

# **POWERSTAR Fuel Bowser**

## **User's Manual**



**POWERSTAR TRUCKS INDUSTRY CO., LIMITED**

**<http://www.isuzutruckscn.com/>**

## Preface

Thank you for purchasing POWERSTAR products. For better using your ISUZU fuel bowser truck, get the best operating performance, we strongly suggest that before the operation process you could read this manual instructions carefully, and to manipulate the program handily.

The manual detailed describes the performance of fuel bowser, structure, usage, precautions and maintenance of such knowledge. While showing details of the truck, both pictures and description will together help you get better understanding of how to use truck. Before the operation, the skilled operator should carefully read the contents of the manual.

After master the truck performance characteristics, methods of operation and precautions, then could start to operate this fuel truck. In order to ensure the staff turnover after the operation, and properly use of the truck. This manual book must be properly kept, shall not be lost and damage.

----POWERSTAR TRUCKS

# POWERSTAR

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## Chapter 1. General Description

POWERSTAR TRUCKS Fuel Bowser based on type II ISUZU 4\*2 Left Hand Drive chassis, Fuel tanker capacity could up to 16,000liters, which also installed with famous Chinese brand Fuel Pump, mainly used for Fuel storage and transportation, and the working aerial can be city street, factory, desert areas and other areas of need.

The vehicle designed to fully rely on the advantages of the original of ISUZU brand chassis, fully consider the product's convenience and reliability, also the chassis ISUZU technology features. The fuel tanker material is international standard carbon steel, both internal and external with anti-rust painting, which can effective to avoid rusting. As for tank capacity, this is strictly 16CBM and safety enough to transport & refueling oil based on customer requirement.

The ISUZU 4x2 Fuel Tanker Truck equipped with a 4 compartment fuel tanker and fuel gauges, front climbing ladder, Euro standard Manhole, top & side & rear guard plate and safety fuel inlet & outlet valves to help better use of the trucks. Cab for the single-row Comfortable seat, nice driving feeling. Therefore, the vehicle is an ideal Fuel Tanker Truck mainly for oil storage & transportation function.



(Preview for your ISUZU 16CBM Fuel Tanker Truck)

## Chapter 2, Main Technical Data

### Basic parameter:

Items		16CBM ISUZU Fuel Tanker Truck
S I Z E	Outer Dimension (L×W×H) (mm)	8000*2500*3100
	Wheelbase (mm)	4500
Kerb Weight (kg)		6720
G E A R	Gearbox brand	ISUZU MLD
	Model	6-shift gearbox
	Type	Manual
Cab capacity (includes driver)		2
E N G I N	Brand	ISUZU
	Model	4HK1-TC50
	Type	Four cylinder inline, four stroke, water-cool, turbocharged Inter-cooling, diesel
	Rating Power (kW/HP)	151 / 205

Note: 1. We keep the right to revise the parameters on the list above.

### Water Tanker basic parameter list

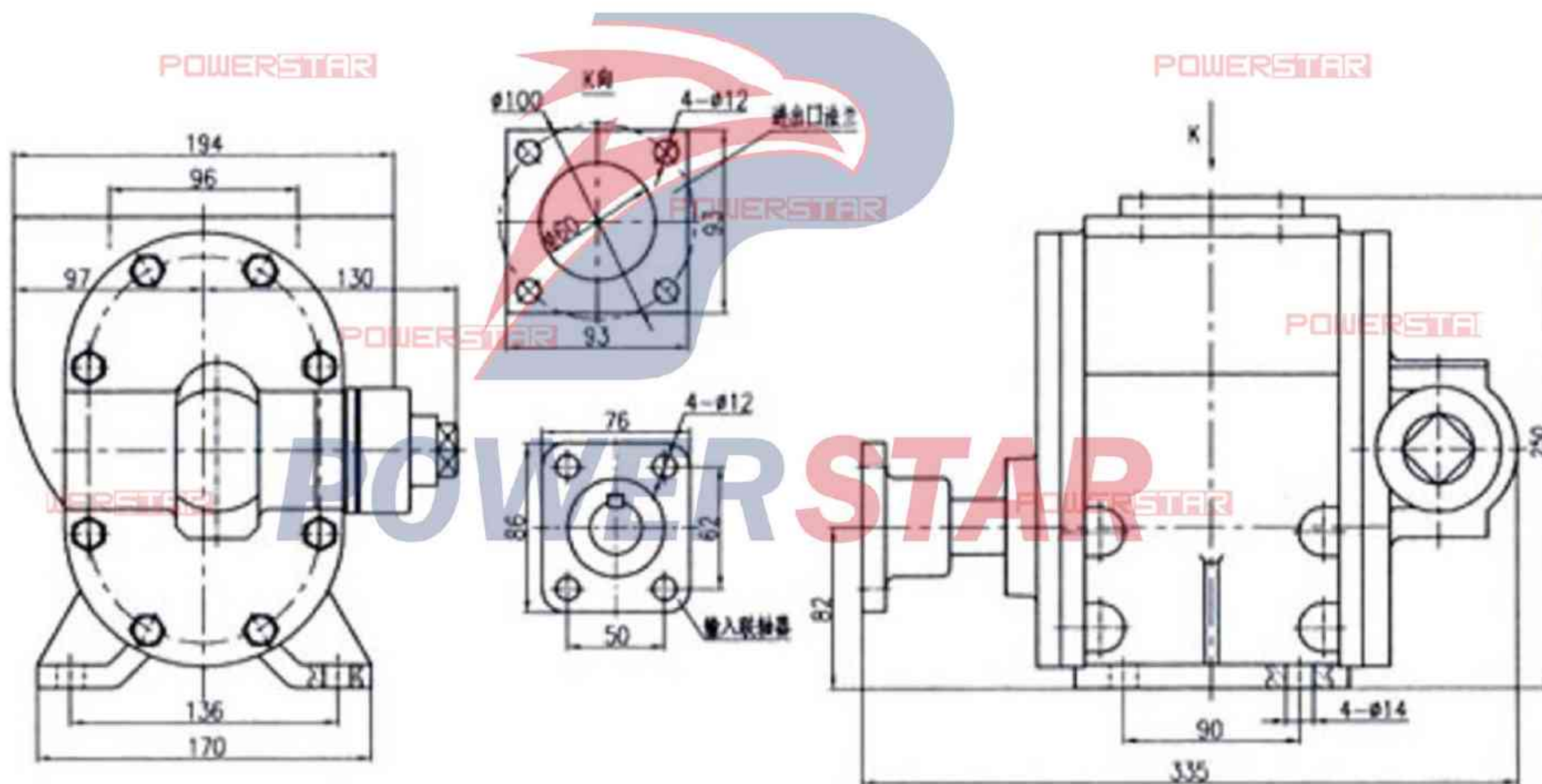
Items		Parameter	
Water tanker	Capacity (Liters)	16000	
	Material	Standard Carbon Steel	
	Painting	Internal	With anti-rust painting
		External	Silver painting with blue line
	Special Equipme nt	Fuel Gauge	Equipped compartment of tank
		Valves	Equipped on side of tank
		Climbing Ladder	Equipped in front of tank
Safety Guard		Equipped on top of tank	
Fuel Pump	Model	80YHCB-60	
	Fuel Flow Rate (m <sup>3</sup> /h)	60	
	Working Pressure (MPa)	0.6	
	Revolving Speed (r/min)	960	
	Self-Suction Height (m)	6	
	Rated Power (kw)	7.5	

