4.3.6.6.4.2, there shall be no movement of the handlebar-stem relative to the fork steerer.	No movement occurred.	P
4.3.6.6 .5	Bar-end to handlebar – Torsional safety test When tested by the method described in 4.3.6.6.5.2, there shall be no movement of the bar-end in relation to the handlebar.	No bar-end.	N/A
4.3.6.7	Handlebar and stem assembly – Fatigue test When tested by the method described in 4.3.6.7.3 or 4.3.6.7.4, there shall be no visible cracks or fractures in any part of the handlebar and stem assembly or any bolt failure. For composite handlebars or stems, the running displacements (peak-to-peak value) at the points where the test forces are applied shall not increase by more than 20 % of the initial values.	Test frequency: 2 Hz. No visible cracks and fractures in any part of handlebar and stem assembly or any bolt failure.	P
4.3.7	Frames		
4.3.7.1	Suspension-frames – Special requirement The design shall be such that if the spring or damper fails, neither the tyre shall contact any part of the frame nor the assembly carrying the rear wheel become detached from the rest of the frame.	No risky part.	P

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4.3.7.2	Frame – Impact test (falling mass) When tested by the method described in 4.3.7.2.3, there shall be no visible cracks or fractures of the frame. The permanent deformation measured between the axes of the wheel axles shall not exceed the following values: a) 30 mm where a fork is fitted; b) where a dummy fork is fitted in place of a fork, the values are given in Table 9. NOTE See Annex D (normative) Dummy fork characteristics. Table 9 — The values of permanent deformation <table><tr><th>Fork type</th><th>Real fork</th><th>Dummy fork</th></tr><tr><td>Permanent deformation</td><td>30 mm</td><td>10 mm</td></tr></table>	Fork type	Real fork	Dummy fork	Permanent deformation	30 mm	10 mm	A real fork was fitted. Permanent deformation:8 mm.	P
Fork type	Real fork	Dummy fork							
Permanent deformation	30 mm	10 mm							
4.3.7.3	Frame and front fork assembly – Impact test (falling frame) When tested by the method described in 4.3.7.3.3, there shall be no visible cracks or fractures in the assembly and after the second impact there shall be no separation of any parts of any suspension system. The permanent deformation measured between the axes of the wheel axles shall not exceed the values specified in Table 11. Table 11 — The values of permanent deformation <table><tr><td>Permanent deformation</td><td>60 mm</td></tr></table>	Permanent deformation	60 mm	Permanent deformation: 11 mm.	P				
Permanent deformation	60 mm								
4.3.7.4	Frame – Fatigue test with pedalling forces When tested by the method described in 4.3.7.4.3, there shall be no visible cracks or fractures in any part of the frame, and there shall be no separation of any parts of the suspension system. For composite frames, the running displacements (peak-to-peak values) at the points where the test forces are applied shall not increase by more than 20 % of the initial values (see 4.3.1.6).	Test frequency: 1.5 Hz. No visible cracks and fractures in any part of the frame.	P						
4.3.7.5	Frame – Fatigue test with horizontal forces When tested by the method described in 4.3.7.5.3, there shall be no visible cracks or fractures in the frame and there shall be no separation of any parts of any suspension system. For composite frames, the running displacement (peak-to-peak value) at the point where the test forces are applied shall not increase by more than 20 % of the initial values (see 4.3.1.6).	Test frequency: 2.0 Hz. No visible cracks and fractures in any part of the frame.	P						

