Installation Manual
KT-198L

Auto Body Collision Repair System

1.Brief introduction

It is the high-end system .Tilt hydraulic lifting platform assembled with light and flexible support leg,make the car drive on and off more frequently.

- Rectangular tube platform, pipe of 6mm thickness, flatness, small error but intensity. Many of the convenient hole in the bench easy for fixture.
- 360-degree spiral and unique wheel rotation makes pulling towers move stable and flexibele.
- Unique spiral movement design of main clamps. Keep the jaw flat and turn the pole up and down to change the height. Applying t adjust vehicles with different chassis.
- Unique adjustment design of main clamp jaw, fixed by only two screws. Thimble jaw, clamping vehicles firmly and quickly with high efficiency.
- Mechanical streamline design tools, forge and heat treatment process, long service life and high-intensity, almost considerate all deformation correctin.
- Hydraulic pumps customized according to repaire environment, power is strong and durable, convenent, quick, abundant, low repair cost.
- .All accessories and clamping tools are forged with the mould, hardened and tempered under HRC 28 degrees, and clamp tooth are heated under HRC40 degrees.

Attention:

Don’t operate this machine before reading the operation manual carefully, and pay attention to all notices here and especially the sign”!”

2. Machine transportation and prepare for installation

① Fork lift or lifting crane should have a lifting capacity of minimum 3.5 tons to transport or lift the machine; legs in the front or rear should be locked when lifting preventing person nearby from hurting, and the basement is the part where fork lift holds.

② Installation should be on the solid and flat concrete floor and the area should be at least 8M×5M.

③ The compressed air should be dried by special device and secondary filtration will be done by air-water separation (triplets) in the end for air in. Oil mist lubrication is necessary for the air, and air pressure should be at least 0.7-0.8Mpa.

3. Attentions during transportation

- The truck loading capacity must be min.3.5 tons.
- During transportation, the equipment is not allowed to contact truck floor, there must be woodblock under it.
- The equipment must be fixed during transportation.
- The movable components (for example tower) must be fixed during transportation.
- Never place sharp items or objects on the upper surface of the equipment to protect the paint.
- Do not load the equipment with inflammables or corrosives.
- Prevent equipment from rain or getting wet.

4.Loading and unloading

Use either crane or forklift to load and unload the equipment. When using crane, the steel wires positions must be evenly deployed around the platform to get balance; when using forklift, the lifting capability must be at least 5 tons, and place the forks to maximum distance. The length of forks should be at least 1.6 meters and use extensions if length is not enough. The forks must be inserted under the platform at balancing positions width ways.

Specifications

Main technical parameter	
Length	6000MM
Width	2140MM
Height	520MM
Pulling capacity	100KN
Air supply required	0.6-0.8MPA
Radius of pulling	360°
Max. load	3500KG

5.Installation

I. Installation of Pulling Towers

a. Use hoisting support equipment like 2T jack, or manually, to lift the pulling tower and make three guide wheels closed with the bench track of the platform. (Figure 5-1)

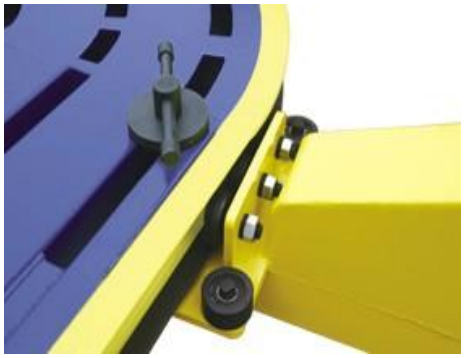


Figure5-1

Don’t push the pulling tower to avoid the falling.

b. Install the hook plate of the pulling tower and lock the screws.

