

Product Approval Sheet

Customer Name	/
Customer Number	CNF569
Product Number	30502012901 305310340AB/305310341AB 30505009203/30505009204
Product Name	XRotor Pro-200A-14S-FOC-RTF-CNF5 69 UAVM-X13-13825-60KV-BLACK-CW (CCW) -G1-CNF569 5620 blade clamp-V1-CW (CCW) -CNF569
Sample stage	/
Sample version	/
Date of Delivery	/

Approved by Hobbywing			Approved by customer
Prepared By	Reviewed By	Sales Representative	Approved by
Hong Xueyong	Zhuo Dong		

Revision History			
Version	Revised Content	Date	Made By
A0	initial issue	2023-11-16	Zhang Lianyin
A1	Update the motor parameters, update the motor shape diagram, update the program, add the positioning block installation diagram, packaging information.	2023-12-13	Hong Xueyong
A2	Update the gold plug to 6.0 gold plug, update the motor shape diagram, and update the electric adjustment combination shape diagram.	2024-12-4	Hong Xueyong
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In case of any special requirements on the product quality, please contact our sales.

Thanks for offering this opportunity of sample submittal&approval, please return this form to us for filing after confirmation.

catalogue

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1. Purpose:

1.1. The product specifications in this letter of recognition are to ensure that the quality assurance of the product in design, production and sales is based on evidence.

2. Motor function requirements:

order number	project	ask	remarks
1	54 VDC no-load current (A @ PWM 1940 us)	≤ 8.3 __	Factory inspection items, current tester
2	54 VDC no-load speed (rpm @ PWM 1940 us)	$3145 \pm 5\%$	Factory inspection item, current tester
3	Internal resistance of motor ($m\Omega$ ambient temperature: 25°C)	<u>13.0-14.7</u>	Factory inspection items, DC low resistance sorter
4	insulation grade	H	Inspection items at factory
5	Overall voltage resistance (mA AC750V/50 Hz, 3s duration, leakage current)	≤ 1 mA	Factory inspection items, pressure tester
6	Single-sided rotor balance (mg @ 1600 rpm)	≤ 20	Factory inspection items, dynamic balance instrument
7	Turn (view from the shaft extension)	Clockwise / counterclockwise	Inspection items at factory, visual inspection
8	noise	No abnormal sound (interference friction, foreign matter, bearing damage, magnetic steel loosening, etc.)	Inspection items at factory, listen
9	Motor slot pole number	Use a 36-slot 42-pole design	
10	Motor weight (g)	2775 ± 35	Inspection items for factory inspection, electronic scales (random sampling)
11	Motor outer diameter (mm)	$\Phi 147.9 \pm 0.2$	Inspection items at factory, micrometer (random sampling)
12	Motor length (mm)	62 ± 0.2	Inspection items at factory, caliper (random sampling)
13	Shaft extension diameter (mm)	$\Phi 15- 0.01/-0.05$	Inspection items at factory, micrometer (random sampling)
14	Shaft extension (mm)	$10+0.1/-0.15$	Inspection items at factory, caliper (sampling)

15	Base mounting hole distance (mm)	$\Phi 72 \text{ mm}-4*\text{M6}$	Inspection items for factory inspection, 2D/inspection kit
16	Blade installation hole distance (mm)	$\Phi 40 \text{ mm}-4*\text{M5}$	Inspection items for factory inspection, two-dimensional/inspection tool
17	Length of three-phase wire (mm)	100 ± 10 (6.0 mm gold plug)	Inspection items at factory, straight ruler
18	Stator and rotor clearance (mm)	$0.4 +0.15/- 0.155$	Inspection items at factory: feeler gauge
19	Face runout (mm)	≤ 0.06	Inspection items at factory, dial gauge
20	Radial runout (mm)	≤ 0.08	Inspection item at factory, dial gauge
21	Overall appearance	No dirt, scratches, residual glue, electroplating defects, etc	Visual inspection items for factory inspection