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4.3.7.6	Frame – Fatigue test with a vertical force When tested by the method described in 4.3.7.6.3, there shall be no visible cracks or fractures in the frame and there shall be no separation of any parts of the suspension system. For composite frames, the running displacement (peak-to-peak value) at the point where the test forces are applied shall not increase by more than 20 % of the initial value (see 4.3.1.6).	Test frequency: 2.0 Hz. No visible cracks and fractures in any part of the frame.	P
4.3.8	Front fork		
4.3.8.1	General		
4.3.8.2	Means of location of the axle and wheel retention The slots or other means of location for the wheel-axle within the front fork shall be such that when the axle or cones are firmly abutting the top face of the slots, the front wheel remains central within the fork. The front fork and wheel shall also fulfil the requirements of 4.3.9.4 and 4.3.9.5.	Checked ok.	P
4.3.8.3	Suspension-forks – Special requirements		
4.3.8.3 .1	Tyre-clearance test When tested by the method described in 4.3.8.3.1.2, the tyre shall not contact the crown of the fork nor shall the components separate.	Tested with positive result.	P
4.3.8.3 .2	Tensile test When tested by the method described in 4.3.8.3.2.2, there shall be no detachment or loosening of any parts of the assembly and the tubular, telescopic components of any fork-leg shall not separate under the test force.	Tested with positive result.	P
4.3.8.4	Front fork – Static bending test When tested by the method described in 4.3.8.4.2, there shall be no fractures or visible cracks in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 10 mm.	Permanent deformation: 3.6 mm.	P
4.3.8.5	Front fork – Rearward impact test		
4.3.8.5 .1	Forks made entirely of metal		

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4.3.8.5 .1.1	Crown/steerer joint assembled by welding or brazing When tested by the method described in 4.3.8.5.3, there shall be no fractures or visible cracks in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 45 mm. If the fork is used in the frame impact test (falling-mass), 4.3.7.2, there is no need to perform this test.	See clause 4.3.8.5.1.2.	N/A
4.3.8.5 .1.2	Crown/steerer joint assembled by press-fitting, bonding, or clamping When tested by the method described 4.3.8.5.4 a), if there are any fractures or visible cracks in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, exceeds 45 mm, the fork shall be considered to have failed. If the fork meets these criteria then it shall be subjected to a second test as described in 4.3.8.5.4 b), after which, it shall exhibit no fractures, then it shall be subjected to a third test as described in 4.3.8.5.4 c), irrespective of the amount of permanent deformation, there shall be no relative movement between the steerer and the crown.	The fork is used in the frame impact test (falling-mass).	P
4.3.8.5 .2	Forks which have composite parts When tested by the method described in 4.3.8.5.3, there shall be no fractures in any part of a fork and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 45 mm. After which, it shall exhibit no fractures, then it shall be subjected to a second test as described in 4.3.8.5.4 c) Torque on fork, irrespective of the amount of permanent deformation, there shall be no relative movement between the steerer and the crown.	No composite part in fork.	N/A
4.3.8.6	Front fork – Bending fatigue test plus rearward impact test When tested by the method described in 4.3.8.6.2, there shall be no fractures in any part of the fork, and the permanent deformation, measured as the displacement of the axis of the wheel-axle or simulated axle in relation to the axis of the fork steerer, shall not exceed 45 mm. For composite forks, the running displacement (peak-to-peak value) at the points where the test forces are applied shall not increase by more than 20 % of the initial values (see 4.3.1.6).	Test frequency: 2 Hz. Rearward impact test: Permanent deformation: 13 mm.	P
4.3.8.7	Forks intended for use with hub- or disc-brakes		
4.3.8.7 .1	General		

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4.3.8.7 .2	Static brake-torque test When tested by the method described in 4.3.8.7.3, there shall be no fractures or visible cracks in any part of the fork.	Tested with positive result.	P						
4.3.8.7 .3	Fork for hub/disc-brake – Static brake-torque test								
4.3.8.7 .4	Fork for hub/disc-brake – Brake mount fatigue test When tested by the method described in 4.3.8.7.5, there shall be no fractures or visible cracks in any part of the fork and, in the case of suspension-forks, there shall be no separation of any parts.	Test frequency: 1.5 Hz.	P						
4.3.8.7 .5	Fork for hub/disc-brake – Brake mount fatigue test								
4.3.8.8	Tensile test for a non-welded fork When tested by the method described in 4.3.8.8.3, there shall be no detachment or loosening of any parts of the assembly.	Tested with positive result.	P						
4.3.9	Wheels and wheel/tyre assembly								
4.3.9.1	Wheels/tyre assembly – Concentricity tolerance and lateral tolerance When measured by the method described in 4.3.9.1.2, the run-out shall not exceed the values which are given in Table 22. Table 22 — Wheel/tyre assembly - Concentricity and lateral tolerance Dimensions in millimetres <table><tr><td></td><td>Intended for rim-brakes</td><td>Not intended for rim-brakes</td></tr><tr><td>Concentricity and lateral tolerance</td><td>1</td><td>2</td></tr></table>		Intended for rim-brakes	Not intended for rim-brakes	Concentricity and lateral tolerance	1	2	Not intended for rim-brakes. Concentricity tolerance < 2 mm, Lateral tolerance < 2 mm.	P
	Intended for rim-brakes	Not intended for rim-brakes							
Concentricity and lateral tolerance	1	2							
4.3.9.2	Wheel/tyre assembly – Clearance Alignment of the wheel assembly in EPAC shall allow not less than the clearance values given in Table 23 between the tyre and any frame or fork element or a front mudguard and its attachment bolts. Table 23 — Wheel/tyre assembly - Clearance Dimensions in millimetres <table><tr><td>Clearance</td><td>6</td></tr></table> NOTE Where EPAC has a frame or a fork with a suspension system, the values in Table 23 apply to the suspension system in its uncompressed state. Clearance requirements for the frame or fork under a load are specified in 4.3.8.3.1.	Clearance	6	Clearance > 6 mm.	P				
Clearance	6								

