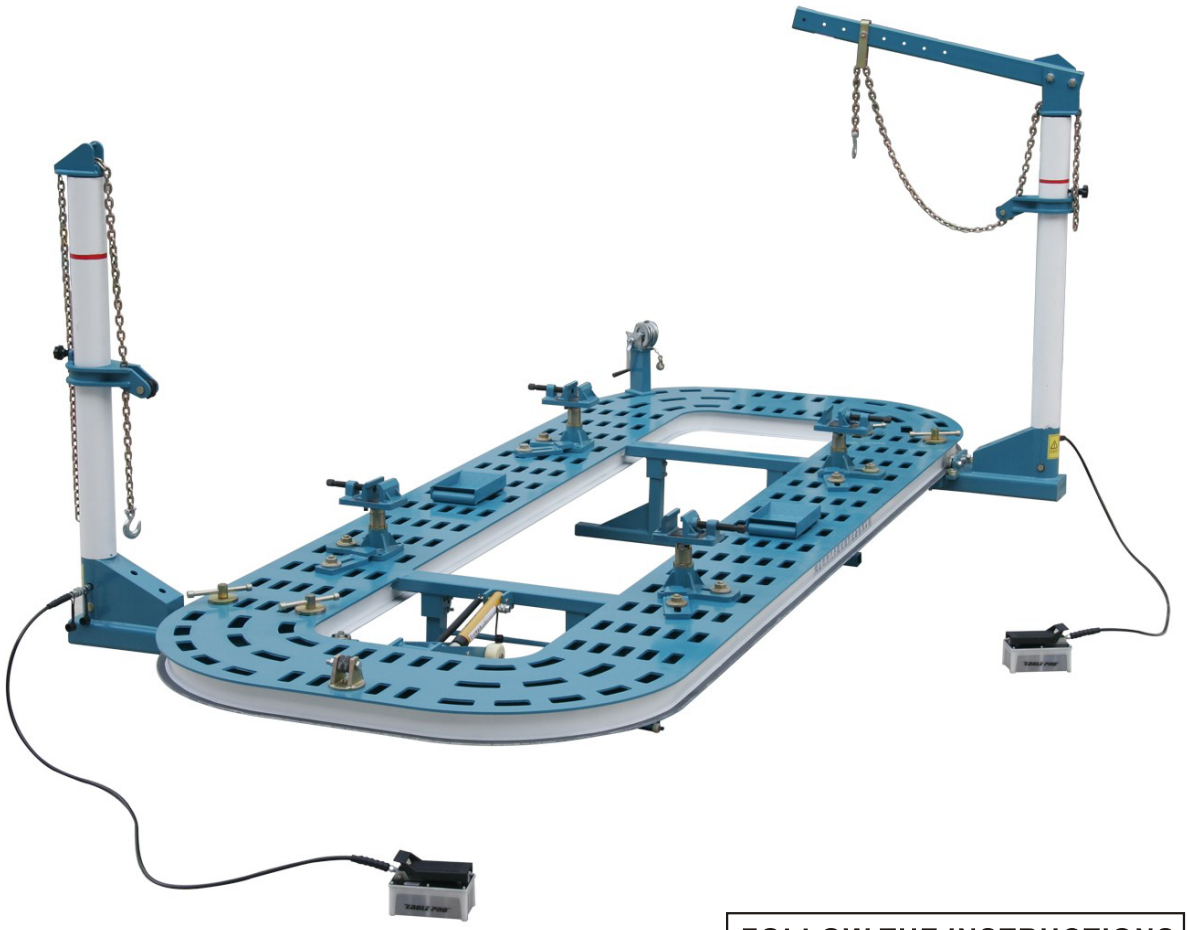
Aprica

QUALITY & TRUST

ALL FOR AUTO

ITEM NO:EE-CRT3000

USER MANUAL



KEEP THE MANUAL NEAR THE MACHINE ALL TIME AND MAKE SURE ALL USERS HAVE READ THIS.

FOLLOW THE INSTRUCTIONS CAREFULLY TO GRANT THE MACHINE A CORRECT FUNCTION AND LONG SERVICE LIFE.

CONTENT

CHAPTER I SAFETY INSTRUCTION

I. Pre – work Inspection

1. Check the seal of hydraulic system constantly, if the seal condition is poorly, need to maintenance or replace.
2. Hydraulic oil pipe keep complete, and without any damage, fire is forbidden.

II. Platform Lifting and Drive on the Platform：

1. When platform lifting, pulling tower move one end and locked tightly with bolt, personnel forbidden to stand behind the vehicle. When drive vehicle on or off the platform, there must have direction guide beside.
2. Platform rise or fall constant velocity, it couldn't be too fast. After rise, must lock the movable support leg or self-lock, to avoid platform fall suddenly to injure person. After driving vehicle on, put the sleeper under the wheel and pull up the hand brake, so to avoid vehicle slide.
3. Don't press the air line during rise and fall process, to avoid system leak so the press couldn't reach to working press, influence operation.
4. Don't press oil pipe during rise and fall process, to avoid oil pipe burst, and the hydraulic oil hurt person.

