



# 苏迈特智能科技

**PTE 系列 手提式胀管机**

**PTE Portable Hydraulic Expander**

## **USE MANUAL**

The People's Republic of China

苏迈特智能科技（江苏）有限公司

## PREFACE

Thank you for your choosing our product of ZZS—00 Portable hydraulic expander. For the safety's sake, the manual should be followed carefully.

The purpose of the manual is to provide the technical guide, explain the installation, commission, operation, maintenance and the simple fault solving of the line.

Supposed you have any doubts and problems, please contact our technician or after sales service by tel: 0513-88320811,88320190,88320800.

If the line is transferred to others, please provide the Manual together with the line.

The line is subject to Chinese standard. If it is used out of China, the clients are kindly requested to follow the requirements of safety standards of his own country.

With the principle of improving the quality of the products, our company will reserve the rights for improvement, and the changes of Manual will not be notified in advance.

☆ **Thank you for purchasing our equipment.**

☆ **In order to properly use the equipment that you bought, please read this manual carefully before use.**

☆ **Please be sure to pass this manual to the actual user of the machine.**

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## **1. Section of safety**

### **1.1 Safety must know**

#### **1.1.1 Manager must know**

- 1 ) Draft education outline of the line in operating and maintaining safely;
- 2 ) Select experienced operation principal, maintaining principal and operator before the line working;
- 3 ) Training the operation principal, maintaining principal and operator before the line working, make sure they master how to use the line safely;
- 4 ) When using the line, you should make use of the safety equipment truly and reliably. Forbid transform and dismantle safety equipment by yourself;
- 5 ) Take action to protect the operator and the other people from being damaged by running part, rotate part and something splashing;
- 6 ) Make a programe for examing the line and the safety equipment at regular intervals, and make sure it will be carried out reliably. Ensure all of the parts, auxiliary equipment and safety equipment work well. Supervise and urge the operator to use the machine truly. Try to find the fault and deal with it , to avoid the accident, save the result and repair record.

7) All of the workers must stop operating the line if the line was out of order. You can use again after the problem was solved.

8) You should carry out obligations on the basic of native laws and regulations.

### **1.1.2 Operation principal must know**

1) Operator can use the line after being educated and get the qualification;

2) To promise Inspection before starting up, daily inspection and regular inspection of the line, the safety equipment and all;

3) You must stop using the line and report to the manager when the line and the equipment was found abnormal. You can use the line when the problem was solved;

4) Take care of the key of the line and the safety equipment;

5) You can't use the line after drinking and taking medicine in order to avoid the accident;

6) Prohibit wearing loose clothes and hang jewelry in order to avoid the accideng such as electric shock, be drawn into revolve part. Safety helmet, safety shoes, protective glasses, gloves, earplug and the other working protective production;

7) Don't operate the line of production and touch any electric component;

8) More than one people don't operate the machine at the same time;

9) You should carry out obligations on the basis of native laws and regulations.

### **1.1.3 Maintain principal must know**

- 1) Maintain principal can maintain the line after being educated and get the qualification;
- 2) Inspect the line of production and the safety equipment, you shouldn't use the line and report to the manager if the line run abnormally, than repair it;
- 3) You can't use the line after drinking and taking medicine in order to avoid the accident;
- 4) You should carry out obligations on the basis of native laws and regulations.

## **1.2 Safety matters need attention**

### **1.2.1 Matters need attention about installation**

- 1) The line of production should be put in the workshop which has regular lighting and work space;
- 2) Environmental demand: the temperature around the line is  $-5^{\circ} \sim 50^{\circ}$  , the humidity is below 85%. There are not any corrosion gas, combustion gas, oil, dust and the others. Height above sea level is below 1000m. Shock below 5.9m/s, air pressure  $\geq 6\text{kgf/cm}^2$  , air rate of flow come to  $0.82\text{m}^3/\text{min}$ .
- 3) Entrust professional or serviceman to carry, lift and install;

4) Installation of the special part must be carried out by the professional who had qualification and was trained;

5) Installation of the electric must be carried out by the professional who had qualification and was trained.

### **1.2.2 Matters need attention about operation**

1) Make sure there are no person around the line, no fraise. Don't put any tool and part on the workbench to avoid accident;

2) Having setting up inspection and daily inspection;

3) Prohibit working strictly if the shield of the rolling part was dismantle;

4) Only one people can operate the line, two or more than two people operate the line at the same time is not permitted;

5) Prohibit standing on the turnplate when operating the line;

6) Press the emergency button at once if the line of production goes abnormal. Stop working, turn off the power and report to the manager.