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4.3.9.3	Wheel/tyre assembly – Static strength test When a fully assembled wheel fitted with a tyre inflated to the maximum inflation pressure is tested by the method described in 4.3.9.3.2, there shall be no failure of any of the components of the wheel, and the permanent deformation, measured at the point of application of the force on the rim, shall not exceed the values which are given in Table 24. Table 24 — The values of permanent deformation Permanent deformation 1,5 Dimensions in millimetres	Permanent deformation: Front wheel: 0.26 mm, Rear wheel: 0.22 mm.	P
4.3.9.4	Wheels – Wheel retention		
4.3.9.4 .1	General Wheel retention safety is related to the combination of wheel, retention device, and drop-out design. Wheels shall be secured to EPAC frame and fork such that when adjusted to the manufacturer's instructions they comply with 4.3.9.4.2, 4.3.9.4.3 and 4.3.9.5. Wheel nuts shall have a minimum removal torque of 70 % of the manufacturer's recommended tightening torque. Where quick-release axle devices are used they shall comply with 4.3.9.5.	Front wheel: quick-release, Rear wheel: nuts.	P
4.3.9.4 .2	Wheel retention – Retention devices secured When tested by the method described in 4.3.9.4.2.2, there shall be no relative motion between the axle and the front fork/frame.	No relative motion occurred.	P
4.3.9.4 .3	Front wheel retention – Retention devices unsecured EPAC shall be equipped with secondary retention system that retains the front wheel in the dropouts when the primary retention system is in the open (unlocked) position and wheel off the ground. Where threaded axles and nuts are fitted, and the nuts are unscrewed by at least 360° from the finger tight condition and the brake system disconnected or released, the wheel shall not detach from the front fork when a force of 100 N is applied radially outwards, in line with the drop-out slots, and maintained for 1 min. Where quick-release is fitted, and the quick-release lever is fully open and the brake system is disconnected or released, the wheel shall not detach from the front fork when a force of 100 N is applied to the wheel radially outwards, in line with the drop-out slots, and maintained for 1 min.	Checked ok. Checked ok. Checked ok.	P