III. Vehicle Fix

1. Before stretch vehicle, four main clamp to clamp vehicle body and locate. Clamp base need tightened with screw to fix. When stretch reverse direction, fix clamp base with assist press plate. When stretch reverse direction, vehicle should fasten the chain for safety protection.
2. Each position bolt of clamp must screw tightly, accidental vehicle forbidden slide during stretch process. Or else vehicle could pull way from fixed clamp to cause accident. During stretch process, it needs to fasten repeatedly.

IV. Vehicle Stretch

1. Before stretch, make sure each fixed part has been fixed well.
2. Make sure guide ring direction and stretch direction is the same.
3. Make sure sheet metal tool connect and screw tightly, during stretch, clamp connect with steel wire rope should well, to avoid clamp breakage or fall off to hurt person.
4. Person forbid to stand in the range of 2 meters of pulling tower, when operation, personnel should stand on the position that pulling tower side direction and stretch direction vertically, and when operate keep away from pulling tower.
5. During stretch process, hydraulic jack couldn’t used for vehicle support, personnel forbidden to operate under vehicle.

6. Before use chain, to make sure without twist, bend, knot, chain should be inspected periodically, to find whether there is nick, groove twist, bending stretch and support place excessive wear and tear, to check hook and chain accessory whether damage or twist. If there is any above mentioned defect on chain, it must be replaced on time.
7. Adopt specially tools to shorten or lengthen chain. Edges and corners need spacer that chain pass, Heating to the chain is forbidden.
8. Person forbid to stand in the range of 2 meters of pulling tower, when operation, personnel should stand on the position that pulling tower side direction and stretch direction vertically, and when operate keep away from pulling tower.
9. During Stretch process, person forbidden to walk behind pulling tower.
10. When chain in stretch condition, personnel forbidden to knock clamp and chain, avoid clamp fall off and fly out to hurt. Person forbidden to step over chain and operation above chain.

V. Drive off vehicle from platform

1. After vehicle finished maintenance and drive off from platform, there should be direction guidance beside platform. Person forbidden to stand behind platform when drive off vehicle.
2. When drive vehicle on platform, there should be direction guidance, in

order to avoid accident.

3. Pulling tower rail has to clean usually, wipe rail with oil cloth to avoid rusty.

VI. Hydraulic System

1. Strictly forbid bump against or drag oil pump.
2. Strictly forbid squeeze oil pipe, or else hydraulic oil would rush out to hurt person when oil pipe under high pressure condition.

   Don’t bump against fast connector, or else would cause connector seal is bad and oil leak, or dirt could enter oil pump inside, it would damage oil pump when operation.
3. Install air drier filter device on pipeline before compressed air enter oil pump, to avoid water enter pump, to cause piston rust, piston isn’t working, hydraulic oil deterioration.