## Chapter 3, Fuel Pump

### Brief introduction of 80YHCB-60 fuel pump:

ISUZU fuel bowser use famous Chinese brand Fuel Pump and pump model is 80YHCB-60. The pump is newly produced National Patent Products which based on many years' independent developing & production of arc gear pump. Also the pumps comply with national standards JB/T6434-92. Advanced features for the pump showing as below: Simple Structure, Smooth Operation, High Efficiency and Reliable Operation.

Below is overview for 80YHCB-60 model fuel pump:



## How to Installation & Maintenance 80YHCB-60 fuel pump:

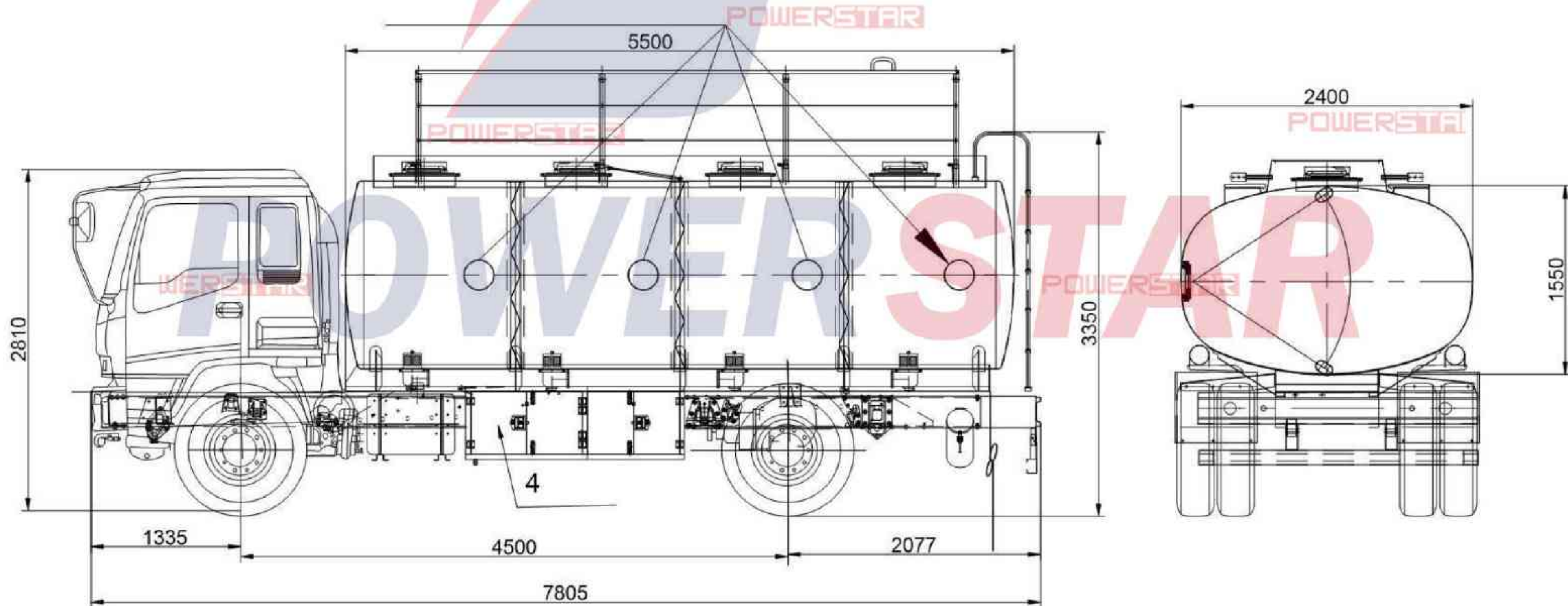
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Items	Notification	
1	Usage	<ol style="list-style-type: none"> <li>1. Installed on Fuel Tanker Truck</li> <li>2. Installed on Fuel Storage House</li> </ol>
2	What need to pay attention while installed on fuel tanker truck	<ol style="list-style-type: none"> <li>1. The pump get power from PTO</li> <li>2. The pump is installed in hanging bracket under chassis frame</li> <li>3. Pumping-In pipeline should match with pump hole, and max. suction height less than 7m</li> <li>4. On working condition, the pressure gauge less than 0.5MPa, and vacuum gauge less than -0.08MPa</li> </ol>
3	Before start working	<ol style="list-style-type: none"> <li>1. Test the shaft valve direction of rotation</li> <li>2. Test the Fittings and Flange sealing</li> <li>3. Test all valves</li> </ol>
4	Cleaning suggestion	<ol style="list-style-type: none"> <li>1. Washing the filter have a month, so to avoid any block</li> <li>2. Adjust the discharging pressure of safety valve</li> </ol>
5	Pump revolution speed suggestion	The pump revolution speed should be from LOW to HIGH, and speed up slowly. Not allowed any over revolution speed or any instability speed
6	Watching pressure gauge & vacuum gauge while pump working	<ol style="list-style-type: none"> <li>1. When pressure gauge higher, means the lifting is over height or the pumping-out pipeline is blocked</li> <li>2. When vacuum gauge high, means the suction is over distance or the pumping-in pipeline is blocked</li> </ol>
7	Maintenance for cold weather and not working	Discharging all storage inside pump, which can avoid frost crack
8	Maintenance for long-term use	Treated with anti-rust processing and keeping properly
9	Maintenance for bearings	Filling calcium grease every half year
10	Pipeline installation suggestion	The pipeline should be installed at proper height and position
11	Stop working suggestion	When stop the truck, firstly disconnect the PTO handle, secondly close the inlet & outlet valve of the fuel pump
12	Start working suggestion	When no medium inside the fuel pump, strictly forbidden starting