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4.3.9.5	Wheels – Quick-release devices – Operating features Any quick-release device shall have the following operating features: a) it shall be adjustable to allow setting for tightness; b) its form and marking shall clearly indicate whether the device is in the open or locked position; c) if adjustable by a lever, the force required to close a properly set lever shall not exceed 200 N and, at this closing force there shall be no permanent deformation of the quick-release device; d) the releasing force of the clamping device when closed shall not be less than 50 N; e) if operated by a lever, the quick-release device shall withstand without fracture or permanent deformation a closing force of not less than 250 N applied with the adjustment set to prevent closure at this force; f) the wheel retention with the quick-release device in the clamped position shall be in accordance with 4.3.9.4.2, 4.3.9.4.3; g) the front wheel retention with the quick-release device in the open position shall be in accordance with 4.3.9.4.3. If applied to a lever, the forces specified in c), d), and e) shall be applied 5 mm from the tip end of the lever.	Quick-release fitted. Checked ok. Checked ok. Checked ok. Checked ok. Checked ok. Checked ok. Checked ok.	P
4.3.10	Rims, tyres and tubes		
4.3.10.1	General Non-pneumatic tyres are excluded from the requirements of 4.3.10.2 and 4.3.10.3.		
4.3.10.2	Tyre inflation pressure The maximum inflation pressure recommended by the manufacturer shall be permanently marked on the side wall of the tyre so as to be readily visible when the latter is assembled on the wheel. If the rim manufacturer recommends a maximum tyre inflation pressure, it shall be clearly and permanently marked on the rim and also specified in the manufacturer's instructions. It is recommended that the minimum inflation pressure specified by the tyre manufacturer also be permanently marked on the side wall of the tyre.	The maximum inflation pressure: 65 P.S.I Size: 27.5x2.4 inch.	P

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4.3.10. 3	Tyre and rim compatibility Tyres that comply with the requirements of ISO 5775-1:2014 and rims that comply with the requirements of ISO 5775-2:2021 are compatible. The tyre, tube and tape shall be compatible with the rim design. When inflated to 110 % of the maximum inflation pressure, determined by the lower value between maximum inflation pressures recommended on the rim or the tyre, for a period of not less than 5 min, the tyre shall remain intact on the rim. NOTE In the absence of suitable information from the above-mentioned International Standards, other publications are allowed to be used. See Bibliography [31], [29].	Tested with positive result. Tested pressure: 72 P.S.I	P
4.3.10. 4	Rim-wear In the case where the rim forms part of a braking system and there is a danger of failure due to wear, the manufacturer shall make the rider aware of this danger by durable and legible marking on the rim, in an area not obscured by the tyre, (see also Clause 6 z) and 5.1). NOTE A symbol referring to the instruction manual is an acceptable marking for rims for wear. Where the rim is made of composite materials, the manufacturer shall include in the manufacturer's instructions warnings of the danger of rim failure caused by wear of the braking surfaces.	Not intended for rim-brakes.	P
4.3.10. 5	Greenhouse effect test for composite wheels	Not composite wheel.	N/A
4.3.11	Front mudguard If front mudguard is fitted, when tested by the method described in the two-stage tests in 4.3.11.2 (for mudguard with stays) or 4.3.11.3 (for mudguard without stays), the front mudguard shall not prevent rotation of the wheel or obstruct steering.	Front mudguard without stays.	P
4.3.12	Pedals and pedal/crank drive system		
4.3.12. 1	Pedal tread		
4.3.12. 1.1	Tread surface The tread surface of a pedal shall be secured against movement within the pedal assembly.	Checked ok.	P

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4.3.12.1.2	Toe Clips Pedals intended to be used without toe-clips, or for optional use with toe-clips, shall have: a) tread surfaces on the top and bottom surfaces of the pedal; or b) a definite preferred position that automatically presents the tread surface to the rider's foot. Pedals designed to be used only with toe-clips or shoe-retention devices shall have toe-clips or shoe-retention devices securely attached and need not comply with the requirements of 4.3.12.1.2 a) and b).	Complied with a).	P											
4.3.12.2	Pedal clearance													
4.3.12.2.1	Ground clearance With EPAC un-laden, the pedal at its lowest point and the tread surface of the pedal parallel to the ground and uppermost where it has only one tread surface, EPAC shall be capable of being leaned over at an angle of θ from the vertical before any part of the pedal touches the ground. The values are given in Table 26. When EPAC is equipped with a suspension system, this measurement shall be taken with the suspension adjusted to the softest condition and with EPAC depressed into a position such as would be caused by a rider weighing 90 kg. Table 26 — The values of ground clearance <table><tr><td colspan="2">Angle in degrees</td></tr><tr><td>Lean angle θ</td><td>25</td></tr></table>	Angle in degrees		Lean angle θ	25	Left side > 25 °, Right side > 25 °.	P							
Angle in degrees														
Lean angle θ	25													
4.3.12.2.2	Toe clearance EPACs shall have at least C clearance between the pedal and front tyre or mudguard (when turned to any position). The clearance shall be measured forward and parallel to the longitudinal axis of EPAC from the centre of either pedal-axle to the arc swept by the tyre or mudguard, whichever results in the least clearance (see Figure 37). The values are given in Table 27. Table 27 — The values of toe clearance <table><tr><td colspan="3">Dimensions in millimetres</td></tr><tr><td rowspan="2">Toe clearance C</td><td>without foot retention</td><td>100</td></tr><tr><td>with foot retention</td><td>89</td></tr><tr><td colspan="3">NOTE Foot retention system, e.g. quick-release pedal or toe-clip.</td></tr></table>	Dimensions in millimetres			Toe clearance C	without foot retention	100	with foot retention	89	NOTE Foot retention system, e.g. quick-release pedal or toe-clip.			Without foot retention. Left side: > 100 mm, Right side: > 100 mm.	P
Dimensions in millimetres														
Toe clearance C	without foot retention	100												
	with foot retention	89												
NOTE Foot retention system, e.g. quick-release pedal or toe-clip.														
4.3.12.3	Pedal – Static strength test When tested by the method described in 4.3.12.3.2, there shall be no fractures, visible cracks, or distortion of the pedal or spindle that could affect the operation of the pedal and pedal-spindle.	Tested with positive result.	P											