Fix two M10 screws on the hook plate and install three M16 screws. Fasten all screws with spanners. The distance between the upper wheel and bench outer is 2mm-3mm. For more distance, a pad can be put on three M16 bolts on the interior side of the hook plate. Push the pulling tower around the platform to check its flexibility. Lock the bolt to fasten the pulling tower.(Figure 5-2,5-3,5-4)

Figure5-2

Figure5-3

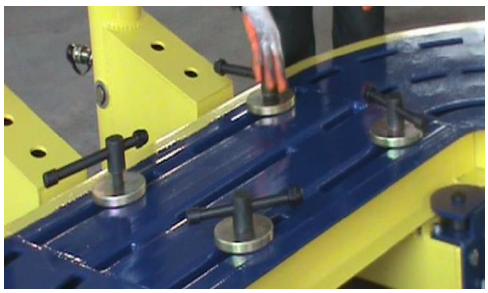


Figure5-4

c. Installation of the tower column: put the collar from the upper end to the bottom end, and put the tower cap slantly into the tower column. The tower cap is long, so it shall be installed slantly to ensure safety. (Figure 5-5)

Figure5-5

d. The installation of the lifting arm: Unload M24 bolts of the lifting arm first. Purt one end of the lifting arm into the tower cap and fixed it with M24 bolts. U-shape frame of the lifting arm can be ajusted and fastened based on requirements.(Figure 5-6, 5-7,5-8)

Figure5-6

Figure5-7

Figure5-8

e. Installation of the chains

a) With tower head of the lifting arm: Insert the chain end without hook from the above end of the U-shape pulley through the tower collumn, then through the loop pulley from bottom to above, better through the tower head and locked.

Figure5-9

b) Without tower head of the lifting arm: Insert the end of the chain without hook through the loop pulley from bottom to above directly, then through the tower head and locked.

Figure5-10

Figure5-11

II **Pressure test of the pulling tower**

a.Ensure joints of all oil pipes are tightened well.

Figure5-12

b． The press injection pneumatic pump travel the whole hydro-cylinder stroke and remain at a stautus of high pressure. Check joints of all oil pipes to avoid leaks. After confirmation, pressure shall be released, and the hydro-cylinder returns. In case of any leak, such actions repeat.

Figure5-13

Figure5-14

Figure5-15

⚠ This is a destructive test to check oil leaks in each joint. In actual pulling with pressure, work shaould be stopped immediately in case that the tower head exceed the warn mark. The length of the chain can be adjusted for better calibration to ensure safety and prolong the usage life of oil pipes.

6. Loading and unloading vehicle

1） Use of the accessories

a) Wheel trollies----When one or more wheels are damaged during a collision. Put the dolly under the damaged wheels, this work should be done with a jack. And then drive the car onto the bench with the possible equipment. (Figure 6-1)
Wheel dolly installation of each model acts same.

Figure 6-1

b) Wheel stand ---- Adjust the extension bolt of the wheel stand. Find the right on the wheel stand, and get the two bolts on the wheel boss into holes, then fasten them with the nuts.(Figure 6-2)

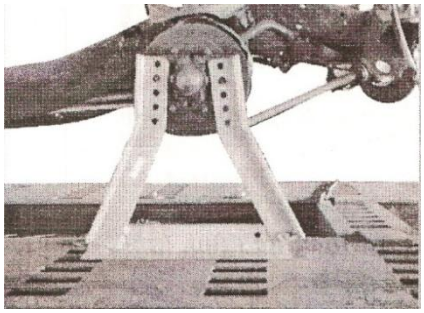


Figure 6-2(**optional)**

c) Installation and use of Winch
Take out the axle of the pulling tower,(Figure 6-3) install the winch, then open the switching then crank, loose the steel wire.(Figure 6-4)

Figure 6-3(**optional)**

Figure 6-4

2） Loading vehicle operation

a. Unlock the anchoring bolts on the platform (Figure 6-5).Power on the

Eagle pro pump.(Figure 6-6)

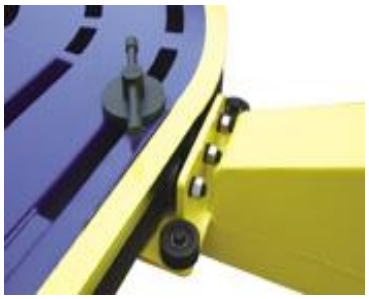


Figure 6-5

Figure 6-6

b. Power the pump to lift the bench till the movable support leg leave the ground, then pull out the handle, pull back the support leg. (Figure 6-7)

Figure 6-7

c. Loose the locking device of the movable support leg, then pull out the pin (Figure 6-8)

d. Stop pumps and unloads the bench

e.Install the ramps (Figure 6-9)

f. Drive the car on the bench (or pull the car on the bench with winch,

then remove the ramps;

Figure 6-8

g. Stop the car with hand brakeand then lock the wheels.