VII. Strictly forbidden uncorrelated personnel or without training personnel to operate equipment.

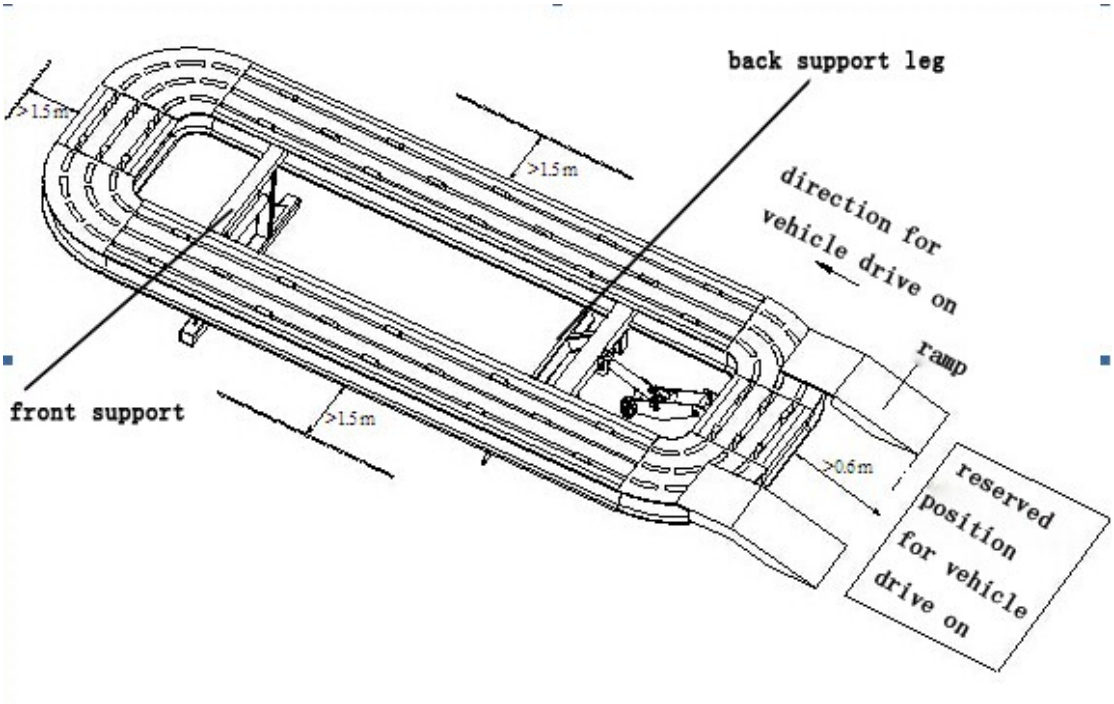
CHAPETER II EQUIPMENT INSTALLATION

Site requirement: smooth cement floor, at least 4m x 7m

I. Platform installation

For equipment, it needs to install pulling tower stretch and vehicle drive

on operation. So please reserve enough installation position, it would be convenient for later operation, in order to avoid causing any trouble for your later operation. To make sure repaired vehicle could drive on platform successfully, please reserve enough position before ramp.



Fix front support on platform front cross beam with 4 bolt, and make platform lifting end oil in by lifting oil cylinder, and make platform higher 5-10cm than horizontal height, install back support leg on platform back cross beam, and make lifting oil cylinder oil return and retract, and then back support leg drop on ground steadily.

II. Pulling tower chain installation

One end without hook of tower column chain pass through from pulley

below and to upper, and then pass through tower column top pole and locked by top pole apical chain locked groove, then finished. Show in Fig. 2-1,2-2

Fig. 2-1

Fig. 2-2

III. Fixed clamp installation

It’s time to use fixed clamp when vehicle fixed on platform and being to repair, usage see chapter IV.

IV Tool holder and tool installation

Find hanging hook in package, and put hanging hook on tool holder, then hanging tool on the suitable position. Show in Fig. 2-3

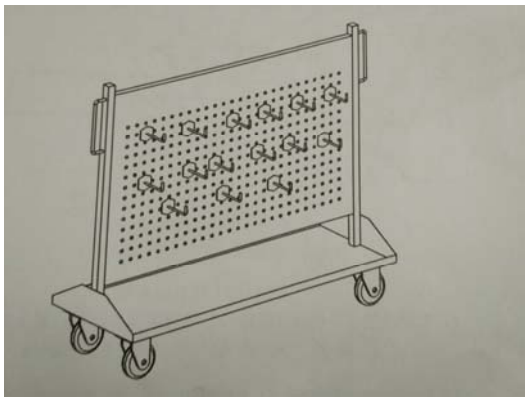


Fig. 2-3

Chapter III OPERATION FOR VEHICLE DRIVE ON or OFF

I. Drive on operation

Before use, first to connect oil pump that for platform lifting with oil cylinder for platform lifting, and then connect air source, detailed operation as follow:

1. Clean up platform surface goods and dirt.
2. Move pulling tower to platform end which fix support leg, fix them with bolt and prohibit moving.
3. Put oil pump at the lateral of platform, stepping down oil pump pedal rear end, rise platform, and lift up platform activity support leg backwards and fixed, and then press oil pump pedal front end, make platform end for vehicle drive on to the lowest position and install ramp for vehicle drive on.
4. Drive vehicle on platform with ramp or make use of tractor (optional) to pull on the platform. If wheel lock and couldn't move, could make wheel on movable vehicle, pull vehicle on platform with tractor (optional), put sleeper under tire to prohibit slide, and lift up the hand brake.
5. Move away ramp, operate hydraulic pump to raise platform, and recover active support leg to droop condition and lock support leg with fix lock pin. Then press oil pump pedal front end for decompression, recover round legs oil cylinder to original state.

Maintenance part should keep 500-700mm distance from tower column, so not to interfere with operation.

II. Drive off operation

1. After vehicle finished maintenance and drive off from platform, there should be direction guidance beside platform. Person forbidden to stand behind platform when drive off vehicle.
2. Move pulling tower to platform end which fix support leg, fix them with bolt and prohibit moving.
3. Put sleeper under tire to prohibit slide, and lift up the hand brake.
4. Put oil pump to the lateral of platform, stepping down oil pump pedal rear end, lifting platform, and lift up platform activity support leg backward and fixed, locked with lockpin. And then press oil pump pedal front end, make platform the end for vehicle drive on to the lowest position and install ramp for vehicle.
5. Drive or move vehicle off platform, and then move away ramp, operate hydraulic pump to lift platform, support leg recover to droop condition and lock support leg with lock pin. And press oil pump pedal front end to decompression, recover round legs oil cylinder to original state.

Attention: Safety Instruction

1. When platform lifting, please don’t press all tool, hydraulic pipeline, air

pipeline.

2. When vehicle drive on or off platform, there should be direction guide beside.
3. When platform lifting, it must use hand brake. The front and rear of tire must use sleeper for safety, prohibit vehicle slide.