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4.3.12. 4	Pedal – Impact test When tested by the method described in 4.3.12.4.2, there shall be no fractures of any part of the pedal body, the pedal-spindle or any failure of the bearing system.	Tested with positive result.	P
4.3.12. 5	Pedal – Dynamic durability test When tested by the method described in 4.3.12.5.2, there shall be no fractures or visible cracking of any part of the pedal, the pedal-spindle nor any failure of the bearing system.	Tested with positive result.	P
4.3.12. 6	Drive-system – Static strength test a) Drive-system with chain When tested by the method described in 4.3.12.6.2, there shall be no fracture of any component of the drive system, and drive capability shall not be lost. b) Drive-system with belt When tested by the method described in 4.3.12.6.3, there shall be no fracture of any component of the drive system, and the belt shall not slip/skip, fracture or cause any loss in drive capability. Smooth sliding between pulleys and belt is allowed at a rate not exceeding 1 °/s at the drive axis.	Complied with a). Multi-speed system. Tested with positive result.	P
4.3.12. 7	Crank assembly – Fatigue test When tested by the method described in 4.3.12.7.2, there shall be no fractures or visible cracks in the cranks, the bottom-bracket spindle or any of the attachment features, or loosening or detachment of the chain-wheel from the crank. For composite cranks, the running displacements (peak-to-peak values) of either crank at the point where the test forces are applied shall not increase by more than 20 % of the initial value (see 4.3.1.6).	Test frequency: 2 Hz. No fractures and visible cracks detected after test.	P
4.3.13	Drive-chain and drive belt		
4.3.13. 1	Drive-chain Where a chain-drive is used as a means of transmitting the motive force, the chain shall operate over the front and rear sprockets without binding. The chain shall conform to the tensile strength and push-out force requirements of ISO 9633:2001.	Checked ok. Tensile strength: 8 890 N, Push-out force: 980 N.	P
4.3.13. 2	Drive belt Where a belt-drive is used as a means of transmitting the motive force, the drive belt shall operate over the front and rear pulleys without binding. And when tested by the methods described in 4.3.13.2.2, there shall be no evidence of cracking, fracture or delamination of the belt drive.	Chain-drive is used.	N/A