## Chapter 4, Fuel Bowser Structure Components

### i ,Fuel Tanker Structure Components

Overview for ISUZU fuel bowser technical drawing:



Above drawing show that there are safety-guards at two sides & rear; at rear of tank installed the rear climb ladder; on top of tank equipped 4 units Euro standard Manhole, also aisle and handrail on two sides; there are 4 compartment for the fuel tanker and 4 sets fuel gauges. The whole fuel tank is **oval shape**:

Top of the Tank: safety fence, manhole and Euro standard manhole cover

4 units Euro standard manhole covers with Key (Top of tank)

Safety fence (Top of tank)

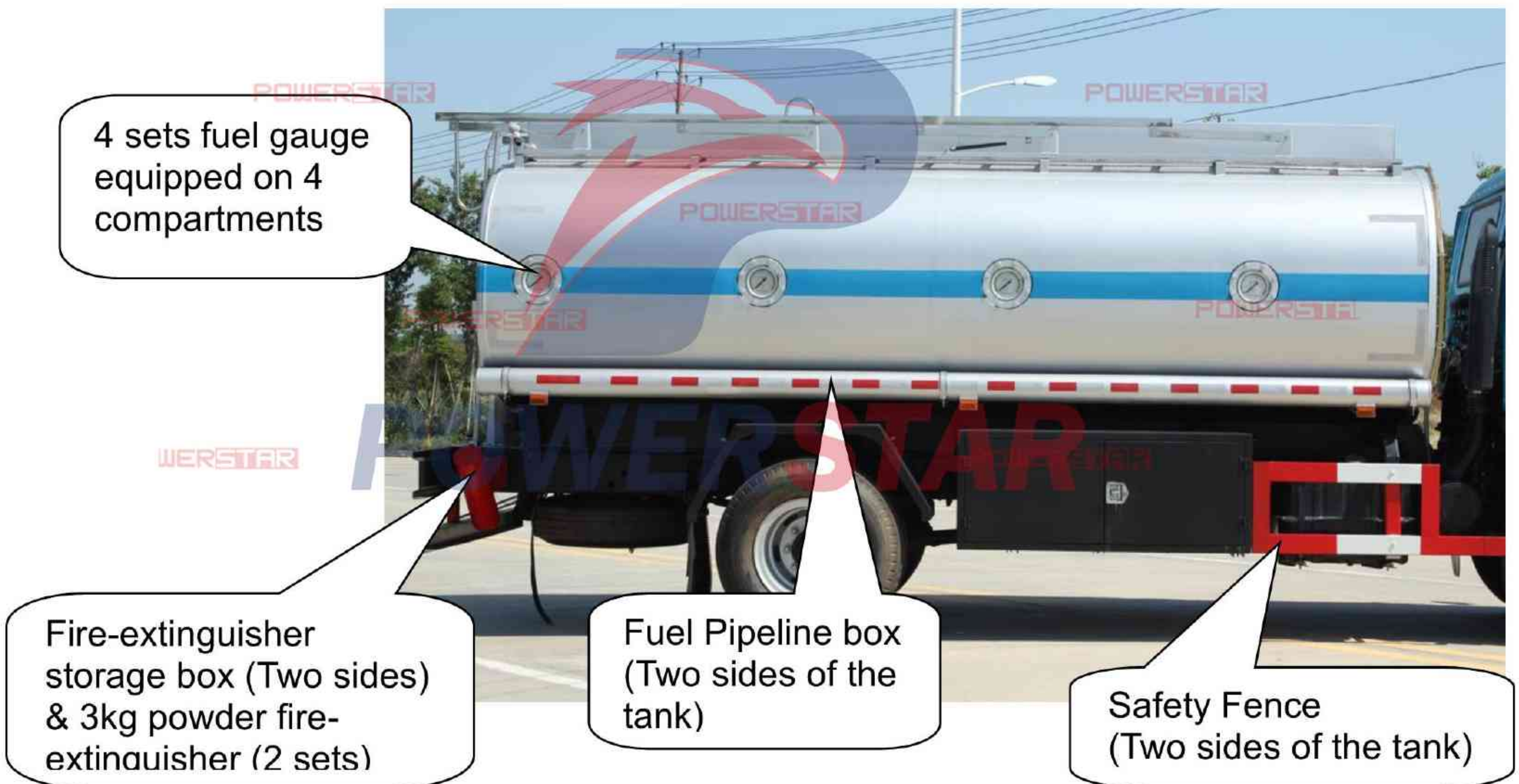