### **1.2.3 Matters need attention about maintain**

1) Inspect the line and the safety equipment at regular intervals;

2) When maintaining, turn the switch to “off”, cut the power, hang the caution scutcheon “Prohibit operating” on the power supply, turn off the air supply of the throttling valve, and hang the caution scutcheon “Prohibit operating” on it;



3) When maintaining, hang the caution scutcheon “Prohibit Running” on the conspicuous place of the line;

4) Take care of the maintain principal's safety. You must make use of the safe ladder when you are working 1.5m above the ground. Don't stand on the machine. Tie the safe belt to prevent you fall from upper air.

## **2. Product specifications and use**

### **2.1 The use of the product**

Portable hydraulic expander is indispensable to produce large special heat exchanger tube expanding device, which can conduct a dilation 2 holes or puckering fitting, and by adjusting the stroke length expansion rod, complete the required length of the heat exchanger tube expanding. Portable heat exchanger pipe expander is also an important manufacture and repair tool.

Processing object in for copper tube, aluminum tube, stainless steel tube, etc.

## 2.2 Main specification and parameter

1	Normal copper pipe specification	$\phi 7 \times 21 \times 12.7 - \delta$	
		$\phi 7.94 \times 22 \times 19.05 - \delta$	
		$\phi 9.52 \times 25.4 \times 22 - \delta 0.71$	
		$\phi 12.7 \times 31.75 \times 27.5 - \delta 0.71$	
		$\phi 15.875 \times 38 \times 33 - \delta 0.71$	
	Special specification		
2	Maximum length of bilge	3100mm	
3	Maximum speed of bilge	10m/min	
4	The oil pump motor	4KW, 1440r/min	
5	Vane pump	9.1ml/r	
6	Cycloid hydraulic motor	475r/min, 250N · m, 60L/min	
7	The rated pressure of hydraulic system	18Mpa	
8	The hydraulic oil brand	46#	
9	The weight	500kg	