Attention: Stop the pump when the movable support leg leave the ground, avoid the lift parts can not move back.

Figure 6-9

3) Unloading vehicle operation

a. Connect the air pipe of the pump with the oil pipe;

b. Power the pump to lift the bench till the movable support leg leave the ground, then pull out the handle;

c. Lock the movable support leg and then loose the air pump, then unload the bench to avoid the support leg damaged.

Attention: All fuel tanks must be in the back-and then stop pneumatic pump pressure relief.

7. Vehicle anchoring

1） Introduction of anchoring system

The vehicle anchoring system of UL-199L is a set of T-top clamps, which is universal among all auto body repair systems and suitable for most of unibody vehicles with an edge at the bottom. This kind of clamp features great joggling power and strong fastness, which can support large pulling power and assures the safety of pulling work.(Figure 7-1)

Figure 7-1

2） Anchoring the vehicle on platform

Firstly put the four clamps onto the platform under the anchoring points of the vehicle, and adjust the clamps to the level height. Raise the vehicle to a certain height with a rolling scissor jack or other lifting tools. Release the bolts of the clamps, and position them at the anchoring points one by one, and lower the vehicle to get the vehicle edge into the clamp top, tighten the bolts of the clamps. Finally anchor the clamps onto the platform with the special bolts and anchoring panels. Clamp for UL-199L (Figure 7-2)

Figure 7-2

8. Pulling and straightening operation

Operation of the pulling tower

1）Movement and anchoring of the pulling tower

Loosen the tower bolts and pull out the tower pins, move the pulling tower around the platform slowly (Figure 8-1).When the pulling tower is at its right position, anchor it with the tower bolt solidly and insert the tower pin (Figure 8-2)

Figure 8-1

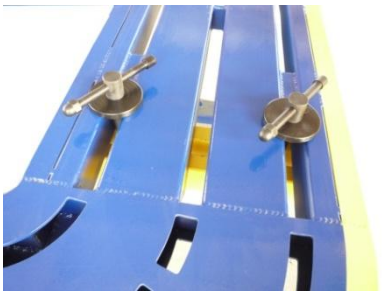


Figure 8-2

NOTE: While doing the pulling work, please make sure that the platform is at its lowest height, or else, no pulling work is allowed.

2) Pulling operation

Connect the two quick couplers on the platform and tower (Figure8-3), position the tower collar to a suitable height(Figure 8-4),select the right pulling tool and anchor it to the vehicle body, where needs pulling, then join to the pulling chain, adjust the length and direction of the chain to get every section into a line, and assure the other end of the chain is locked on the tower ram. Start the oil pump, when the chain is getting tightening, loosens the tower collar, and then continue to do pulling (Figure 8-5).

Figure 8-3

Figure 8-4

Figure 8-5

NOTE: Please do not pulling arrisways or crossly, to protect the outside guide way and tower rollers from being damaged.

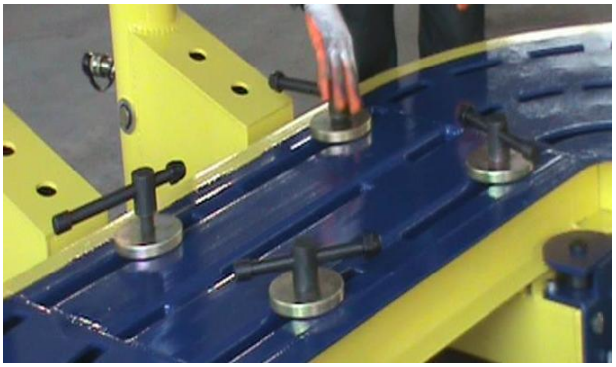
3) Use of the steel wire sling

When using the pulling tools, you should prevent the pulling ring from

Disengaging and bouncing with a steel wire sling. Fasten one end of the sling to the ring, and buckle the other end to the vehicle or platform.