Rear of the Tank: Rear climbing ladder & Safety guard



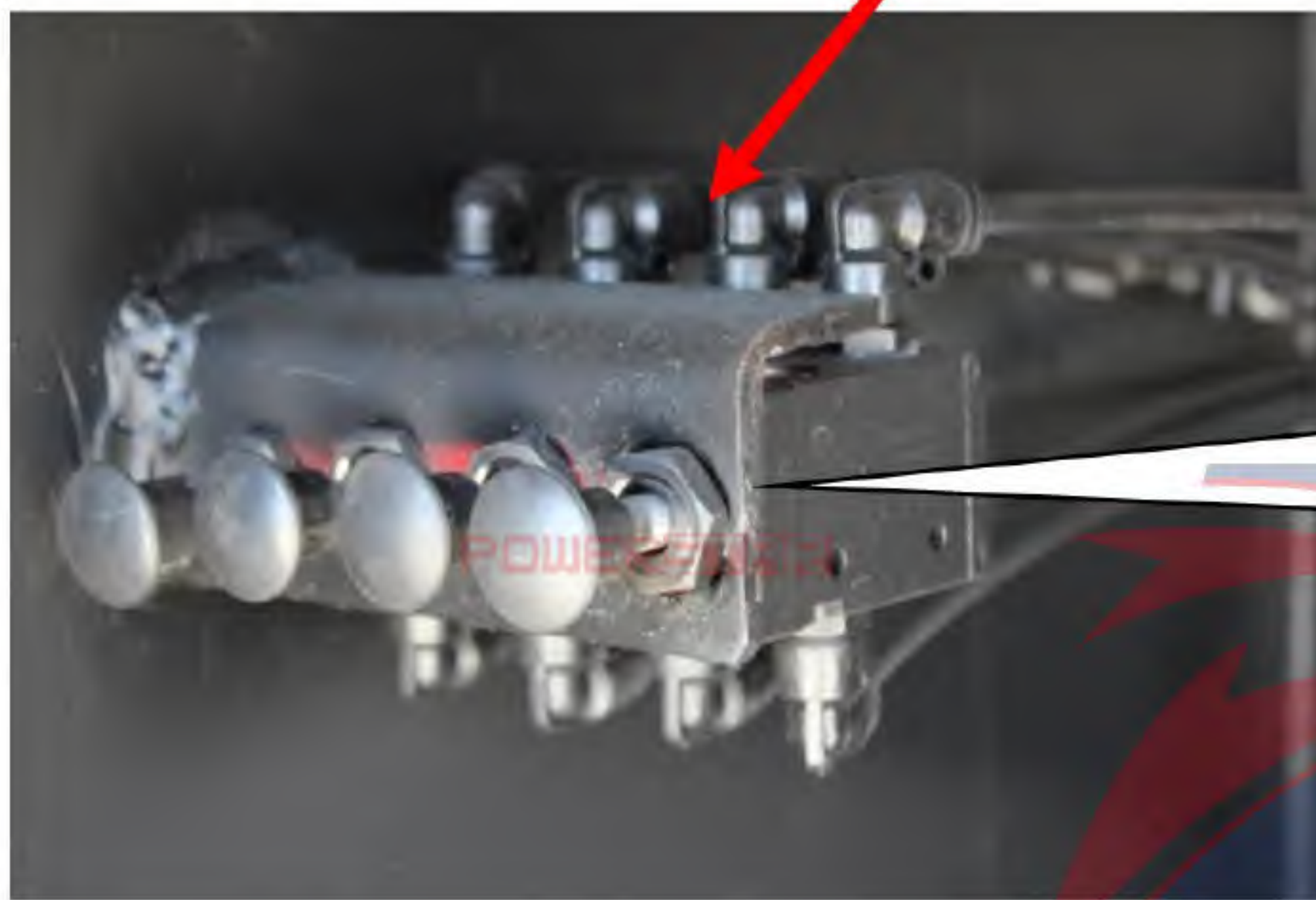
Side of the Tank: Fuel gauge, Pipeline storage box & Fire-extinguisher storage box, pipeline systems



4 sets fuel gauge  
Counting Method: Pointer  
figure number times 200L,  
which means the rest  
volume in the tank



Fuel Valves & Pipeline



Submarine Emergency  
Valve Controller (under  
tank) which connect  
tank and pump, for  
emergency stop

Fire-extinguisher storage  
box (Two sides) & 3kg  
powder fire-extinguisher  
(2 sets)



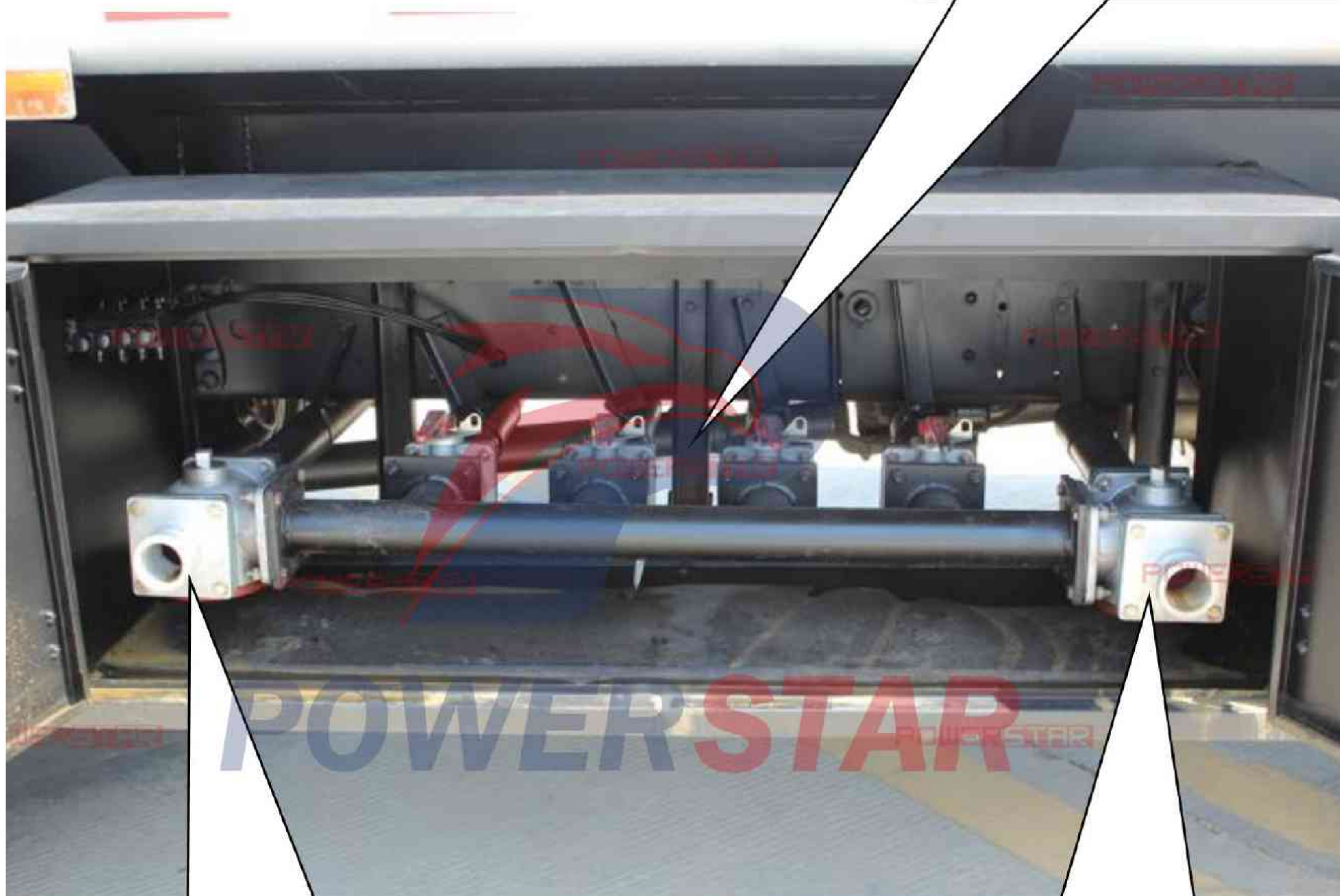
## ii ,Fuel Pipeline Structure Components