22	Appearance of three-phase lines	Surface is protected by high temperature resistant pipe, and the wire skin is not damaged or broken	Visual inspection items for factory inspection
23	Color of three-phase wire heat shrink tube	Orange, yellow and blue are distinguished, and the sleeve should completely wrap the root of the gold plug	Visual inspection items for factory inspection
24	Gold-plated exterior	6.0 Gold plug head, no oxidation, no blackening, no crimping and other defects	Visual inspection items for factory inspection
25	pigment	black	Visual inspection items for factory inspection
26	Logo	No leakage, font skew, damage, etc	Visual inspection items for factory inspection
27	other	See the attached drawing of the shape of the attachment	Visual inspection items for factory inspection

2.1. Electric adjustment function parameters:

order number	project	ask	remarks
1	54 VDC no-load current (A)	≤ 8.6 _____	The factory inspection items are equipped with 13825-60 KV motor_ _
2	54 VDC no-load speed (rpm)	<u>3140\pm3%</u>	The factory inspection items are equipped with 13825-60 KV motor_ _
3	Low voltage start (30 VDC @ PWM 1200 us)	The product started smoothly	The factory inspection items are equipped with 13825-60 KV motor_ _
4	Adjust the ID	1, 2, 3, • • • (can be set normally)	The factory inspection items are equipped with 13825-60 KV motor_ _
5	Electrical adjustment status code	32768, 32776, • • (can feedback normally)	The factory inspection items are equipped with 13825-60 KV motors_ _
6	Undervoltage protection threshold (VDC)	"Beep beep--beep beep" is called, and self-inspection is not passed	Inspection items at factory
7	Overvoltage protection threshold (VDC)		Inspection items at factory

8	dynamic current (A)	80A	The operating environment is at room temperature, the working voltage is 54V, and the motor is cooled directly below the blade (the temperature in non-sealed environment is less than or equal to 60°C)
9	Instantaneous current (A)	200A	The heat dissipation condition is the same as above, and the time is 3S (the temperature in non-sealed environment is less than or equal to 60°C)
10	Instantaneous protection current (A)	405A	
11	Pulse width calibration	Calibration is not supported	
12	Signal loss protection	The signal line is pulled out for 0.3s, and "beep-beep" is made; the signal line is re-plugged to restore the output power	For factory test items, input voltage 54 VDC input PWM 1200 us
13	Stumbling block protection	The motor is stuck, and the motor does not start for 1s; the motor can start normally after removing the stuck device	For factory inspection items, input voltage 54 VDC input PWM 1200 us
14	Electrical adjustment size length width height (mm)	118*69.1*37 (± 1.5 mm)	Inspection items at factory, micrometer (random sampling)
15	Controller installation hole distance (mm)	65 * 48, 4-M3 screws	Inspection items for factory inspection, two-dimensional/inspection tool
16	Controller CAN resistance (Ω)	not have	Inspection items at factory, multimeter (random sampling)

17	Power cord length (mm)	60±10	Inspection items at factory, caliper (random sampling) length of exposed without head
18	Length of three-phase wire (mm)	75±10	Inspection items for factory inspection: length of exposed caliper (random sampling) without head
19	Signal line length (mm)	HW 5114 Signal line-110 MM-CNF 569 customer supply	Inspection items for factory inspection, caliper (random sampling) length of exposed head without head
20	Color of the machine signal line	Green-CH, blue-CL, red-S, black-GND2 (with circle-)	Visual inspection items for factory inspection
21	Color and specification of power cord	HW5114 Power cord-black and red-CNF 569 customer supply	Visual inspection items for factory inspection
22	Requirements for signal lines and tensile force (kgf/min) of the whole machine	Bending is required to be more than 1000 times (2*90°, 20-25 times/min, load 1kg) The pull-off force of terminal pair core is greater than or equal to 3.0 The pull force of terminal pair to rubber shell is greater than 1.0	Factory inspection items, bending machine/tensile meter
23	CAN communicating protocol	version number	Inspection items at factory
24	PCB hardware version (CAN-ESC)	PCB-HW5114-YT2-V2.0-blue	Inspection items at factory
25	Hardware version (CAN)	SMT- HW5114- YT2-V2.0-14S- CAN	Inspection items at factory
26	Electrical control program version (CAN-ESC)	HW5114YT2V1C1420-C06X13825S60ZT2-62239081-HW	Inspection items at factory
27	Electrical CAN communication version	HW318-EXT-V2.0-CAN-03.5.15_TH2-B04.1.12-61238141-HW	Inspection items at factory
28	overall unit	No dirt, scratches, residual glue, electroplating defects, bumps and other defects	Visual inspection items for factory inspection
29	signal wire	The wire is not damaged or broken	Visual inspection items for factory inspection