9.Demonstration and spare parts installation

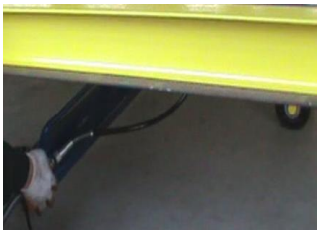
Drive the car on: the lifting power of the car chassis alingment platform is maximum 3.5T.



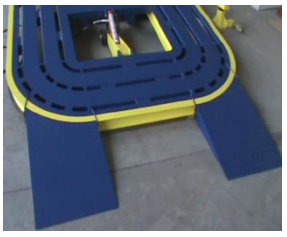
1. Lower the platform

1)Move the pulling tower to the other end of the platform where car is put, and fix it with bolts. Eliminate obstacles on the platform.

2）Start the pneumatic pump o push the support lags slantly against the land. Take back the movable legs of the platform and release the pneumatic pummp, the platform drop slowly to the ground.



3）Two ramps are installed into one end of the platform. In case the ground is not even, ajdust the screws of ramp legs.



4）A person shall be arranged to guide the car onto the platform, confirming all distances correct.

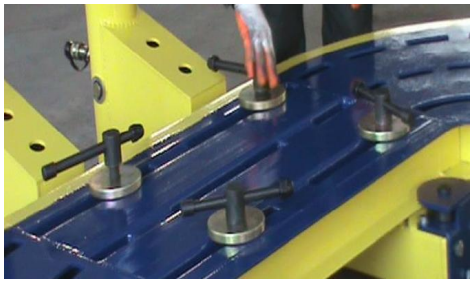
2.Lifting the platform

Start the pneumatic pump o push the support legs slantly against the land. Put down the movable legs of the platform . Release the pneumatic pump in case of spaces between legs and the ground slide the support wheel slowly until movable legs are fixed.

Note: observe space between the brackt and the ground, release the pneumaic pump in case full contact.

3. Aligning

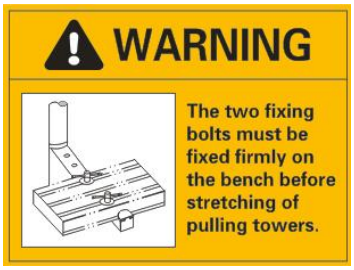
1) Decide stretching points, place the pulling tower to the right position. Firstly the pulling tower must be locked with pressplate and bolts.



2) Durng stretching, the stretching point, the collar and the tower head must be on the same surface. Workers shall stand at the side of the stretching point to prevent hurt.

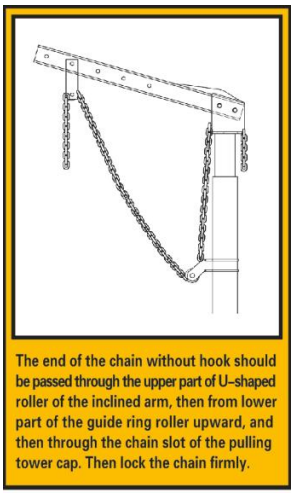
3) Stretching must be stopped in case the tower head exceeds the warning mark. For further aligning, release the pressure and reduce the length of the chain.

•For any stretching, two bolts of the pulling tower must be locked.



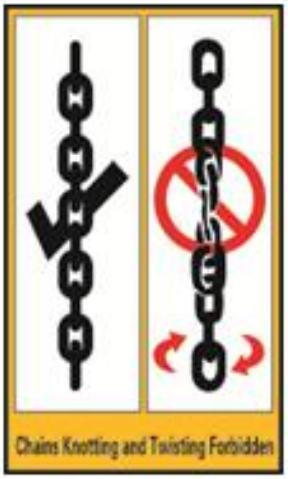
•The chains should be flat and straight. (Twisted straightening is forbidden).