Pipeline is to fuel bowser what blood vessel is to human body! The fuel bowser pipeline system is simple but very practical. One main pipeline connect with fuel tank and fuel pump, which means there are two ways to collection fuel: firstly is pumping fuel directly through Fuel pump; secondly is collection fuel from top Manhole.

At side of the truck which installed Fuel pump, also Fuel inlet & outlet valves (Pipeline system as below):



80YHCB-60  
Fuel pump



4 units Ball Valve Control fuel  
in & out of the 4 compartment  
tank

Fuel Inlet Valve (**Inlet**)  
Pumping fuel into the tank

Fuel Outlet Valve (**Outlet**)  
Pumping fuel out of the tank

## Chapter 5, Fuel Tanker Truck Working Principles

The operator should fully understand Whole Structure and Working Principle for ISUZU Fuel Bowser before any operation. Only trained person can operate this vehicle properly and to prevent unnecessary accidents and equipment damage.

### i ,How are the fuel trucks working?

The ISUZU Fuel Bowser makes use of the special power take off (PTO) to get power from the engine, and then transfer the power to the Fuel Pump via drive axle so to rotate the pump. The fuel pump, pipelines, valves and joints consist of the pipeline system. Turn on / off valves through the regulated program, the pump can absorb fuel into the tank, also can pumping-out the fuel. And then come to all function.

### ii ,What is the main component for truck?

The fuel bowser is refitted based on the ISUZU 4x2 LHD chassis. The refit part includes fuel carrying assembly, actuator device, pipeline system and operation system.

- Fuel carrying assembly: A carbon steel container shaped ellipse, with anti-rust painting, which is used to store and transport oil.
- Actuator device: includes power take off, drive line, etc., which can pass the power from the chassis to the pump.
- Pipeline system helps come to all special functions.
- Operation system: helps come to all special functions' convert.

### iii, How to operate fuel bowser? (Very Important)

1. Refer to Chapter 4 and get more information about valves structure component.



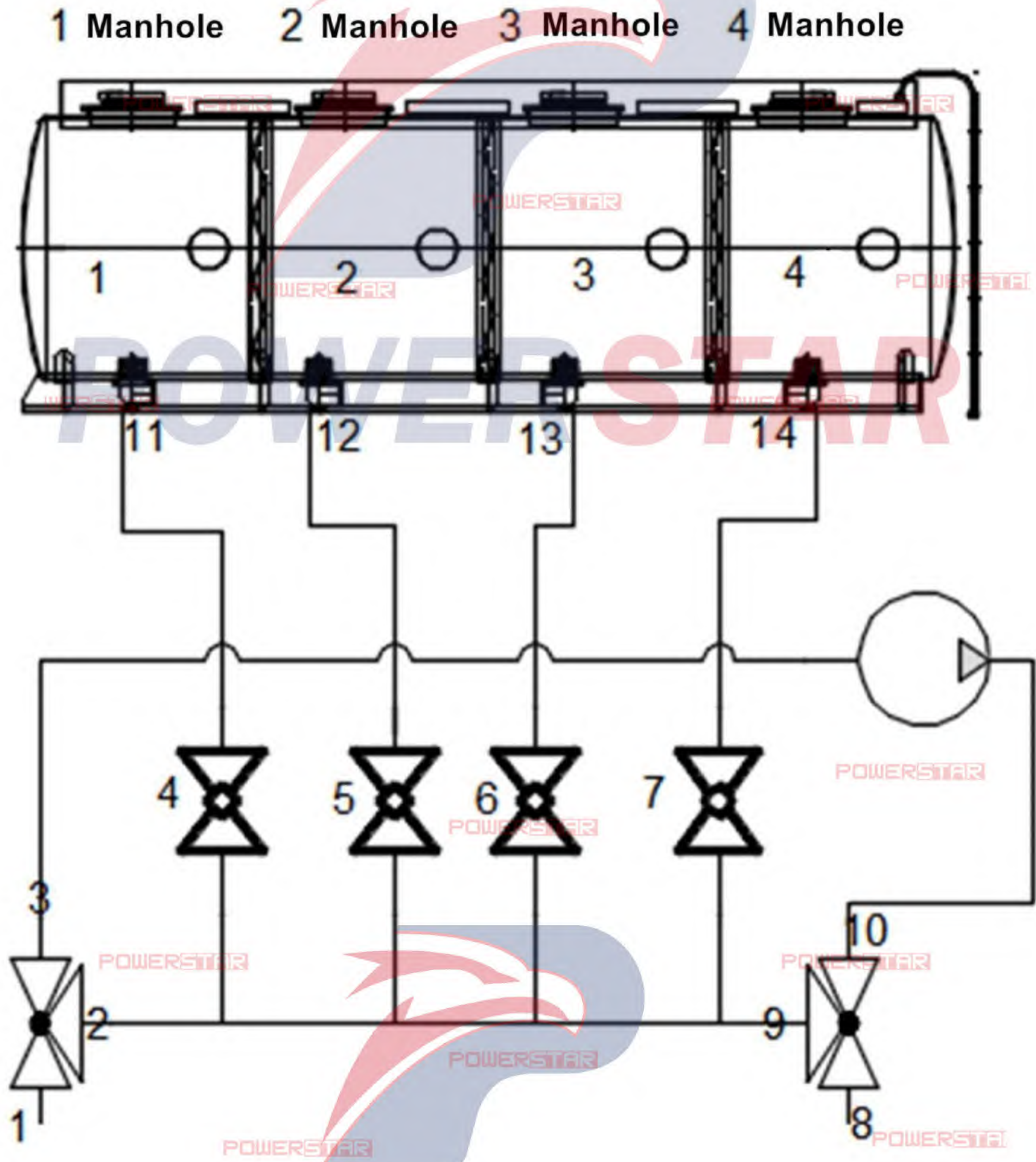
Submarine Emergency valve Controller for emergency stop.  
The Controller must be **opened** both Pumping-In & Pumping -Out working

