**Flow Drainage Emergency Rescue System (3,000-4,000 Cubic Meters/Hour) Technical Specifications**

## I.Technical indicators of the entire vehicle

1、Basic parameters of the whole vehicle

| | | | |
|---|---|---|---|
| **Product name** | High flow drainage emergency vehicle | Total Weight(kg) | 19000 |
| **Dimensions (mm)** | 9580（10690）×2550×3900 | Curb weight (Kg) | 18870 |
| **Number of passengers allowed in the cab** | 2 (people) | Approach angle/ departure angle | 19/11(°) |
| **Front suspension/rear suspension (mm)** | 1492/2388（2358） | Maximum speed (Km/h) | 90 |
| **Axle load (Kg)** | 6000/6500/6500 | | |

2. Chassis reference technical specifications (to be provided by the customer)

2.1 Choose the heavy-duty truck Shandeka ZZ5356V524MF1 (National VI emission)

special operation chassis with a drive type of 6 × 4.

2.2 Cab structure: 2-door single row cab, capable of accommodating 2 people.

2.3 Emission standards: National VI.

2.4 Engine power: MC13.54-61 (540 horsepower).

2.5 The equipment inside the cab is standard equipment from the original chassis factory (including air conditioning).

2.6 Wheelbase: 5200mm+1400mm.

## II、 System Overview

2.1 Function:

The high flow drainage emergency vehicle has the characteristics of high efficiency, high speed, and lightweight, and can provide multifunctional uses such as on-site lighting, which is at the forefront of domestic standards. The vehicle emergency drainage equipment is integrated, with simple settings such as pumps, generators, control cabinets, drainage hoses, and lighting fixtures. It has a fast drainage response

speed and achieves the purpose of emergency drainage.

2.2 Applicable occasions:

Municipal and highway emergency drainage; Assault flood control and drainage, cofferdam pumping; Drought resistance and disaster relief, agricultural irrigation; Extract and clean up polluted water surface; Pumping and drainage in areas without fixed pumping stations and power sources. It is particularly suitable for drainage in urban underground garages, highway tunnels, culverts, subways, factories, mines, and other low rise environments that are not suitable for personnel to enter, ensuring the safety of emergency rescue personnel to the greatest extent possible.

2.3 Main components:

The high flow drainage emergency vehicle is an independent drainage emergency system. The system consists of a main vehicle, a high flow tracked self-propelled drainage vehicle, a hydraulic control system, and an adjustable lighting system. With a user-friendly operation mode, it provides real-time updates on the current operating status, faults, and troubleshooting measures, allowing operators to quickly troubleshoot according to the prompts. Adopting internationally renowned

hydraulic components;

2.4 Technical features:

☆ Fully hydraulic, small track walking, water pump and auxiliary mechanism are all driven by hydraulic, without any electrical safety hazards;

☆ High flow rate and head;

The water pump has a simple flow channel and strong anti clogging properties, which can be used for various complex drainage conditions;

☆ Wired+wireless remote control, wireless remote control distance of 100m;

The tracked vehicle can be immersed in water for a long time and operate normally.

2.5 Compliance with Standards

The entire vehicle meets the requirements of GB7258- Technical Conditions for Motor Vehicle Operation Safety and relevant national standards.

The vehicle is suitable for ambient temperatures ranging from -30 ℃ to+50 ℃. Various instrument components can maintain good working condition in this ambient temperature.

All instruments comply with the requirements of the Metrology Law of the People's Republic of China.

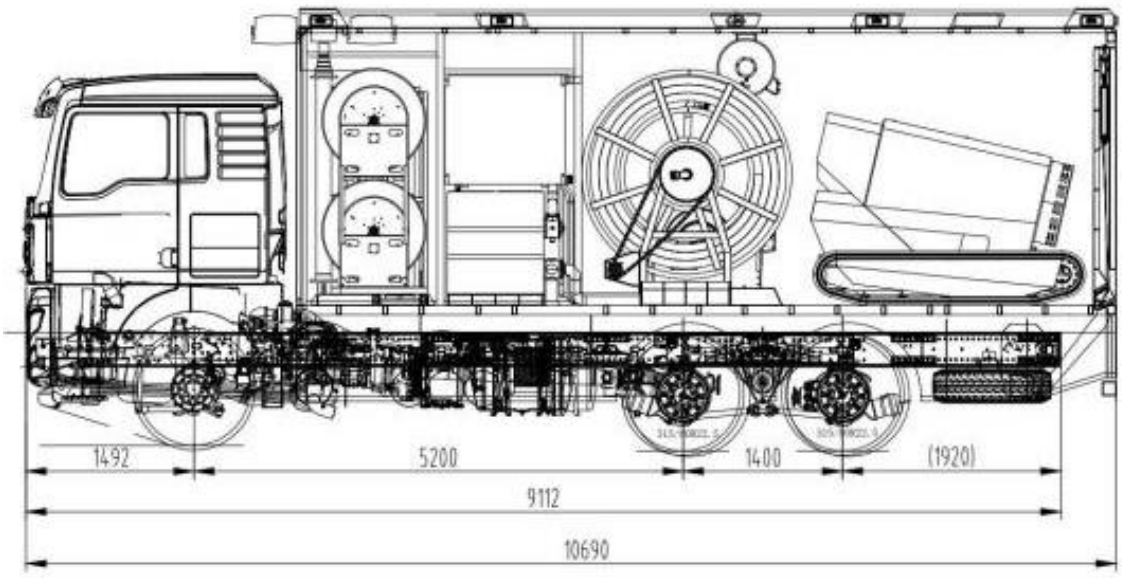
All external interfaces comply with the GB12514-2006 fire interface standard.