CHAPTER IV CLAMP SYSTEM

Equip with standard clamp system, include four base clamps. Clamp used to clamping vehicle bottom bulge on vehicle control zone (center zone), that is auto skirt. Clamp system with location, clamping, and support function. Fixed clamp height could be adjusted, with strong adaptability to vehicle.

Introduction double jaw clamp as example:

1. Make sure damaged vehicle position on the platform according to the damage degree, position. There should be enough room between vehicle and tower column, the distance between tower column and vehicle body is about 50-70cm.
2. View auto skirt shape of chassis, to decide the type of clamp system. If auto-skirt shape is special, please choose “optional special clamp system”.

3. Clamp height lift to the needed height (such height is decided by vehicle damage degree and maintenance personnel working habit), and loosen jaw bolt. Show as Fig. 4-1.

Fig. 4-1

4. Put auto-skirt between two jaw, screw jaw bolt tightly, make clamp system and vehicle body as whole. Other three operations are the same.
5. Make bolt pass through from lower surface of platform, connect with clamp system foundation. Install assist press plate round pin into the hole on one side of clamp seat, and fixed with screw, to make clamp system and platform as one entirety.

Attention: it needs to re-screw clamp jaw in proper order after clamp tightly at begin. Each stretch finished, before next stretch, it must check all fixed bolt, and clamp must clamp reliable, make platform and vehicle body as one entirety. If it isn't fixed, clamp or vehicle body maybe slide, to make personnel damage. If front wheel remove, engine without removing, then need to make use of wheel support.

CHAPTER V HYDRAULIC SYSTEM

I. System requirement:

1. Inspection whole hydraulic system. Attention to the pressure range, bearing capacity limited, system working pressure couldn't beyond rated highest pressure. Avoid damage caused by wrong hydraulic system, unsafely operation, lack maintenance, or incorrect use.

2. Air supported by air hydraulic pump, need to use oil water separator or air drying chamber, and drain periodically, replace internal filter parts.

II. Operation

1. Check oil connector, needn't screw fast connector too tightly, only hand tight is enough.

2. Check equipment safety condition, make sure connect with speed connector, hydraulic oil pipe without bending, compression fault.

3. Oil line must connect tightly, avoid oil line blocked up, system isn't work.

4. Connect pneumatic pump with air source, air source pressure need about 0.8Mpa.

5. There is one exhaust knob on right side of pneumatic pump pedal front end. Unscrew knob 2-3 circle before pump working. Step down pedal, pump with continuous sound "Tu Tu", it means normal.

6. Press down pump pedal front end, to decompression, control tower

column top pole and platform descend steadily.

III. Maintenance:

1.Check all hydraulic oil pipe and fast connector, make sure connect tightly, if loose, could bind with thread seal tape and install again (when bind, leave first circle thread to prohibit thread seal tape debris enter into system, cause oil line block up), connect loosen or oil leakage could cause hydraulic system operation instability and operation out of control.

2. Check hydraulic oil mass in system, it needs to supplement hydraulic oil if insufficient.

3. Exchange hydraulic oil when working about 200-300 hours, In more dust or dirty environment, it need to exchange frequently, it need to totally exchange when exchange hydraulic oil.

4. Keep all hydraulic elements from dust, grease and debris invasion.

5. Keep hydraulic system working environment cleaning, don't pile unnecessary device.

6. Check whether hydraulic system leak periodically, connector whether loose, if there is any problem, it needs to solve quickly.

7. Check hydraulic system working oil each 40 hours.

IV. Main failure during hydraulic device operation process

1. Hydraulic cylinder elastic phenomenon. Mainly for the air accumulate in hydraulic system, would cause elastic phenomenon. Solution is to put

pump at the position higher than soft tube and hydraulic cylinder, the aim is to make air float and rising, return to oil box. Turn off valve, extension hydraulic cylinder as far as possible elongation, turn on valve, let oil and air return to oil box. Repeat 3-5 times.

2. Pneumatic pump working normally, but hydraulic cylinder isn't extend or couldn't extend totally, main failure is hydraulic oil too little, check hydraulic oil mass, if isn't enough, supplement immediately. If there still has problem, it need to wash filter net of oil pump.
3. Hydraulic cylinder couldn't extension, check fast connector whether damage, and then check plunger whether bending.
4. Hydraulic oil cylinder drop automatically, check hydraulic pump oil return valve whether turn off, if oil return valve turn off, hydraulic cylinder still drop automatically, check oil return valve's ball non-return valve, and clean with alcohol or kerosene. If there still has problem, should repair pump and replace seal element.
5. Pump could work normally one time, maybe there is problem with piston of pump, first maybe impurity and ooze block up piston couldn't reciprocating motion. Or for air isn't dry cause piston rusty, so piston couldn't reciprocating motion, take apart pump and clean inside element, finish installation and add new hydraulic oil, exchange oil water separator.
6. Hydraulic cylinder piston pole leak, exchange oil cylinder inner seal ring,

if there is leakage, piston pole abrasion seriously, to exchange piston pole.