**Please Note:** When wrench is PARALLEL with pipeline, the pipe flow;  
When wrench is VERTICAL with pipeline, the pipe closed.

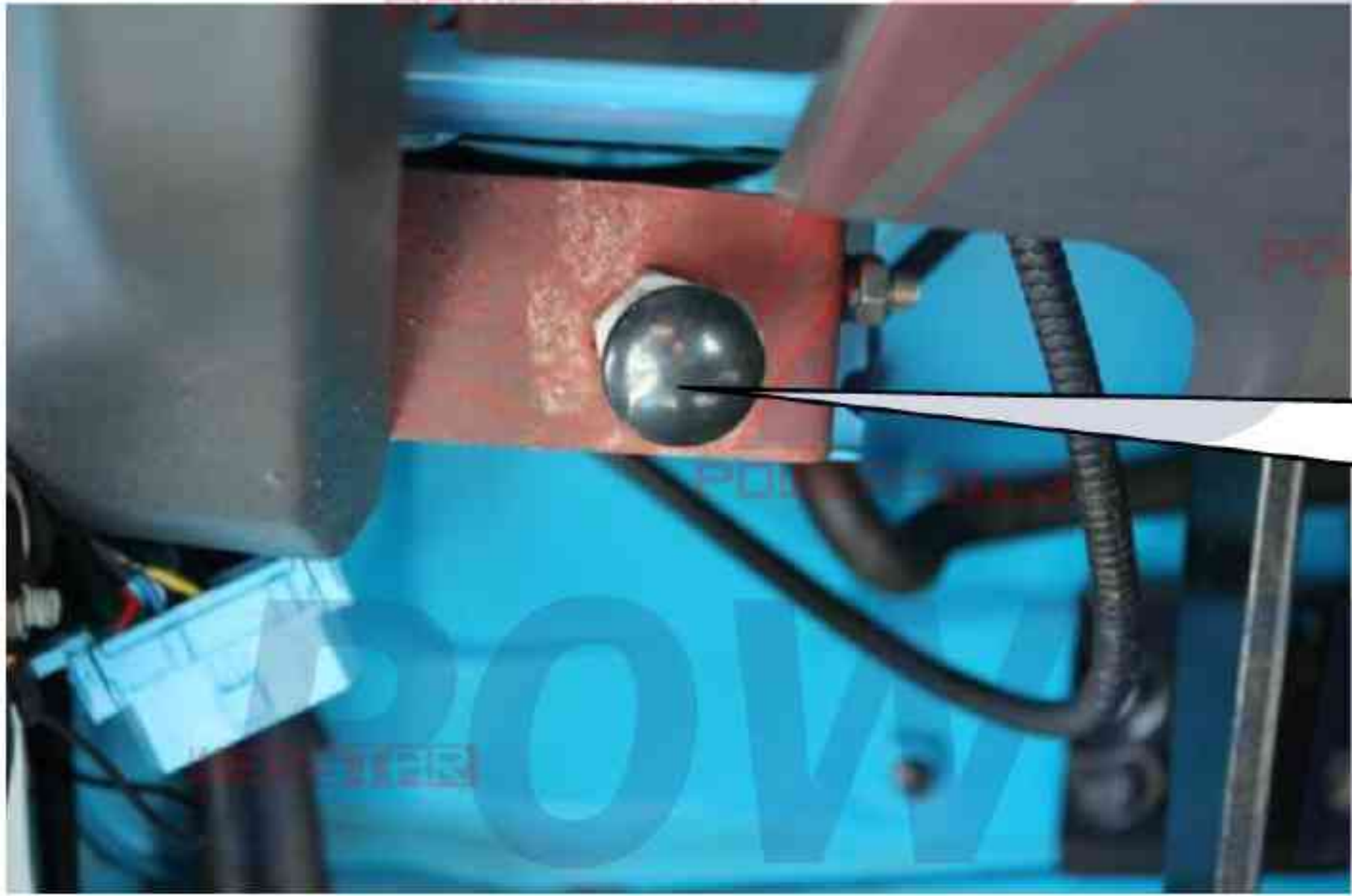


The Dot point to the position, means the wrench direction

2. Read the below Operation Chart carefully before any operation:

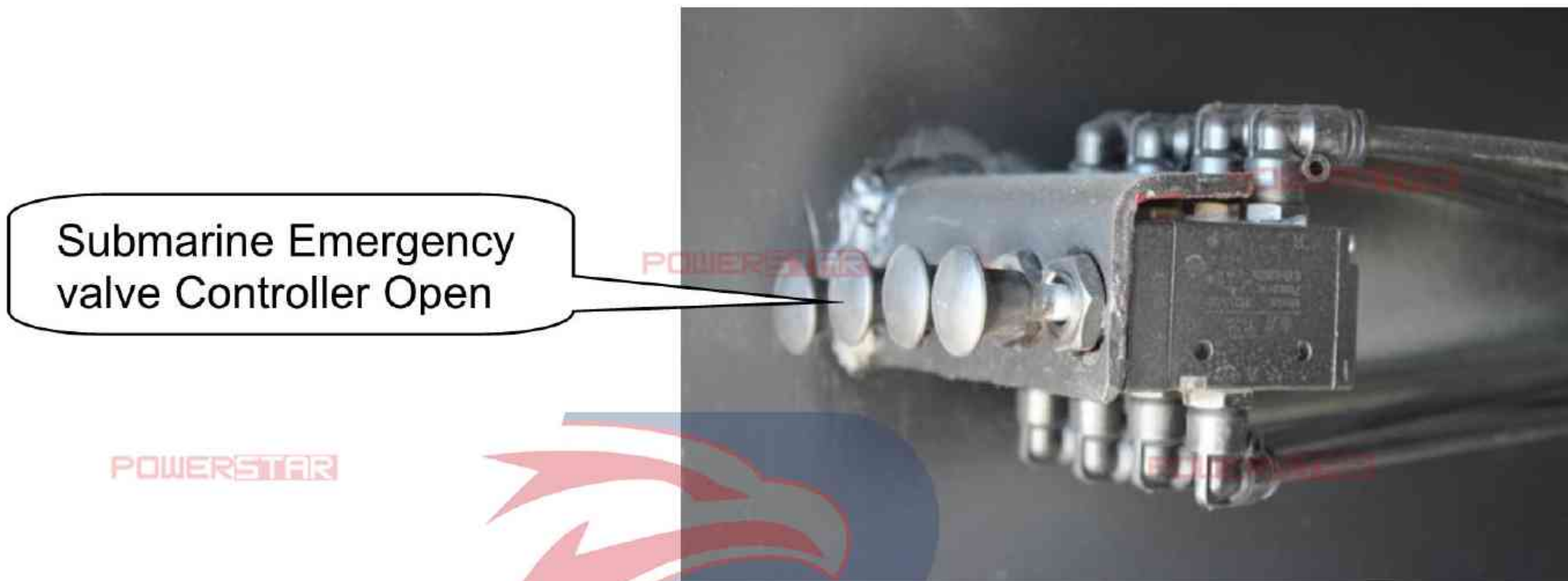


- a) Before operating valves you should operating the power take off (PTO), the truck transmission gearbox should be in neutral, when the engine is idle, step on