30	power line	The wire is not damaged, broken or other defects	Visual inspection items for factory inspection
31	Three-phase line	The wire is free from damage, fracture and other defects, and is protected by black heat shrinkage braided tube	Visual inspection items for factory inspection
32	Color of three-phase wire heat shrink tube	Orange, yellow and blue are distinguished, and the sleeve should completely wrap the root of the gold plug	Visual inspection items for factory inspection
33	Gold plating	6.0 The gold plug head is not oxidized, blackened, or pressed	Visual inspection items for factory inspection
34	pigment	black	Visual inspection items for factory inspection
35	Logo	Customized logo, no missing stickers, font skew, damage, etc	Visual inspection items for factory inspection
36	other	See the attached drawing for the shape of the attachment	

2.2. Blade function parameters:

order number	project	specifications	remarks
1	pulling (kg)	The maximum pull reaches 57+ at 2400 RPM	
2	Weight of single blade (g)	293 ± 3	Inspection items at factory: electronic counting scale
3	material quality	Clamps: Aluminum Blade: nylon + carbon fiber	
4	Use ambient temperature (°C)	-20~60	
5	Storage temperature (°C)	5~35	
6	Storage humidity (RH)	15%~75%	
7	Maximum speed (RPM)	2450	Operating at the upper limit of overspeed will have structural risks and safety risks
8	Carbon plastic blades	The blade is not damaged, cracked, bulging, obviously shrinkage and depression, missing glue, the inlet and the blade need to be cleaned up; Surface floating fiber no agglomeration, no obvious stress marks; The installation surface is flat without obvious shrinkage; The trace code is clearly visible. If there is a screen printing pattern, it should be intact and clear and the position should be accurate.	Different materials should not be used in the same rack

2.3. Motor + electric control CAN ID and steering distribution:

order number	project	ask	remarks
1	CAN ID And steering distribution	Motor 1---ID:, direction: CCW	Inspection items at factory
2		Motor 2---ID:, direction: CCW	Inspection items at factory
3		Motor 3---ID: CW	Inspection items at factory
4		Motor 4---ID: CW	Inspection items at the factory

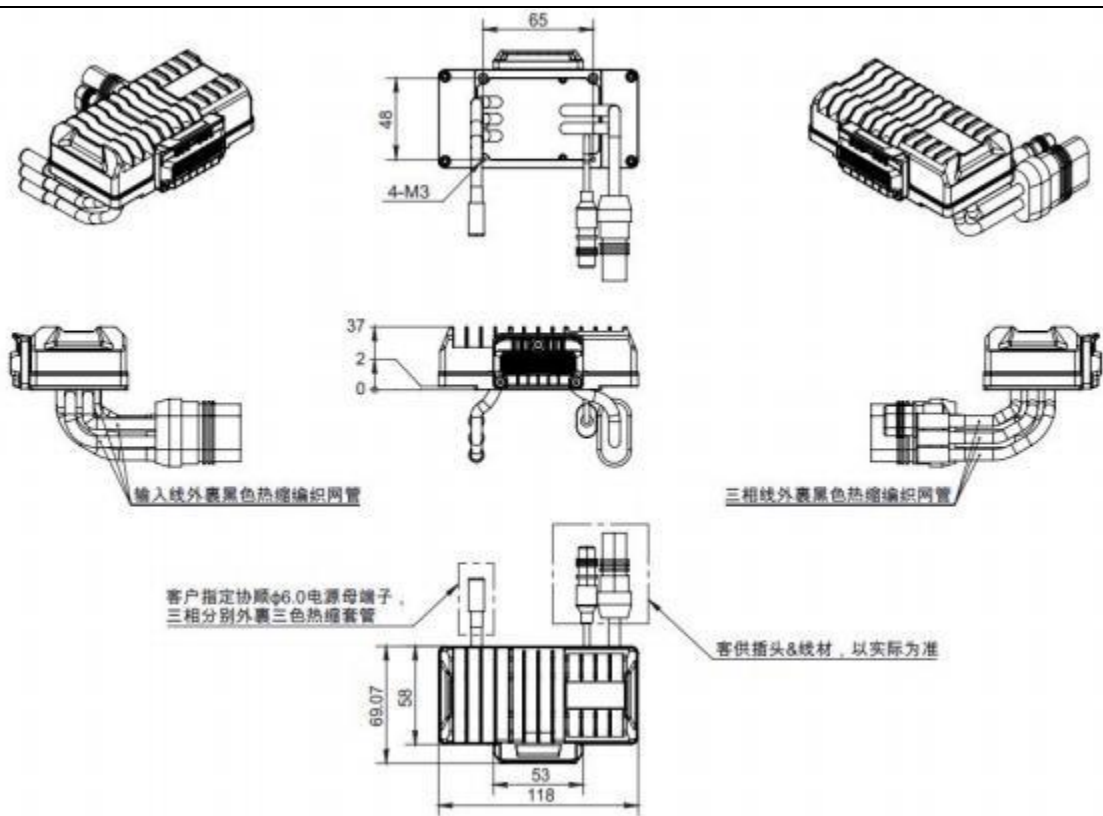
3. Environmental adaptability and life requirements:

order number	project	specifications	remarks
1	CASS salt spray test (h)	≥ 24	Incoming material inspection (sampling)
2	levels of protection	IPX 6	Inspection items (sampling)
3	High and low temperature start (°C)	High temperature +65/ low temperature -20, can be started normally 20 times	Inspection items (sampling) at factory
4	hot operation (h)	≥ 2 (+65°C, load, continuous operation, PWM1300-1800 us)	Inspection items for factory inspection (full inspection)
5	cold operation (h)	≥ 2 (-20°C, load, continuous operation, PWM1300-1800 us)	Inspection items for factory inspection (full inspection)
6	random vibration test	Frequency range: 5-40 Hz, power spectral density: 3 dB/ Oct g^2 / Hz Frequency range: 40-200 Hz, power spectral density: 0.1 g^2 / Hz frequency range Circulation: 200-300 Hz, power spectral density: -12 dB/ Oct g^2 / Hz placed at high temperature +65°C, start and stop 2000 times, function normal	Inspection items (sampling) at factory

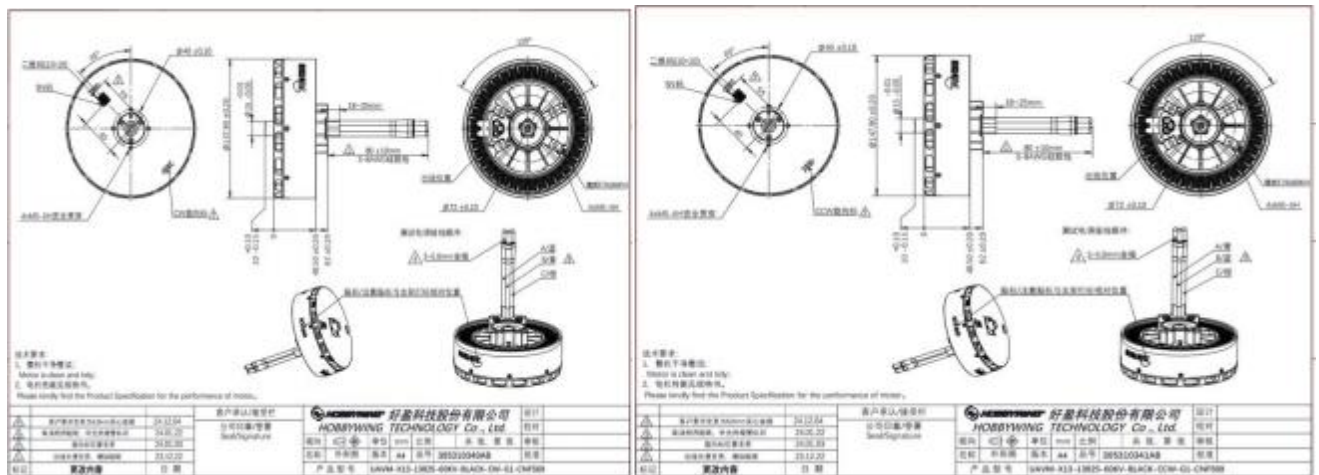
7	Average downtime (h)	More than 500 (load 5620 blades, motor bearing life more than 500h) _ (The wiring harness is not damaged or broken, and there are no safety faults, such as drive loss of step, controller burnout, CAN communication feedback is normal, the electric adjustment lamp is faulty, the structural parts are not damaged, worn, cracked or broken, The performance attenuation shall not exceed 5%; the motor shall run for more than 500h, and there shall be no loosening of the stator and rotor clearance, motor jamming, shaft end, rust, abnormal sound, etc.	
8	Electromagnetic Compatibility (V/m)	≥ 15 (test frequency range 30M-1 G Hz, high frequency interference) ≤ 37 dB (test frequency range 30M-1 G Hz, distance 3m, external radiation)	
9	Operating temperature range (°C)	-20~60	
10	Working humidity range (RH)	15%~95%	
11	Storage temperature range (°C)	-20~30	
12	Storage humidity range (RH)	30%~70%	