7. Oil cylinder connector leakage, unscrew oil cylinder connector, re-bind seal belt, screw connector, if leakage seriously, exchange connector.
8. Solution for oil pump and oil pipe connector leakage the same to above method, if oil pipe damage seriously, need to exchange, forbidden to use.
9. Oil cylinder rising speed slowly, pressure isn't enough, check whether air pressure enough or not, and then check pump filter net whether block up.
10. Pump pedal underneath oil leakage, change seal ring immediately.

Attention: adopt seal belt, pay attention to length, avoid more seal belt into oil line, cause block up and damage hydraulic system. To working unmoral, problematic pneumatic pump, hydraulic oil cylinder, hydraulic oil pipe, when to maintenance, it needs to be repaired by specialist. Damage caused by maintenance, manufacturer isn't responsible for it, and user should responsible for all maintenance cost.

CHAPTER VI SHEET METAL SHAPING TOOL

Sheet metal tool could use single, and also could combined as one complex sheet metal shaping system. Sheet metal tool usage isn't only, and

decided by technician according to accidental vehicle type, damage degree and operator style. It would depend on operator subjective initiative, maintenance become more convenient.

I. Safety Instruction

1. During stretch process, it needs to check sheet metal tool clamp position, to avoid tool fall off.
2. Be careful when use sheet metal tool stretch welding parts, when heard weld failure, it means weld separation.
3. Before use, check clamp jaw. Make sure it is clean.
4. Install stretch tool, make sure not to damage vehicle electric appliance, hydraulic pipeline.
5. When stretch, don’t stand behind enforce chain, sheet metal tool.
6. Attention pull degree each time, all sheet metal tool forbidden overload.

First introduce several kind clamps, and there would be more introduction in next chapter.

1. Right angel multi-direction clamp (optional)

   Structure: multi-direction stretch jaw bolt lock chain locking pull ring

   Max. load：3000KG

   Use：suitable for different angle stretch,

pull ring adjust direction, could 90°stretch.

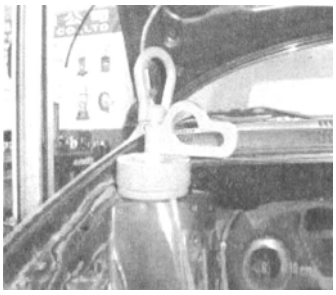
2. Chain connector:

Structure: double chain rake

Max. load：3000KG

Use: Connect with tow long chain, and shorten overlong chain to specified length.

3. Shock absorber puller (optional)



Structure: suspension disc holder, pulling ring

Max. load：200KG

Use: Suitable for vehicle shock absorber “bulge” straight maintenance multi-directional stretch

4. Chain lock hook plate

Structure: oval plate with open slot

Max. load: 2000KG

Use: lock chain outside the slot of equipment.

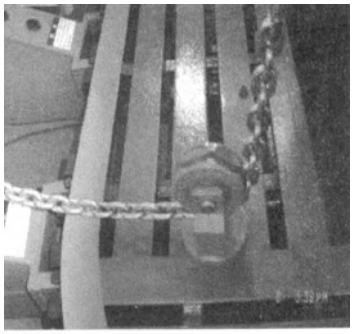
5.Pull down device (optional)

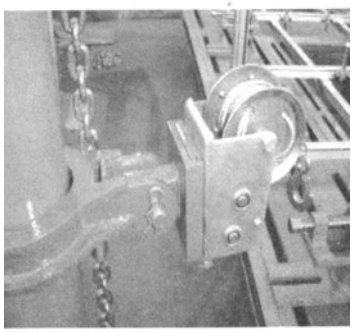
Structure: pulley direction change device

Max. load: 2000KG

Use: suitable for direction stretch that chassis face down

Change stretch direction.





CHAPTER VII STRETCH SYSTM

Pulling tower could move around platform 360°, usage as follow:

I. Pulling tower fixed type is screw fix:

1. Push pulling tower to maintenance position on platform, if damage degree seriously, could adopt two pulling tower stretch simultaneous.

2. M28X6 bolt pass through round press plate, show Fig. 7-1.With round press plate, pass through platform, screw at puling tower column front and rear end, and screw it tightly.

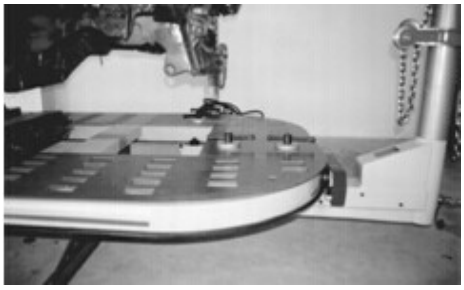


Fig. 7-1

3. M28X6 bolt pass through round press plate, the same way. Screw at tower rear end, and screw it tightly.

4. Check step 2 screw down condition, if find it hasn't screw tightly, re-screw tightly to avoid pulling tower slide during stretch process.