the clutch pedal and turn the PTO switch on, and then release the clutch pedal slowly. The fuel pump will start operating.



Pull out the PTO switch button, to make fuel pump working

- b) Before any other operation, the most important thing is opening the **Submarine Emergency Valve** controller, then the pump pipeline and the fuel tank is unblocked, and the oil can be pinging-in & pumping-out of tank compartment.



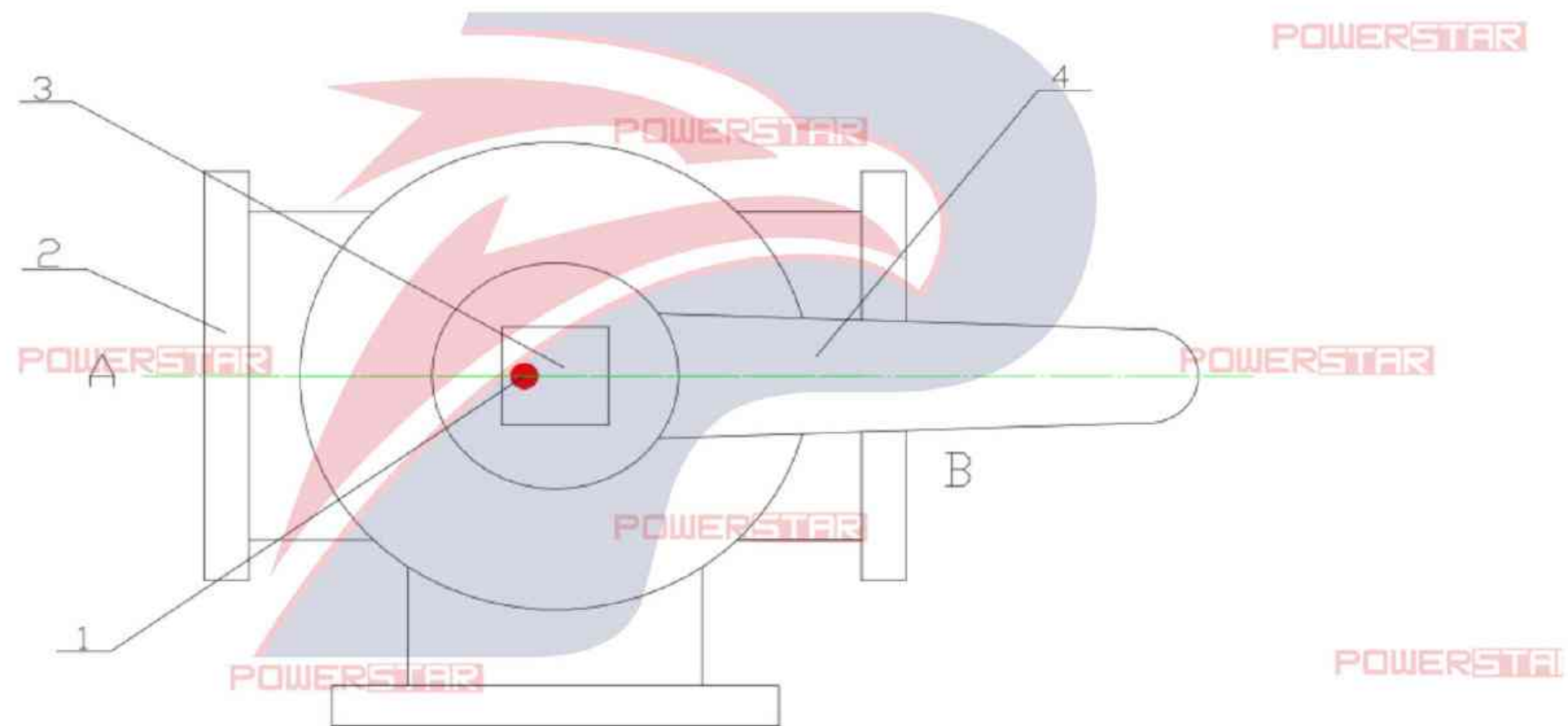
Submarine Emergency valve Controller Open