**III. Upper cargo body**

The whole vehicle is equipped with a containerized structure, and the frame is welded with high-quality materials. The outer skin is made of high-quality aluminum alloy plate, which meets the requirements of lightweight and vehicle strength. The car door

adopts professional customized profile doors, with high reliability and good sealing. The floor surface inside the cabin is made of high-quality anti slip aluminum patterned board, which is anti slip and anti-corrosion; The fire retardant rating meets the GB8624B1 standard. The main color of the high-quality vehicle is fire red due to the paint process.

**Interior layout diagram:**




Drainage hose placement room: the front of the carriage is a drainage hose placement room, and the drainage pipe is a polyurethane hose with anti-aging properties; Size: Inner diameter of hose: 301mm, pipe thickness size: 2.1mm; length: 120m, divided into 4 sections; Pressure bearing: working pressure 0.45MPa, burst pressure 1.2MPa; The cut of the pipe mouth should be level, and the diameter of a single water pipe should be consistent. It needs to be used in conjunction with the corresponding quick connector. The hydraulic device is used to retract the drainage hose, and each winch can retract and retract a 30m drainage pipe. The water hose

retraction rack is driven by hydraulic pressure and can be fully lowered when horizontally extended out of the carriage.

Mobile drainage pump station and hydraulic system placement room: The middle section of the carriage is used to park hydraulic devices, hydraulic oil tanks, and place oil pipe winches. The rear door of the carriage is a downward opening, which serves as a rear door during driving to protect the facilities inside the car. When the sub car gets off, it can be used as a ladder to ensure smooth boarding and alighting of the sub car.

**IV. Mobile drainage pump station - a complete rubber tracked drainage pump station, mainly composed of a rubber tracked chassis, hydraulic driven water pump, pump station hydraulic system and hydraulic pipelines, control system, etc.**

4.1. System composition

(1) Integrate specialized drainage equipment such as water pumps onto rubber track chassis and use chassis power take-off; The rubber track drainage pump station is mainly composed of a rubber track chassis, a hydraulic driven water pump, a pump station hydraulic system and hydraulic pipelines, a control system, etc;

(2) Water pump: Water pump drive mode: hydraulic direct drive;

The rated flow rate of the water pump is 3000m ³/h; Lift 15m; 4000 m ³/h, lift 10m

The height of the water pump suction port can be adjusted, and the minimum depth of the pump port from the water surface during operation is ≤ 0.3m;

The pump suction port is a surrounding water inlet structure, and the bottom can directly touch the ground; And install an anti suction pit bottom plate on the suction end face of the pump; It can prevent the pump station from tipping over when it needs to be relocated and drained due to prolonged suction of the pit.

(3) Drain hose: the drain hose is a polyurethane hose with anti-aging property;

Size: Inner diameter of hose: 300 ± 3mm, wall thickness size: 2.3 ± 0.3mm;

Length: 120m, divided into 4 sections;

Pressure bearing: working pressure 0.3MPa, burst pressure ≥ 1.0MPa;

The cut of the pipe mouth should be flat, and the diameter of a single water pipe should be consistent, and it needs to be used in conjunction with the corresponding quick connector. Retracting and releasing drainage hose winch: used for retracting and releasing drainage hoses, each winch can retract and release 25m of drainage pipes.

(4) Quick connector: Made of 3-speed internal buckle aluminum alloy, with a diameter of 300mm, a total of 4 sets, and equipped with one set for each section of water pipe. Installed at both ends of the drainage hose to facilitate the connection between water pipes.

(5) Walking performance:

1. Hydraulic control, self-propelled, capable of climbing slopes ≥ 35 degrees;

2. Walking speed 0-5km/h (walking speed);

(6) Performance:

1. The pumping position of the water pump can be remotely adjusted according to the actual water accumulation conditions on site; The system water pump is designed with an anti suction pit structure and is equipped with a device; There is no need to worry about tipping over when adjusting the position of the water pump on non hard surfaces.

2. The farthest drainage distance that can be remotely operated to move the pump station away from the drainage operation of the truck is 60m.

(7) Oil pipe: hydraulic quick change connector is used to connect with the trunk car, and the oil pipe material is anti-aging. Oil pipe winch: When the mobile drainage pump station is driven away from the carriage, the winch can be dragged and rotated by the pulling force of the mobile drainage pump station itself.