5. Connect hydraulic pump output hydraulic oil pipe with hydraulic oil cylinder by fast connector.

6. Choose suitable sheet metal tool fix at repair parts, show Fig. 7-2, connect tower column chain hook with sheet metal tool.

Fig. 7-2

7. Check chain whether has twist, knot, if ha such phenomenon, to re-adjust chain.

8. Adjust pulling towers guidance ring height, according to maintenance position, stretch angle requirement, direction. Show in Fig. 7-3.

Fig. 7-3

9. Lock chain tightly; make sure chain locked in tower column upper self-lock groove. Show in Fig. 7-4.

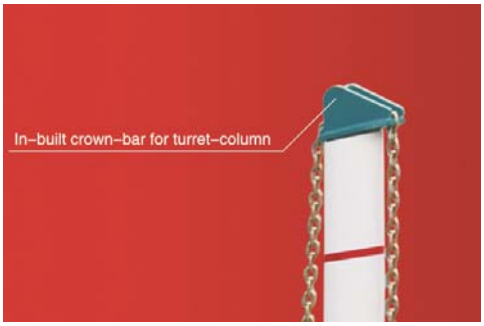


Fig. 7-4

10. After finishing check, turn on pneumatic hydraulic for exert pressure. Attention: begin stretch, don’t operate to fast, stop and check whether there is any problem with connection.
11. During operation, personnel should stand away from stretch direction of both sides above 2 meters. Forbid to stand on stretch direction, avoid chain or clamp fall off to hurt.
12. During stretch operation, sometimes, it need to knock some parts to relieving of internal stress, should observe chain tension degree at any time.
13. Equipment regulation: pulling tower guidance ring more far away from ground, pull should less that supported by pneumatic pump; guidance ring installation position shouldn’t beyond pulling tower warning line.
14. Stretch to designate position or need to re-stretch, to open pneumatic hydraulic pump oil return valve, release press, tower column pole return to original position, re-adjust chain, guidance ring, go on stretching, measuring, adjusting until operation finished.
15. Stretch finished, decompression, loose chain with sheet metal accessory, hydraulic oil pipe speed connector separate from tower column.
16. Loosen M28X6 bolt that fixed pulling tower, push it to suitable position, and for next operation.

Attention:

Warning: personnel forbid to stand behind tower column when it

under press, avoid chain or tool accessory flyout and hurt personnel. Cause danger. Chain couldn't twist and knot.

CHAPTER VIII COLLISION ACCIDENT VEHICLE STRAIGHTENING

I. Vehicle body straightening basis

Vehicle collision damage maintenance processes mainly include straight vehicle body bending, twist, deflection and exchange damaged seriously welding steel plate. To each accidental vehicle, it needs to make a complete maintenance project, collision accident vehicle repair process as follows:

1. Analysis accidental vehicle damage, make maintenance project.
2. Remove decoration parts and mechanical parts that has relationship with collision
3. Located accidental vehicle on platform, according to practical situation, make sure whether to repair or exchange.
4. Stretch and straight accidental vehicle.
5. Anti-rust prevention
6. Painting
7. RE-install decoration parts and mechanical parts that has removed
8. Test and maintenance finished.

The influence is large for collision. When vehicle crashed, vehicle body

design requirement front body and back body easy to damage, so to form one structure to absorb collision energy, to make sure passenger zone strong. At this time, it need to make sure crashed vehicle size, structure, direction, speed and the angle and direction when vehicle crashed and passenger number and their position when crashed, before make exact evaluation, to know more truth about crashed vehicle and also to combined with practical measure to specify detailed process of maintenance.

For one accidental vehicle maintenance, should make detailed analysis to the vehicle, make maintenance project, and not only to depend maintenance instruction in brochure.

Basic Principle for vehicle straightening: according to reveres direction of impact direction, to stretch on collision zone, when crash and damage is little, such way is effective. But when there is fold, part damage, if just to stretch on reverse direction, it couldn’t recover, because each plate strength and recovery rate is different. So during stretch process, it needs to change force size and direction according to each plate recovery rate.

II. Straightening Technical

With series one-way direction pull, it could to repair and straightening frame type vehicle body. Simple one direction pull, the effect is obvious to

small scope crashed maintenance; it wouldn't cause stretch excess or break. But the situation is changeable when to straightening load bearing vehicle. Attention：load bearing vehicle body structure more complexity, impact could effect whole vehicle body. Most load bearing vehicle body repair, require multiple pull, during one time maintenance and straightening process, there is more pull point and direction. If just to pull from one direction vigorously, before load bearing vehicle body pull straight, pull could make it break. Straightening process as follow:

1. To know about equipment safety instruction.
2. Vehicle damage analysis
3. Initial straightening basic fix point
4. Repair location point, check straightening effect, straight according to the sequence.

III. Vehicle collision repair process

Before any repair work, determine collision repair procedure.

1. Vehicle body damage analysis

   Before stretch straight, remove relative parts that have relationship with collision maintenance. For load bearing vehicle body damage would diffuse to distance, and some place unexpected.