**Notice:** ● Client choose

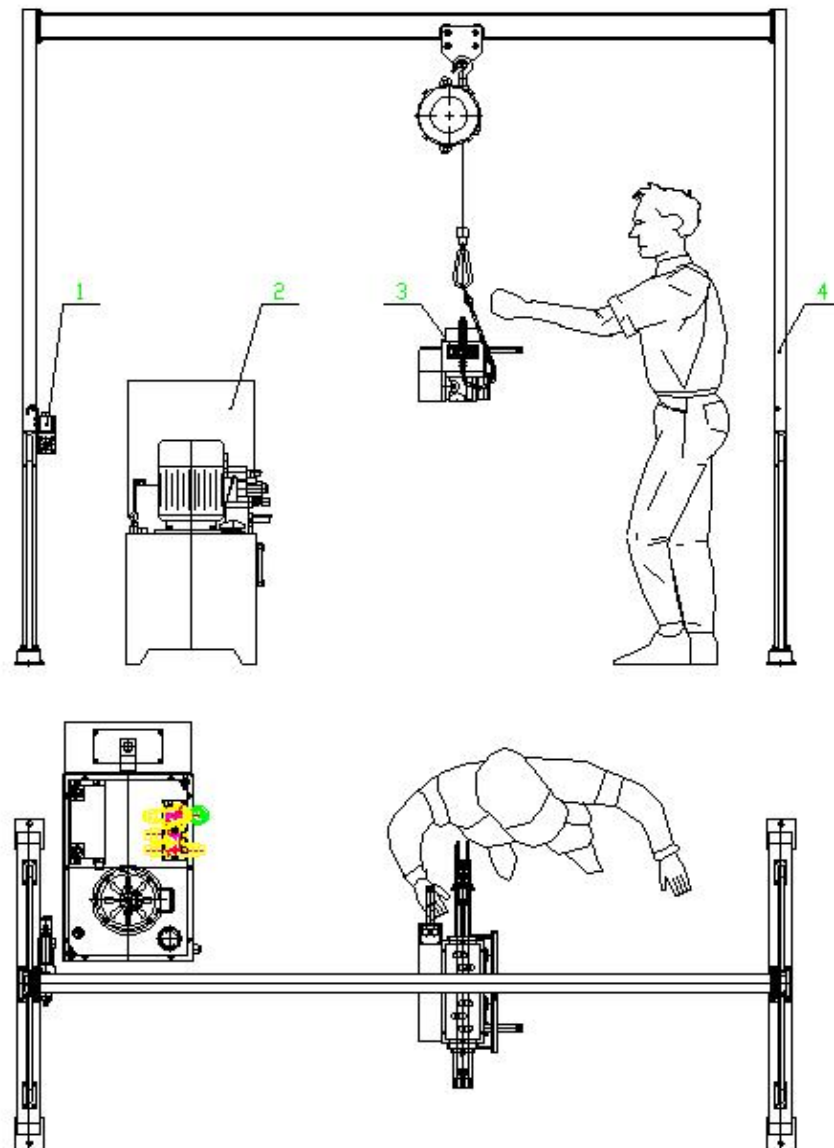
## 2.3 Main part configuration

Num	Item	Brand	Sign
1	Transducer	LS	
2	Hydraulic	YUKEN	
3	The oil pump motor	KOMPASS	
4	Vane pump	E&f	
5	Balancer	QF	
6	The wind cooler	RL	

**Notice: ● Client choose**

## 2.4 Portable hydraulic expander

The equipment includes host machine, gantry, flaring kit, hydraulic station. Four high pressure hose and two control wires link them to become a complete system.



Picture 1 Portable Hydraulic Expander

1. flaring kit    2. hydraulic station    3. Host machine    4. Gantry

### **3. Operational approach and principle**

#### **3.1 Tube expanding job**

The output oil of the hydraulic pressure station drives hydraulic motor rotating. The gear on the hydraulic motor rotate with transposition gear. Roller gears compress expansion rod. Under the action of friction, forward or backward. Expansion head is fixed on the expanding rod. When the expansion head returns to the finish line position, it will squeeze the spring .

#### **3.2 Flaring work**

Flaring buto AN5electromagnetic valve of 9 ,3DT electricity,electromagnetic valve 6 2DTafter time relay action is electricity.Due to the expansion joint expansion head is in the back bottom limit position,so the hydraulic motor does not turn,presure oil before entering the flaring oil cylinder cavity,push the piston back and pull flaring kit front come expansion oral flaring into the copper pipe,the piston to the cylinder bottom,flaring end,loosen AN5 button,3DT power,reset.

Electromagnetic valve,presure oil into the flaring oil cylinder cavity,after pushing cone enlarge oral forward,relay electric shock due to time delay cut, make 2DT lost electromagnetic valve 6 reset,unloading hydraulic system,flaring.

According to the customer request,can choose without flaring,thread

clamp structure mode,specific content the customer can contact our company sales department.contact:0513-88320190,contact Miss Lu.

### **3.3 The use and adjust the matters needing attention**

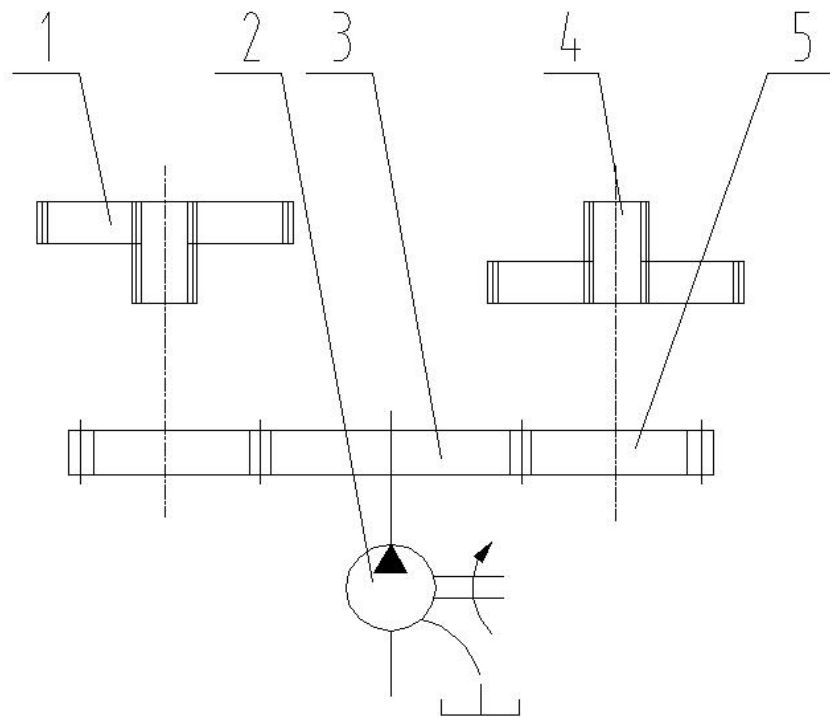
- 1 ) Adjusting gear friction:hydraulic gear friction between expanding arbor size,to achieve through the adjustable screw,presure value should make the expansion head move to the left and right limit position,the relief valve setting pressure range(5Mpa), nonskid stop expanding arbor with hydraulic gear between advisable,of course,presure should not be too large,the expansion rod wear faster.
- 2 ) Adjust pressure of 5-8Mpa,general factory hydraulic overflow valve pressure has been adjusted,user don ' t raise,so as to avoid high system pressure attaint parts.
- 3 ) Tightening force adjustment:by clamping force size screw tightness pressure spring compression to increase or decrease,should guarantee the clamp stuck when using copper pipe ends,it is advisable to not loose in the pipe expanding process,if the amount of compression will quicken the wear and tear of expansion head and clamp.
- 4 ) Adjustment of balancer:for the convenience of users,the machine choose QFP-50 type balancer,the balance range 40kbf - 50kgf, rotate the balancer adjust lever can obtain different size of balance