4. Shape diagram:

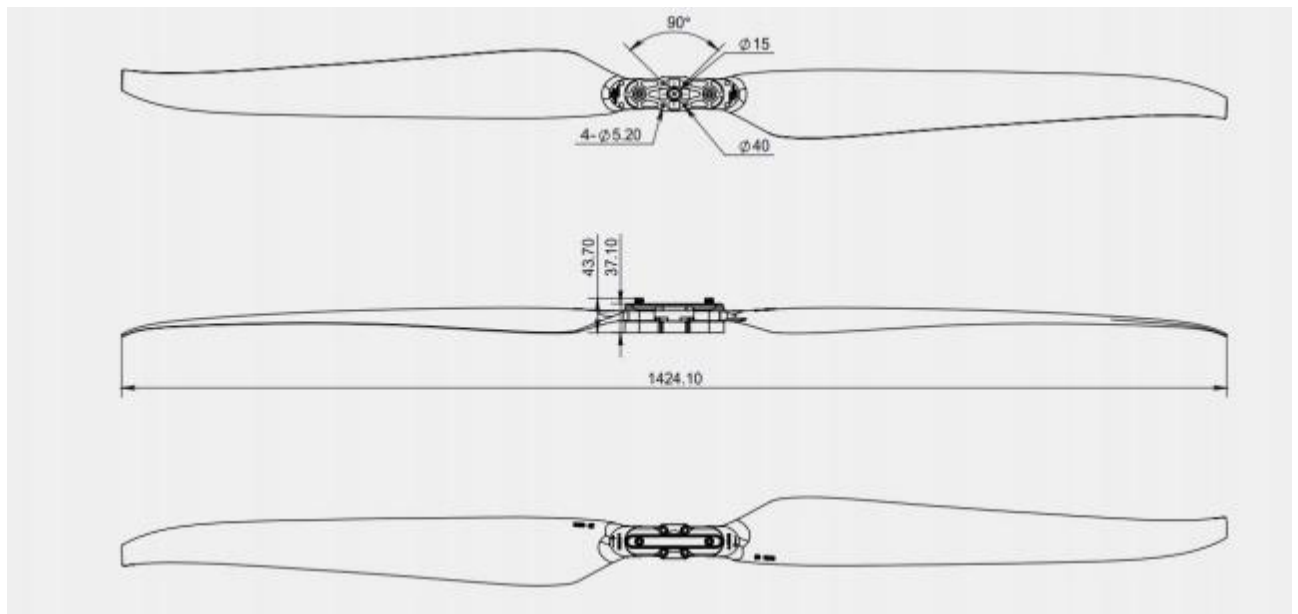
4.1. Electric adjustment combination shape diagram:



4.2. Single motor shape diagram:



4.3. Blade shape diagram:



5. Note:

5.1. Precautions:

5.1.1. Do not reverse the positive and negative power supply, otherwise the product will be fatally damaged and cannot be recovered;

5.1.2. Please do not disassemble the product by yourself. If the product has poor performance, please send it back to our company for maintenance;

5.1.3. The products provided shall be used under the conditions specified in the specification. If your application exceeds the limit of the specification, we do not guarantee the quality of the products;