2. Pull Straightening

   Determine load bearing vehicle structure damage degree, and find out damage zone, then to stretch and straight, Maintenance process should

according to some basic principle, to make sure repair damage part with little metal amount of finish, and couldn’t cause further vehicle structure damage.

3. Maintenance collision damage process

   To stretch according to reverse procedure that caused damage. When stretching load bearing vehicle body and parts, you need to use multiple-point stretch. Now vehicle body material metal plate easy to translocation, shrink, extension, wrong stretch may cause invisible damage. Now vehicle design all consider to isolate from collision, each damage part could be taken as separate entity. To damage parts, according to rules” last-in first-out”.

IV. Equipment stretch procedure

When stretch, one time stretch little, and then loose chain, unload, measure. When operation, according to sequence “inside and out”

1. First is length. Along vehicle centre line, to pull on longitudinal direction.
2. Width straight, straight on horizontal direction.
3. Height straight

For load bearing vehicle body high strength steel is sensitive to heat, normally don’t try to finish straight one step. In generally, should follow stretch- keep balance—re-stretch—re-keep balance, repeatedly

If some vehicle body folds too tight after collision, metal with tearing dangerous. It need to heat. Attention when heating, only could heat at corner angle or connected tightly place of two ply plate. If heat on frame longitudinal member inside lower position or cross section of box type, it would worse, heat is one kind way to eliminate metal stress, and it isn't the way to soften some part. Enforce pull on pre-decided position, make damaged steel plate to recover its size and shape, totally eliminate bending steel plate stress, to realize exact vehicle maintenance. The sequence of vehicle body sequence: length straight, width straight and height straight.

V. Typical collision maintenance

1. Vehicle front damage

Vehicle front collision depend on vehicle inertia mass, speed, collision impact position and collision reason. Vehicle front collision, if damage beam, front longitudinal and front wing, splash guard. First, at one side which need to exchange part, stretch front longitudinal according to the reverse direction of collision direction. If stretch could cause damage to front longitudinal, could separate beam and radiator top mount, and straight respectively.

If damage seriously, damage would into vehicle A column, would cause car door couldn't open. Remove front longitudinal, splash guard, and then stretch, or inner push with top pole.

If vehicle front lateral collision, vehicle front lateral element would arise

horizontal and longitudinal turn deformation and vertically deformation.

Because each assembly element is connect with each other, so impact energy could pass one impact point to opposite to cause deformation.

Sheet metal tool usage

Show in Fig. 8-1 8-2 one kind way for self-adjusting clamp usage

Fig. 8-1

Fig. 8-2

Show in Fig. 8-3 one kind way for small hook usage

Fig. 8-3

Attention: Guidance ring and top pole angle must keep the same with stretch direction, avoid chain break away from.

Show in Fig. 8-4. one kind way for combined clamp usage

Fig. 8-4

2. Vehicle rear damage

Compare to vehicle front end, rear sweep template structure more complicated, and damage maybe diffuse more seriously. In general condition, fender-guard would bad when rear collision and impact would be transferred by rear of back longitudinal or nearby sweep template, cause damage to upswept part. Besides wheel cover also would deform, cause back top cover move forward, change space between other parts. If collision very seriously, it also would influence vehicle top, door and centre column.

Connect suitable sheet metal tool with rear of back longitudinal, back floor or back top cover lateral plate rear, straightening and also measure size of vehicle body below at the same time, observe sweep plate cooperate and space situation to decide necessary maintenance. When back longitudinal crash into wheel cover, back door has interval error, don’t straight back top cover which deform little or without deform. Only to straight longitudinal beam

to eliminate back top lateral plate stress, stretch straight at wheel cover or vehicle top lateral inside plate and back longitudinal, then door space could keep right.

Vehicle head collision also could cause vehicle rear part structure twist. When appear above situation, clamp vehicle rear lowest position structure on platform. Preliminary straight could recovery some lowest straight point.

Re-install sheet metal clamp, to keep original straighten, go on with straightening. Of course, straight point number would change. Once topside structure damaged could repair to install sheet metal tool, install fixed device to straight topside structure, and remove damage seriously and couldn’t repair, and part need to replace.

3. Vehicle lateral damage

If vehicle lateral crashed, car floor also would deformation, to repair such damage, straight from vehicle centre part to outside, suggestion both end straight. If straight at vehicle body higher position, then need at reverse direction, fix vehicle chassis at platform. Straight to outside from vehicle centre part, also could make use of move pulling tower and separate jack to finish.