force. Adjustment to the expansion joint can stay at any position can be up and down.

### 3.4 Transmission mechanism diagram

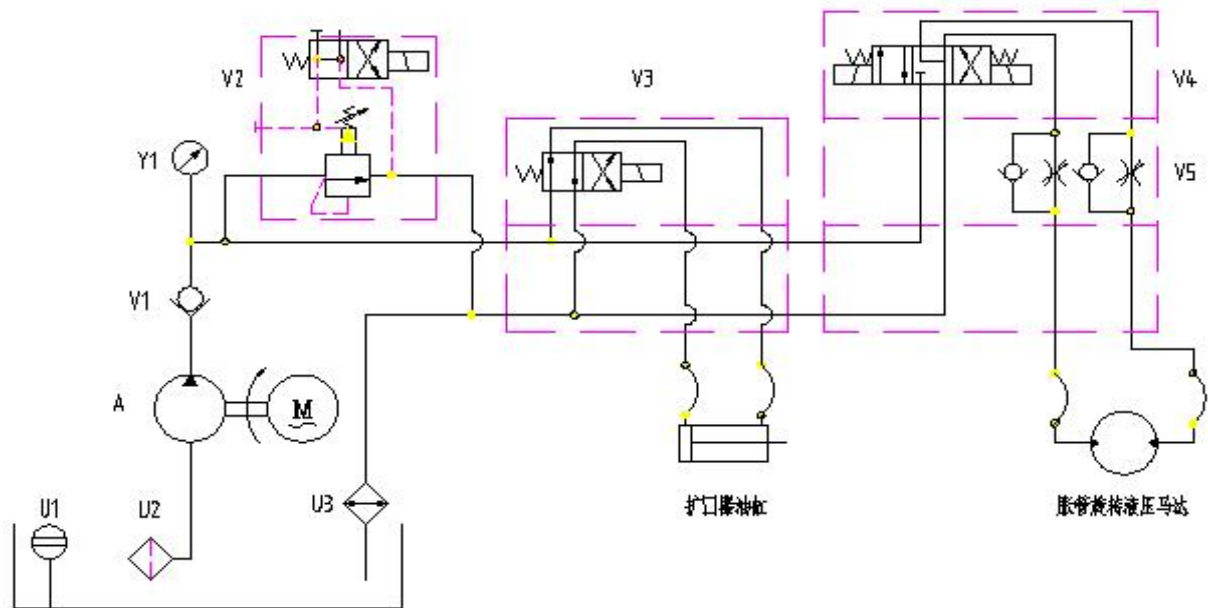
Bilge travel rod maximum speed:

$$v=90 \times (21/32) \times (50/60) \times 3.14159 \times 2 \times 32 = 10 \text{ m/min}$$



- 1、Roller gear (Z=32)      2、Hydraulic motor (475r/min)  
3、main gear (Z=50)      4、gear axis (Z=21)  
5、Transposition gear (Z=60)

### 3.5 Hydraulc principle diagram



picture3 Hydraulic principle diagram

序 号	代 号	名 称
1	A	Quantitative pump
2	U1	Oil level&Temperature Gauge
3	U2	Oil suction filter
4	U3	The wind cooler
5	Y1	Piezometer
6	V1	Tube type check valve
7	V2	Electromagnetic relief valve
8	V3	Magnetic exchange valve
9	V4	Magnetic exchange valve
10	V5	Stacked unidirectional throttle valve





needle roller bearing for rolling bearing,a day to 8 nozzle only add grease,gear shaft with rolling bearing,every 3-6 month to add or replace a grease.