•Stretching: after the chains tighten, all the bolts should be tight again.



•When no stretching is done,the collar must be placed at the bottom of the tower to avoid injuries.

•The cable sling is strictly forbidden for 90 degrees. It needs to be stretched by radian.It can be wrapped by towel or used clothes to prevent breakage, and the maximum load is under 1.5 tons.



10.Installation of tool cart and placement of tools

1. Firstly, install the two fixed wheels by tight the screws. (Figure 5-1)
2. Secondly, install the two universal wheels by tight the screws. (Figure 5-2)

Caution: the fixed wheels must be installed in one short side of the tool board. You can't install one fixed wheel and one universal wheel in the same short side of the tool board.

Figure 5-1

Figure 5-2

3. Turn over the down plate of the tool board, and install the triangle board by tighten the screws. (Figure 5-3)
4. Then put the upper parts of the tool board to connect with the triangle board by tighten the screws. (Figure 5-4)

Figure 5-3

Figure 5-4

5. And the result photo after installation is showed in figure 5-5.

Figure 5-5

11. Operating regulations of body alignment system

1)Be sure to wear work clothes and gloves when you are in the working area, no baboosh or high-heel shoes.

2) Inspection before operation:

a. Before operating the machine, please clean the working area and keep all the sundries away from the platform, tidy the air and oil hoses to protect them from being crushed.

b. Check the air and oil route to make sure all the adapters are connected well and there is no damage of the hoses.

c. Replace the hydraulic oil of the pump after 3 working months, and every 3000 working hours. Some quality hydraulic oils are recommended, such as G-46#, Gulf-46, Mobil-30, BP-32, Shell-32, Esso-32, Caltex-32. Remember to eliminate the deposits in the oil box when replacing oil. d. Inspect the anchoring bolts of the tower roller, and make sure the bolts are tightened well.

3) Regulations of driving on & off

a. Nobody is allowed to stand by the platform during the platform up & down; and some instructions are needed when driving on & off.

b. Be sure to anchor the pulling towers during the platform up & down.

c. When the vehicle is on the platform, be sure to lock the shift and also block the wheels with some wood.

d. Be sure that the safety legs are fully locked by the blocks at the base.

4) Regulations of anchoring the vehicle

a. Inspect the clamp top and clean up the smears and dusts.

b. Be sure that there is no distortion and cracks on the clamp.

c. Tighten the anchoring bolts of the clamps before pulling.

5) Regulations of the measuring system

a. Be careful to take the measuring rods, and protect them from distortion or damage.

b. Read the measuring value horizontally to reduce the tolerance.

c. Please put the rods back to the box.

d. Do not tighten the screw too tight.

6) Regulations of pulling operation

a. Before pulling, inspect the chain, pulling tools and pulling ring, and make sure there are no cracks or damages on them.

b. Tighten the tower anchoring bolts during pulling, and do not position the tower collar above the red precaution line.

c. Be sure of loosening the tower collar.

d. Do not exceed the rated load of the pulling tools during pulling.

e. Do not touch the pulling tools and chain during pulling.

f. No one is allowed to stand behind the pulling tower during pulling.

g. Anchoring the vehicle at the opposite side with chain when doing the great pulling work.

h. When there are any problems with the parts or hydraulic system, please repair them as stipulated by the suppliers.

12.Maintenance

1)Maintenance of the hydraulic system

a. Keep a cleanly environment for the hydraulic system.

b. Keep the hydraulic parts away from dusts, chippingsand caustic liquids, and protect the oil box and gauge

c. Inspect the hydraulic circuit, and make sure there is no oil leak.

d. Check the oil quantity in the oil tank periodically. Replace the hydraulic oil of the pump after 3 working months, Some quality hydraulic oil are recommended,suchasG-46#,Gulf-46,Mobil-30,BP-32,Shell-32,Esso-32,Caltex-32.Remember to eliminate the deposits in the oil box when replacing oil.

e. Protect the oil adaptors with a rubber cover, when they are unconnected.

f. When there are any problems with pump or cylinders, please do repair them as stipulated.