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4.3.14	Chain-wheel and belt-drive protective device		
4.3.14.1	Requirement EPAC shall be equipped with one of the following; a) a chain wheel disc or drive pulley disk which conforms to 4.3.14.2; or b) a chain and drive belt protective device which conforms to 4.3.14.3; or c) where fitted with positive foot-retention devices on the pedals, a combined front gear-change guide which conforms to 4.3.14.4 shall be used.	A chain and drive belt protective device fitted, Complied with a).	P
4.3.14.2	Chain-wheel disc and drive pulley disc diameter		
4.3.14.3	Chain and drive belt protective device		
4.3.14.4	Combined front gear-change guide		
4.3.15	Saddles and seat-posts		
4.3.15.1	Limiting dimensions No part of the saddle, saddle supports, or accessories to the saddle shall be more than 125 mm above the top saddle surface at the point where the saddle surface is intersected by the seat-post axis.	Checked ok.	P
4.3.15.2	Seat-post – Insertion-depth mark or positive stop	Provided with a permanent, transverse mark.	P
4.3.15.3	Saddle/seat-post – Safety test		
4.3.15.3.1	General		
4.3.15.3.2	Saddles with adjustment-clamps When tested by the method described in 4.3.15.3.4, there shall be no movement of the saddle adjustment clamp in any direction with respect to the seat-post, or of the seat-post with respect to the frame, nor any failure of saddle, adjustment clamp or seat-post. If the saddle design is such that it cannot accurately test the saddle/seat-post clamp, it shall be possible to use a fixture which is representative of the saddle dimensions.	Tested with positive result.	P
4.3.15.3.3	Saddles without adjustment-clamps Saddles that are not clamped, but are designed to pivot in a vertical plane with respect to the seat-post, shall be allowed to move within the parameters of the design and shall withstand the tests described in 4.3.15.3.4 without failure of any components.	Saddle with adjustment-clamps.	N/A

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4.3.15.4	Saddle – Static strength test When tested by the method described in 4.3.15.4.2, the saddle cover and/or plastic moulding shall not disengage from the chassis of the saddle, and there shall be no cracking or permanent distortion of the saddle assembly.	Tested with positive result.	P
4.3.15.5	Saddle and seat-post clamp – Fatigue test When tested by method described in 4.3.15.5.3, there shall be no fractures or visible cracks in the seat-post or in the saddle, and no loosening of the clamp.	Test frequency: 1.5 Hz. No fractures and visible cracks detected after test.	P
4.3.15.6	Seat-post – Fatigue test		
4.3.15.6.1	General		
4.3.15.6.2	Requirement for stage 1		
4.3.15.6.2.1	Seat-post without suspension system When tested by the method described in 4.3.15.6.3, there shall be no visible cracks or fractures in the seat-post, nor any bolt failure. For composite seat-post, the peak deflection of seat-post during the test shall not increase by more than 20 % of the initial value.	Test frequency: 2 Hz. No visible cracks and fractures detected after test.	P
4.3.15.6.2.2	Seat-post with suspension system When tested by the method described in 4.3.15.6.3, there shall be no visible cracks or fractures in the seat-post, nor any bolt failure. The design shall be such that in the event of failure of the suspension system, the two main parts do not separate nor does the upper part (i.e. the part to which the saddle would be attached) become free to swivel in the lower part.	Seat-post without suspension system.	N/A
4.3.15.6.3	Test method for stage 1 (fatigue test)		
4.3.15.6.4	Requirement for stage 2		
4.3.15.6.4.1	Seat-post without suspension system When tested by the method described in 4.3.15.6.5, there shall be no fractures, and the displacement shall not exceed 10 mm during testing.	Tested with positive result	P
4.3.15.6.4.2	Seat-post with suspension system When tested by the method described in 4.3.15.6.5, there shall be no fractures. The design shall be such that in the event of failure of the suspension system, the two main parts do not separate nor does the upper part (i.e. the part to which the saddle would be attached) become free to swivel in the lower part.	Seat-post without suspension system.	N/A
4.3.15.6.5	Test method for stage 2 (static strength test)		