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- 5.1.4. When welding the electric regulator, it is recommended to use a constant temperature soldering iron to control the welding temperature. The electric soldering iron with high power is easy to damage the electric regulator during welding;
- 5.1.5. Pay attention to the working environment of the motor, avoid iron and other objects being sucked or inhaled, resulting in noise and even reduce the reliability of the product;
- 5.1.6. Please do not disassemble the product by yourself. If the product is defective due to quality problems, please contact us and send it back to us for after-sales treatment;
- 5.1.7. The products provided shall be used under the conditions specified in the specification. If your application exceeds the limit of the specification, we do not guarantee the quality of the products;
- 5.1.8. Please do not let the motor fall or collide with the motor. If such a situation occurs, even if the motor can be used at that time, the quality will not be guaranteed;
- 5.1.9. The customer shall confirm the actual assembly state of the motor, verify the applicability in actual use, and reasonable matching can prolong the service life of the motor;
- 5.1.10. The root of the folding blade is printed with a traceability code, and one traceability code corresponds to one blade (two blades), which needs to be traced with the same traceability
- The blade of the code can not be replaced at will, otherwise it may cause vibration during operation;
- 5.1.11. After the blade falls or is subjected to the impact equivalent to this, the blade will be deformed or cracked, etc. Do not use it any more;
- 5.1.12. Do not be in a harmful environment with corrosive gases (SO₂, NO₂, CL₂) and substances containing harmful gases (especially
- This product is used in the place where silicone series, cyano series, phenol series) are used. In addition, it is necessary to confirm in advance whether the above substances exist in your companys products. If they exist, they may cause corrosion and affect life;

5.1.13. Product storage should avoid the above corrosive gases and harmful environment. Especially when the inventory is long, more attention should be paid.

The storage conditions are normal temperature and humidity for less than 6 months;

5.1.14. Electrically adjusted products and motors are uniformly placed in the pearl cotton box to organize the wire, and then put into the outer packaging box, with pearl cotton on each layer

Place a 460*320*5MM red cotton pad on the box, with an outer box size of 460*370*345mm. Transportation can only proceed after meeting the packaging requirements, and during transportation, avoid severe compression, collision, and vibration; suitable for transportation by car, train, ship, plane, etc.;

5.1.15. Electric adjustment must be packaged with anti-static packaging materials, and the products should not be squeezed or collided with each other; (Note)

5.1.16. The packaged electric adjustment should be placed in a dry, dustproof and moisture-proof packing box, and the foam cotton or bubble bag should be used to fill the box body to prevent the product from moving in the packing box;

5.1.17. The product name, model, quantity, manufacturer and its contact address, date of manufacture should be marked on the outside of the packing box, as well as "take care" and "upward" marks;

5.1.18. Attached packaging pictures:



Note: Due to the change in the motor and the power cord plug, please update the packaging images later. For products shipped with bare boards, ensure that the wire plugs do not overlap on the PCB board to prevent damage to electronic components; and when handling the product, always wear an effective static wrist strap to avoid damaging the product due to static electricity;

5.2. Warning:

5.2.1. Prohibit short circuit of electric adjustment. Prohibit short circuit between positive and negative terminals of the power supply, between MOS and motor during use

Short circuit between wiring, otherwise the electric adjustment will be damaged and dangerous;

5.2.2. Do not discard damaged electric switches at will. For damaged electric switches that cannot be repaired, do not discard them at will, and special recycling treatment should be carried out;

5.2.3. Do not operate this electric switch in a strong static environment. When operating, using and installing this electric switch, attention should be paid to the protection of static electricity;

Do not use this electric adjustment in places where static electricity is easy to produce, because high voltage static electricity is easy to damage the electric adjustment, so that the electric adjustment can not work normally.

5.3. Other requirements:

5.3.1. If your company has new parameter requirements, you must negotiate and confirm with us in advance. Otherwise, the products shipped shall be consistent with this specification sheet,

The parameters not specified in this specification are the same as the samples finally acknowledged by your company;

5.3.2. Reasonable matching and use can prolong the service life of electric adjustment;

5.3.3. Unless otherwise agreed, we reserve the right to use it under the condition that the performance and life of the product remain unchanged or improved

The right to use parts from various sources of the same specification, and no prior notice shall be given for changes in raw materials;

5.3.4 Your company shall deliver the products to us in accordance with the provisions of this Acknowledgment regarding "working/storage environment" and "instructions for use"

The products shall be stored, kept and used. Otherwise, our company shall not be responsible for all losses caused thereby.