- c) Special function operation showing as below, which mainly has following four functions:
- **Fuel Truck Pipeline System:** There are mainly below 4 parts for fuel truck pipeline system. (Rear system based on truck component)

**Fuel Pump:** 80YHCB-60 fuel pump, provide power for fuel inlet & outlet of tank

**Multi-Function Valves:** Fuel Inlet Valve, Fuel Outlet Valve & Ball Valve

**Fuel Pipeline:** Multiply fuel pipeline service for fuel transportation



(1-Red Point 2-Valve 3-Valve Rod 4-Joystick)

**Red Point:** Means this way closed (Picture showing is A-way closed, B & C way open)

d) Below chart showing how to use the fuel bowser for fuel pump in, pump out & self-discharging by gravity: (Make sure the Manhole small door open during any operation)



Make sure the Manhole small door open during any operation:  
Pump-In Operation: Cause tank high pressure  
Pump-Out Operation: Cause tank negative pressure  
Self-Discharging Operation: not working because of negative pressure inside tank



### Pump-In Process

Working Model	1 Compartment	2 Compartment	3 Compartment	4 Compartment
Valve Open Steps	<b>1-3-10-9-4-11</b> Valve 1-3 open Valve 10-9 open Valve 4-11 open	<b>1-3-10-9-5-12</b> Valve 1-3 open Valve 10-9 open Valve 5-12 open	<b>1-3-10-9-6-13</b> Valve 1-3 open Valve 10-9 open Valve 6-13 open	<b>1-3-10-9-7-14</b> Valve 1-3 open Valve 10-9 open Valve 7-14 open
	1 Manhole Open, Injection from top	2 Manhole Open, Injection from top	3 Manhole Open, Injection from top	4 Manhole Open, Injection from top
Closed Valve	Others	Others	Others	Others

### Pump-Out Process

Working Model	1 Compartment	2 Compartment	3 Compartment	4 Compartment
Valve Open Steps	<b>11-4-2-3-10-8</b> Valve 11-4 open Valve 2-3 open Valve 10-8 open	<b>12-5-2-3-10-8</b> Valve 12-5 open Valve 2-3 open Valve 10-8 open	<b>13-6-2-3-10-8</b> Valve 13-6 open Valve 2-3 open Valve 10-8 open	<b>14-7-2-3-10-8</b> Valve 14-7 open Valve 2-3 open Valve 10-8 open
Closed Valve	Others	Others	Others	Others

### Self-Discharging by Gravity Process

Working Model	1 Compartment	2 Compartment	3 Compartment	4 Compartment
Valve Open Steps (Two for optional)	<b>11-4-2-1</b> Valve 11-4 open Valve 2-1 open	<b>12-5-2-1</b> Valve 12-5 open Valve 2-1 open	<b>13-6-2-1</b> Valve 13-6 open Valve 2-1 open	<b>14-7-2-1</b> Valve 14-7 open Valve 2-1 open
	<b>11-4-9-8</b> Valve 11-4 open Valve 9-8 open	<b>12-5-9-8</b> Valve 12-5 open Valve 9-8 open	<b>13-6-9-8</b> Valve 13-6 open Valve 9-8 open	<b>14-7-9-8</b> Valve 14-7 open Valve 9-8 open
Closed Valve	Others	Others	Others	Others

### Special Operation for this fuel bowser

Working as mobile fuel pump station	<b>1-3-10-8</b> Valve 1-35 open Valve 10-8 open
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## Chapter 6, Others for Attention

After carefully reading the above information, you must be well known how to use the ISUZU Fuel Tanker Truck; below show some parts you need to pay attention while using the truck.

### i ,Precautions for Use

- Please abide strictly by the following manual:
  1. *Fuel Bowser Owner's Manual*
- Carefully examination the fuel truck:
  1. Examine all parts, especially steering device, braking device, Suspension, tires and other joints, etc.
  2. Examine Exhaust Braking System, maintenance if have any leakage.
  3. Examine the tire pressure.
  4. Examine all lights on the truck, including Head Light, Fog Light, Turning Light, Tail Light.
  5. Examine the rear Anti-Static tape, replace it if not tough the ground
- It is strictly forbidden to operate the Power Take Off (PTO) under the condition of the clutch not separation (Not step the clutch pedal). When release the clutch, you should slowly. The operation of the PTO must only on the condition of neutral for clutch.
- It is better not to do Half-Load transportation, especially for long-distance transport.
- When operating all the Valves, it is not good to overexert, for overexert will influence the valve ball's leakproofness. The open & close for Three-Way Valves should completely, and strictly forbidden working when valves not operated completely.

## ii ,Maintenance

- The maintenance of the chassis including clutch and transmission gearbox should be properly.
- The Maintenance of the fuel bowser and fuel pump refers to the **"Fuel Bowser Owner's Manual"**.
- It should be checked all coupling and lubrication at fixed period to exclude the tight parts, and make sure all parts in good lubrication condition.
- Both the Fuel Pump, PTO, Transmission Gearbox should be carefully washed, checked and maintenance every year.
- The strainer inside filter should be washed frequently. Exchange it if necessary.