2) Maintenance of pulling tools

a. Keep the joggling parts of the pulling tools clean from dusts and smears.
b. Do not knock the pulling tools and chain during pulling.
c. Do not exceed the rated load of the pulling tools during pulling.
d. Protect the pulling tools from caustic liquids.
e. Clean the pulling tools with some dry cloth after finishing pulling work.

3) Maintenance of measuring system

a. Be careful to take the measuring rods, and protect them from distortion or
damage.
b. Protect the pulling tools from caustic liquids.
c. Do not tighten the screw too tight.
d. Please put the rods back to the box.

4) Maintenance of the platform and accessories

a. Keep the platform clean and dry from dusts and caustic liquids.
b. Do not knock the platform.
c. Protect the measuring guide way and clean the dusts timely.
d. Lubricate the tower rollers, collar roller, wheel leg and movable leg periodically
e. Inspect the bolts and spring clips of the tower roller and legs regularly, tighten or replace them if there is any problem.

123.Safety precautions

1) Platform lifting and descending

a. If there is no flow control valve on the end of lifting cylinder, it is prohibited to open pressure discharge valve at full speed.

b. When lifting or descending platform, the towers must be fixed at the other end to prevent slide.

c. When lifting or descending platform, put the car's shift at parking position, block the wheels with triangle wood; no person is allowed to stand behind the car.

d. Keep the platform and surroundings clear, oil hose and air hose must be well protected.

e. Make sure the movable stand is fixed after platform is lifted.

2) Vehicle anchoring

a. Check and clear clamp jaws before anchoring vehicle.

b. Check the clamp to see if there is any deformation or crack.

c. The locking bolts must be fully screwed.

3) Pulling operation

a. Check tower rolling bearing anchoring bolt before moving tower.

b. Move towers by pushing instead of pulling.

c. Tower fixing bolts must be fully screwed before pulling.

d. Check and clear clamp jaws before anchoring vehicle.

e. DO NOT twist the chain; Make sure the chain is locked on the top of the ram.

f. Turn and loose the tower collar hand wheel. Do not screw it.