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4.3.16	Spoke protector EPAC bicycles with multiple free-wheel/cassette sprockets shall be fitted with a spoke-protector guard to prevent the chain interfering with or stopping rotation of the wheel through improper adjustment or damage.	Multi-speed system. Speed: 1×7. No risky part.	P
4.3.17	Luggage carriers If luggage carriers are fitted or provided they shall comply with EN ISO 11243:2016.	Normal rear mounted luggage carrier fitted. Max load: 25kg.	P
4.3.18	Road-test of a fully-assembled EPAC When tested by the method described in 4.3.18.2, there shall be no system or component failure and no loosening or misalignment of the saddle, handlebar, controls or reflectors. The EPAC shall with or without assistance exhibit stable handling in braking, turning and steering, and it shall be possible to ride with one hand removed from the handlebar (as when giving hand signals), without difficulty of operation or hazard to the rider.	Tested with positive result.	P
4.3.19	Lighting systems and reflectors		
4.3.19.1	General EPAC shall be equipped with reflectors at the front, rear and side. EPAC shall be equipped with lighting systems and reflectors in conformity with the national regulations in the country in which EPAC is marketed, because national regulations for lighting systems and reflectors differ from country to country.	The lighting systems and reflectors were not checked according to the national regulations. It is reminded to the customer to follow national regulations for lighting systems and reflectors before used on public roads.	P
4.3.19.2	Wiring harness When a wiring harness is fitted, it shall be positioned to avoid any damage by contact with moving parts or sharp edges. All connections shall withstand a tensile force in any direction of 10 N.	Tested with positive result.	P
4.3.19.3	Lighting systems The lighting system consists of a front and a rear light. These devices shall comply with the provisions in force in the country in which the product is marketed. If there are no forced provisions of these devices, the lighting system shall comply with the requirements of ISO 6742-1:2015.	Front: white, Rear: red. See clause 4.3.19.1.	P
4.3.19.4	Reflectors		
4.3.19.4.1	General These devices shall comply with the provisions in force in the country in which the product is marketed. If there are no forced provisions of these devices, the retro-reflective devices shall comply with the requirements of ISO 6742-2:2015.	See clause 4.3.19.1.	P

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4.3.19. 4.2	Rear reflectors Rear reflectors shall be red in colour.	Colour: red.	P
4.3.19. 4.3	Side reflectors The retro reflective device(s) shall be either a) a reflectors fitted on the front half and on the rear half of EPAC. At least one of these shall be mounted on the spokes of the wheel. Where EPAC incorporates features at the rear wheel other than the frame and mudguard stays, the moving reflector shall be mounted on the front wheel; or b) a continuous circle of reflective material applied to both sides of each wheel within 10 cm of the outer diameter of the tyre. All side reflectors shall be of the same colour, either white (clear) or yellow.	Side reflectors fitted; Colour: yellow.	P
4.3.19. 4.4	Front reflectors Front reflectors shall be white (clear) in colour.	Colour: white.	P
4.3.19. 4.5	Pedal reflectors Each pedal shall have reflectors, located on the front and rear surfaces of the pedal. The reflector elements shall be either integral with the construction of the pedal or mechanically attached, but shall be recessed from the edge of the pedal, or of the reflector housing, to prevent contact of the reflector element with a flat edge placed in contact with the edge of the pedal.	Colour: yellow.	P
4.3.20	Warning device Where a bell or other suitable device is fitted, it shall comply with the provisions in force in the country in which the product is marketed.	No warning device fitted.	N/A
4.3.21	Thermal hazards A warning shall be placed on the surface if the temperature of the hot accessible surface could be above 60 °C (see EN ISO 7010:2020, symbol W017). Brake systems are excluded from this requirement.		N/A
4.3.22	Performance levels (PLrs) for control system of EPACs		N/T
4.4	List of significant hazards		

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5	Marking, labelling		
5.1	Requirement	Checked ok.	P
5.2	Durability test When tested by the method described in 5.2.2, the marking shall remain easily legible. It shall not be easily possible to remove any label nor shall any label show any sign of curling.	Tested with positive result.	P
6	Instruction for use	User manual submitted and checked Ok.	P
Annex A	Example of relation between speed, torque and current (informative)		
Annex B	Electromagnetic compatibility of EPAC and ESA (normative)		
Annex C	Steering geometry (informative)		
Annex D	Dummy fork characteristics (normative)		
Annex E	Explanation of the method of least squares for obtaining line of best fit and ± 20 % limit lines for braking performance linearity (informative)		
Annex F	Fork mounting fixture (normative)		
Annex G	Wheel/tyre assembly - Fatigue test (informative)		
Annex H	Light, warning device, on/off symbols (normative)		
Annex I	Walk assist mode symbols (informative)		
Annex ZA	Relationship between this European Standard and the essential requirements of EU Directive 2006/42/EC aimed to be covered (informative)		

*** End of test report ***