(8) Waterproof performance level ≥ IP66.

(9) It has anti electric shock function.

(10) Continuous stable operation time ≥ 72 hours.

The hydraulic system adopts forced air cooling and forced water cooling,

which can work stably for a long time;

The hydraulic system has undergone a 1.5 times pressure test to ensure long-term stable operation.

4.2. System Characteristics

1. The system drainage pump is designed with dual outlets, which is compatible with the double row drainage main line and can reduce drainage pressure loss;

2. The system adopts DN300 double main drainage water belt, with low drainage pressure loss;

3. The system is equipped with a drainage belt of 120 meters, and the double trunk line can drain a distance of 60 meters;

4. The hydraulic hose reel of the system is equipped with inlet and outlet oil pipes of 60 meters each, so that the drainage module is 60 meters away from the main vehicle;

5. The maximum drainage flow of the system is 4000 cubic meters per hour, with greater drainage capacity.

4.3 System Technical Specifications

4.3.1. ATV tracked self-propelled drainage module

Function: Used for carrying drainage pumps and dragging drainage hoses and hydraulic power hoses.

Composition: Composed of chassis frame, left and right tracks, and electric

proportional hydraulic control valve;

Walking ability: able to adapt to various non road water intake conditions, with a wading depth of over 1000mm, convenient for system drainage operations;

Walking speed: 0-3km/h;

Walking performance: hydraulic power, electronic control; Self propelled, capable of climbing slopes or stairs at an angle of ≥ 35 degrees;

Control mode: wireless remote control+wired control+emergency manual.

4.3.2. Drainage system

The drainage system consists of chassis engine, transmission system, hydraulic system, automatic hose reel, floating pump, etc.

4.3.2.1 Hydraulic system

System composition: The hydraulic system consists of a plunger pump, control valve, hydraulic oil tank, inlet and outlet hose reel, hydraulic motor, etc.

Power transmission: The system provides hydraulic power through an engine driven hydraulic piston pump, and under the control of a hydraulic valve, it supplies hydraulic hose to the hydraulic motor to drive the suction pump.

4.3.2.3 Waterproof performance: IP66, the drainage pump is driven by hydraulic pressure, avoiding the possibility of electric shock from the electric pump drainage pump.

4.3.2.4 Continuous stable operation time: ≥ 6h

4.3.2.5 Automatic hydraulic hose reel

The reel of hydraulic hose is composed of reel body (high hardness powder coating), 60m oil inlet and return anti-aging hose, rewinding mechanism, etc.

The hydraulic hose reel can be automatically wound up during recycling.

When the ATV is retracted, the hydraulic hose reel can be controlled to adaptively retract or release. Connect the hydraulic quick change connector to the hydraulic module on the vehicle.

4.3.2.6 Drainage Belt

Water hose reel: electrically controlled, quantity 4 sets.

Model: 03-300-30

Water hose diameter: DN300

Water hose length: 30m/piece

Work pressure: 0.3MPa

Blasting pressure: 1.5 MPa

Working temperature: -10 ℃~+50 ℃

Flexibility: The water hose has good flexibility and can easily bend and fold in half

Interface type: Connected by DN300 high-strength aluminum alloy forged joints (interface type consistent with international standards and fully interchangeable).

4.3.2.7 Control System

Adopting full hydraulic mechanism control, wireless remote control+wired control+emergency manual control; Wireless remote control radius ≥ 150 meters.

The fully automatic or manual control and display system can display engine speed, water pump speed, etc. in real time. When the system is abnormal, it can

automatically sound and light an alarm. All control handles, switches, and indicator lights are marked in Chinese.

4.3.2.8 Control System

The system can control the start stop and speed regulation of the engine.

The control system is controlled by modules and can display engine speed and system voltage in real time. When the oil pressure is low, the water temperature is high, or the voltage is low, it can automatically sound and light an alarm.

**V. Lift remote control lighting:**

4PCS 1000W 24V DC metal halide lamp heads, capable of rotating 360 degrees left and right, and 360 degrees up and down; Capable of lifting up to 4.5 meters; Single lamp brightness ≥ 20000 Lux.

Model: YZH4-4.04CA

Power: 4 × 1000W

Maximum working height: 7m (ground clearance)

Horizontal rotation: ≥ 360 °

Vertical rotation: ≥ 60 °

Installation position: middle position of the front of the equipment box

Distribution box: equipped with functional control keys, instruments, and all kinds of operations are centralized on the control box, and each operation key is marked with obvious operation identification. And it is equipped with one 220V input interface and two 220V output interfaces, which can be powered by a generator or through mains electricity for lighting and other equipment. There is an overload protection system

and monitoring instruments.

## VI. Hydraulic tailgate system

It has the functions of flipping and folding, which can not only close the rear of the car, but also flip and open the floor to meet the up and down functions of the robot.