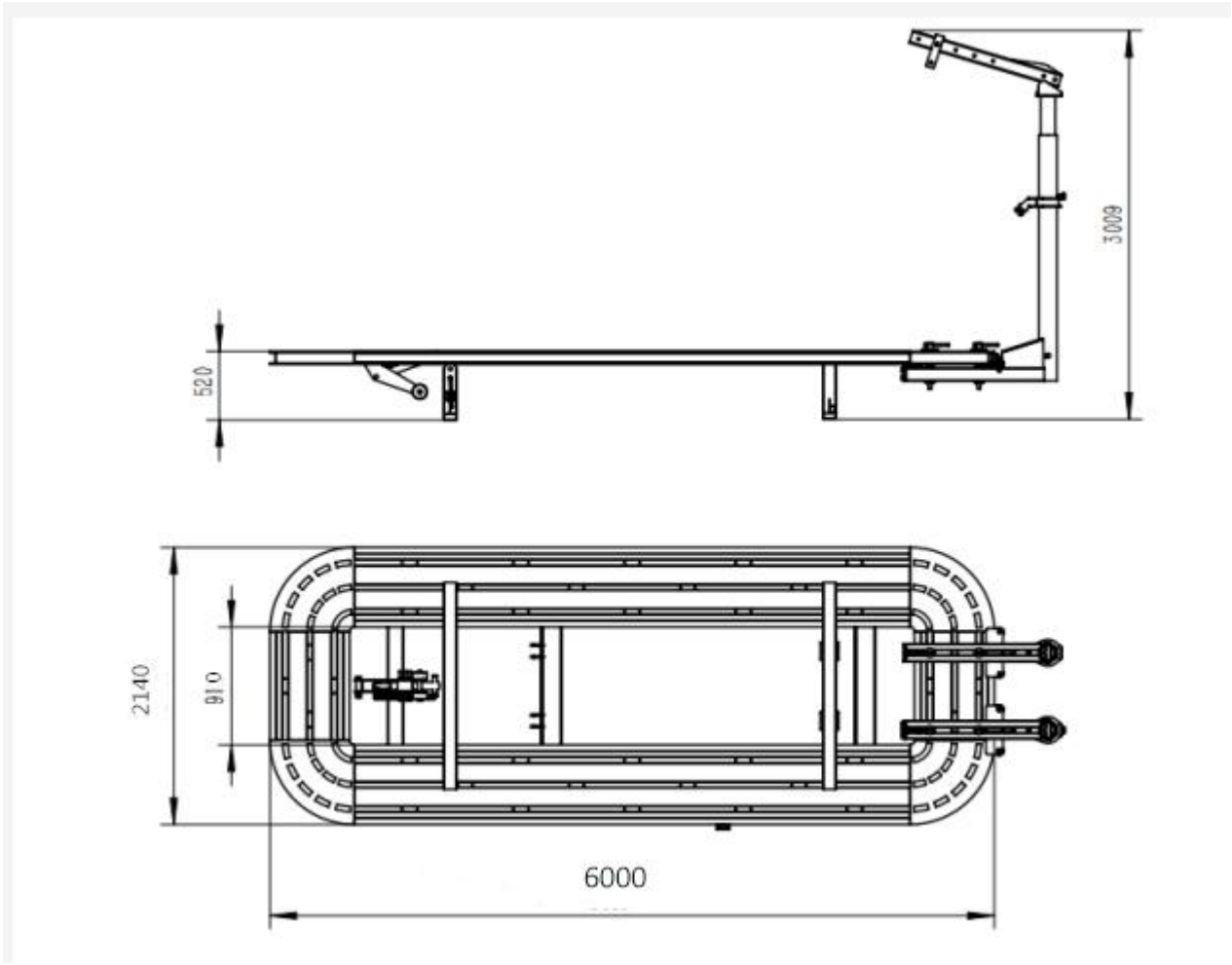
g. Never hammer or beat the chains or clamps when pulling. It is recommended to use protection carpet over the chains.

h. Pay attention to the pulling tools to prevent over pulling or tear.

i. Do NOT over pull the accessories.

j.No irrelevant persons or untrained persons by are allowed to operate the pump.

Equipment plane drawing



14.The supply checklist

1. Number and kind of packages：

No.	Description of goods	Packages
1.	Main platform	1
2.	pulling tower one	1
3.	pulling tower two	1
4.	Tools board	1
5.	Accessories box	1
6.	Fixing and flexible legs	1

15. Tools manual

1) Small clamp

- Structure： Wedge locking mechanism, mesh tooth jaw and bolt fixed jaw.
- Max capacity：3000KG.
- Usage：
- Initial margin and thin metal sheet.

2)Box-clamp

- Structure： Square hole wedge locking
- Mechanism, meshes tooth jaw, and bolted.
- Max capacity:3000KG。
- Usage：To prevent bad clamping of some parts,
- fixed jaw to stretch another part.

3) Big hook

- Structure：Big bending hook, small stents and big stents.
- Max capacity：7000KG
- Usage： For stretch the beam or some strong parts of the vehicle. Change to the big stents when the protection area is bigger.

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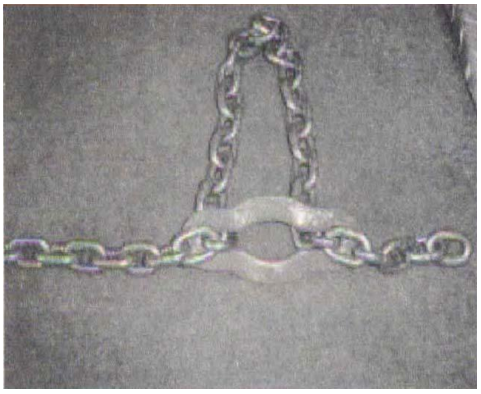
4) Deep hook

- Structure：Is a toothed hook with self-locking of chain mechanism.
- Max capacity：3000KG
- Usage： Quick stretch for any parts, and with non-slip.