Sheet metal accessory:

Show in Fig. 8-5 Big bent hook one kind of usage

Fig. 8-5

4. Vehicle top collision maintenance

   When outside drop object impact on vehicle top, it not only cause vehicle top plate deformation, but also would cause damage to top plate, edge beam, wing plate and windscreen. When vehicle has overturn accident, vehicle column and top would bending, and bending column's relative end also would damaged. According different type overturn, such as longitudinal overturn, vehicle front or back damaged, damaged degree could decided according to car window and car door surround deformation. When maintenance, could adopt optional small hydraulic top pole, other parts could adopt pulling tower stretch,

5. Pull-down operation

Pull down operation is to pull damaged high position to downward

Show in Fig. 8-6; pull down third wheel usage

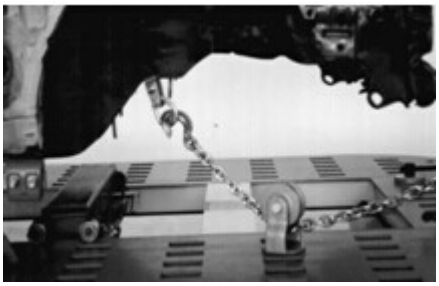


Fig. 8-6

VI. Vehicle collision maintenance notes

Basic principle for vehicle collision repair, if damaged part allowed straight, to repair completely. During straight process, when asperous edge's margin become flat or cut welding point and move back and become one straight line, now it could be welding. When stretch asperous position, need to eliminate stress with hammer. For load bearing vehicle body, each component depend on each other, damaged component maybe make adjacent component stress large, so to cause further damage to component during straight process.

At Begin, enforce pull intermittent and check plate move condition, to make sure pull is effective on damage part. If without effect, consider to

change pull direction or pull part.

Force arised by straightening and damage force caused vehicle collision, is reverse direction. So damage part is as strong as it without damage, damaged end resist stress together; bent part has large stress to resist pull straight. In fact, Vehicle repair rules establish according to: to repairable part, straight and replace shouldn’t proceed at the same time. So during straight process, visual inspection is necessary to straight process. When straight work is good and before for next step straight, should finish each kind of possible ongoing repair work.

Repair bent sealing cross section part, clamp bent edge surface, and straight direction, needed strength should on one imagined straight line direction, the straight line is extension line that pass part original position.

When repair load bearing vehicle body, don’t try to remove some damaged part, then welding intensify patch on removed position for repair part. Because now good vehicle body design structure, some part such as beam, purposed design may supply controllable damage during collision, it could avoid or delay critical part damage. Some part that been strength with intensify patch, maybe prohibit controllable damaged, so the design purpose loose efficacy. So when breakage, abrasion or bent critical component couldn’t repair well, should replace the whole part. Damaged part could create more resistance than

adjacent part during repair process, damaged beam resistance is lager than its connected front cover. Repair force could effect on beam, during straight process, all critical control points must measure to control their direction, avoid straight too much.

IX EQUIPMENT MAINTENANCE

I. Hydraulic system maintenance

1. Keep hydraulic system working environment clean, don't pile unnecessary sundries.
2. Oil pump air supply need no dust, no water, must install air drier device on air line, air pressure 0.5-0.8 Mpa.
3. Keep hydraulic element from dust, debris, and corrosive liquid's erosion, wipe with soft cloth and keep clean. Don't drag oil pump on ground, protect oil gauge.
4. Before each operation, to check hydraulic system pipe line whether leak, connector whether loose, if there is damage, replace it.
5. Check oil mass periodically, please supplement when oil isn't enough, fill Great wall 46, Gulf-46, Mobil-30 , BP-32 , Shell-32 , Esso-32 , Caltex-32 high quality hydraulic pressure oil; After use for three month, should change hydraulic oil, open oil box when change oil, clean dirt at oil box bottom and fuel inlet.
6. When hydraulic system isn't use, each connector should with dust

prevention poly cap.

7. When the hydraulic pressure system appear any problem, don't disassemble it for repair by yourself, avoid to attaint or lost the components and then could not repair, if have any question, please contact with us as soon as possible.
8. Hydraulic oil pump should handle with gently, don't drag on ground and cause pump abrasion.
9. Please keep fast connector at suitable place, when it isn't use, don't bump against connector.

II. Sheet metal tool maintenance

1. Sheet metal tool each clamp rodent clean and without greasy and debris.
2. During stretch process, don't knock steel metal tool and chain
3. During stretch process, don't beyond each tool rated load.
4. Sheet metal tool don't connect with erosion liquid, avoid rusty, erosion clamp jaw teeth.
5. When sheet metal tool isn't use, please wipe with soft cloth, and line up on tool holder.

III. Platform Maintenance

1. Platform should keep clean and without greasy, wipe clean after operation; there should be no water and acidic on equipment.

2. Don’t knock platform with iron, avoid damage platform flatness.
3. Don’t knock pulling tower rail, avoid to damage rail, debris forbidden on rail.
4. When move pulling tower, it need smooth and steady, and brute force is forbidden, or else, it would damage walking device.
5. Pulling tower slid wheel, wheel leg, active leg should fill lubricating oil.
6. It need often to check bolt snap spring of tower column slide wheel, activity leg whether loose, it need to screw tightly.

X PULLING TOWER INSTALLATION INSTRUCTION

Fig. 10-1

Fig. 10-2

Fig. 10-3

Fig. 10-4

Fig. 10-5

Fig. 10-6