Between the gear you need to add grease can remove the top cover and side cover,when the tooth surfaces coated with grease.

4.2 High pressure hose and part of electrical control cables shall be properly protected,protected from damage of use and safety.

4.3 Bulge stem for processing precision of slender shaft,user should carefully use,fight hard surface parts and broken,damaged,affect the use.

4.4 The balancer check once a month,check the content is as follows:

- 1) The faster is loose
- 2) Have tied without bruising,cracks and other defects
- 3) Insurance chain is reliable
- 4) IS not in use for a long term,should do moistureproof processing

## 5.Installation

### 5.1 Packing

1)Before the packaging should be the working liquid,gas,etc from box out(except for special cases)

2)Packaging before the leakage of mechanical parts,components and accessories processing surface besmear after sealing,packaging,to the antirust requirements should comply with relevant regulations

3)The packing of the products and packing should comply with the

relevant provisions

4) This product packaging for the single independent packing, please check and accept people seriously inventory of products whether is complete

## 5.2 Storage

1) Ensure that have enough stability

2) To prevent the rain, moisture, pest, and well ventilated

3) During long-term storage, should be regularly check the status of location and packing statues

## 5.3 Shipping

1) To ensure safe and reliable, should not appear outside the mobile,

Inclination and rotation

2) For weight is greater than 16kg of machine parts, components,

Necessary hole for hoist, lifting hole or lifting tools should be set up

3) When the machine zero, parts of danger caused by the material and shape, special handling measures should be taken

## 5.4 Lifting

### 5.4.1 Hoisting points for attention

1) Please select the correct lifting tool

2) Crane operation must be qualified

3) Please in strict accordance with the crane operating instructions

4) Lifting process should be careful, smooth action

5)Please wear safety protection device

6)When lifting,should stay away from dangerous areas

7)When hoisting rope Angle should be less than  $90^{\circ}$  ,in order to avoid danger

#### 5.4.2 Hoisting way

Will condole belt connected to the lifting bolt,hydraulic station and the nose section is M12 rings the installation of the screw hole is open

5.5 Because the body weight is not very heavy,to use hydraulic forklift to transport more convenient

#### 5.6 Installation

Equipped with stude screws for fastening gantry frame.Due to the packing when using parts of the body,product assembly can refer to picture1

## 6、Special parts, Spare parts list

Serial number	Code name	name	Legend
1	ZZS-01-7	Bulging pole spacing block	Slightly
2	ZZS-01-19	Clamp	
3	ZZS-01-20	Heave head screw	
4	ZZS-01-21	Heave head	
5	ZZS-01-22	Limit expansion head tube	Slightly
6	ZZS-01-24	Clamp holder	Slightly
7	ZZS-01-27	Hydraulic gear	
8	ZZS-01-30	Pipe run mounting plate	Slightly
9	ZZS-01-31	Pipe run	Slightly
10	ZZS-01-32	Pipe run locking plate	Slightly
11	ZZS-01-33	Bulge stem	Slightly
12	ZZS-02-3	Expansion of oral	Slightly

**Note:** Used for  $\phi 7$ 、 $\phi 7.94$ 、 $\phi 9.52$ 、 $\phi 12.7$ 、 $\phi 15.875$

**Customer have demand can contact with my company' s Marketing Department.**

## **PTE Straightening And Cutting Machine**

# Quality certification

**The People's Republic of China**

苏迈特智能科技（江苏）有限公司

**This machine has passed its final quality audit.**

**Inspector:**

**Date:**

## Packing List

### 1. Main Components:

Items	Name	Model	Yes/No	Num
1	Host machine (机头)			1
2	Hydraulic station (液压站)			1
3	Gantry (龙门架)			1
4	Flaring kit (扩口头)	1/4 管用		2+2
5	胀头	Φ 6.74,M4 内螺 纹, Φ 6.3 杆 (铆 接式)		6+9
6	胀杆	Φ 5.5 杆×6000- 外 M4-内 M4		4+3

### 2. Techonology documents:

- 1、 Use manual
- 2、 Quality certification
- 3、 Packing list

**Inspector:**

**Date:**