5) Chains shortener

- Structure： Double chain rack.
- Max capacity：3000KG
- Usage： Shorten the two long chains to the
- specific length.

6) Multi holes puller

- Structure：Process many location holes on
- the spring steel plate
- Max capacity：1500KG.
- Usage：Stretch technological holes.

15.Tools manual

7) Slotted chain anchor

Structure：Elliptical plate with a notch

- Max capacity: 2000KG
- Usage：Tight the chain position in out of the hole.

8) Nylon sling

- Structure：High strength canvas belt is
- 1000mm.
- Max capacity：3000KG。
- Usage： Protect the stretched parts from extra damage.

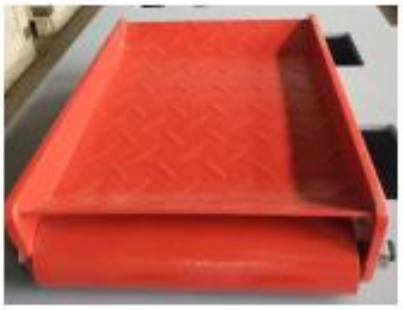
9) Steel wire

- Structure： Length is 1m with two rings at the head of it.
- Max capacity：3000KG
- Usage：Tie up one part to stretch.

10)Down-puller

- Structure：Pulley transformation direction mechanism
- Max capacity：2000KG
- Usage：Stretch the chassis in down direction and can change the direction of the force.

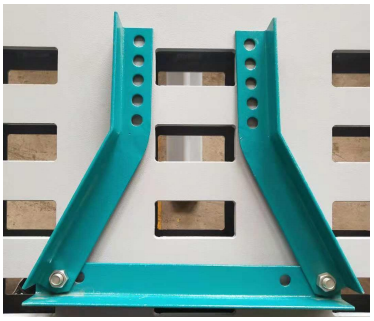
15.Tools manual



11) Wheel trollies

Structure：Rolling wheel dolly mechanism

- Max capacity：2000KG
- Usage： Put the wheel in it when the wheel is flat or lock to pull the vehicle to the frame.

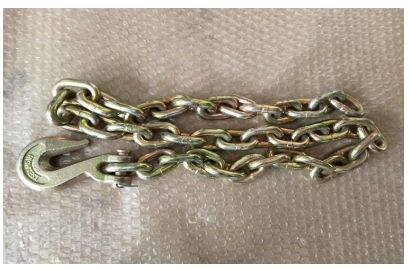


12) Wheel stand（**optional**）

- Structure：Angle type wheel holder
- Max capacity：800KG
- Usage：Support and protect the vehicle after taking off the wheels during the stretching.

13) Chain of 3.5m, chain of 3.5m

- Structure：Chain of 3.5m is with a big hook;
- Chain of 1.2m is with a claw hook.
- Max capacity：8000KG
- Usage：Chain of 3.5m is used in the tower;
- Chain of 1.2m is used for tying up the beam and
- other parts.



THE END

The main procedures of collision repair include: bend and twist adjustment, replacement of seriously damaged welded steel plates, Operators must make a detailed repair plan according to the condition of each damaged vehicle beforehand. The main steps are as follow:

1. Analyze the damage and make a repair plan;
2. Disassemble the relevant decoration parts and mechanical parts;
3. Locate the damaged vehicle on the platform and decide to repair or to replace the damaged parts according to actual condition;
4. Pulling operation;
5. Rustproof process;
6. Painting;
7. Re-assemble all parts;
8. Test-drive the vehicle.

The collision influences vehicles greatly. The auto body design request the front and the rear sections to be easily damaged, which will form collision energy absorbing structure and firm passenger section. Learn as much as possible about the collision and make a detailed plan according to actual measurement.

This manual introduces the installation; test and operation ofUL-L199.There are also detailed introduction on collision analysis and adjustment. For each damaged vehicle, analyze the actual condition and make a detailed repair plan instead of following the illustrations in this manual.