



Car Collision Repair System LCH-TCR302

User Manual



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Chapter 1 GENERAL INFORMATION

1.1 GENERAL INFORMATION

Read the manual carefully prior to starting the frame machine. The Operators and the Qualified Technicians have to familiarize themselves with the instructions contained in the present publication.

1. The goal of this manual is providing the user all the necessary information so that, besides a correct use of the frame machine, he is able to use it on the most security way.
2. It includes information of Technical data, Function, Installation, Maintenance, Spare Parts and Safety Notice.
3. Any question regarding this instructions, please consult our technical office to get the necessary explanations.
4. he manual is an integral part of the frame machine, it has to be taken care of by the buyer, it has to be kept at the immediate vicinity of the frame machine, stored in a special container and protected from liquids or anything that is liable to jeopardize its legibility.
5. If the manual has deteriorated, we are happy to resend a new copy. In such cases it is necessary to communicate with our technical office. The characteristic data stamped on the special identification nameplate. The manual has to be kept with the machine if it is sold. The pictures in this manual only prove how to use H-100 frame machine to repair the accident vehicle. According to the different vehicles, various collision degrees, the repair method is variation. The operators should analyze the situation and make a set of appropriate repair method according to actual position.
6. The manual is composed of 19 pages, cover included.
7. Data and drawings are only illustrative; it is prohibited for anyone to copy, modify or use for personal reasons.
8. Liability: Although every effort has been made to ensure the accuracy and completeness of this information, the information compiled in this manual cannot guarantee that it is completely free of errors or omissions. It is the responsibility of the owners and operators of each facility to ensure that the facility complies with all applicable regulations. The rules and regulatory interpretations may change without individual notice to collision repair and automotive refinishing shops.

1.2 TRADEMARK

When receiving the frame machine, please check the parts of the identification nameplate that has to correspond to following. Table 1:

Specification	
MODEL:	LCH-TCR302
FRAME LENGTH	5600mm
FRAME WIDTH	2200mm
FRAME HEIGHT	580mm
HYDRAULIC PRESSURE	70Mpa(1000psi)
POST MAX. TENSION	95KN
POST WORHING RANGE	360 Degree
PNEUMATIC PRESSURE RANGE	0.8MPa

1.3 SYMBOLS

SYMBOL



MEANING

Caution,
injure foot

COMMENT

When moving the tower, operators should following the regulations in order to avoid injuring foot.



WARNING

Operators are forbidden to stand behind the tower which is working, in case the chain or accessory crash backwards and hurt people. Chains should not be distorted or knotted.



Max Loading of
overhead puller

The Max loading of every bore is identified on the overhead puller. All operations marked by this symbol are strictly to be followed with maximum attention.

Chapter 2 FRAME MACHINE DESCRIPTION

2.1 GENERAL PRESENTATION OF STANDARD COMPONENTS

The frame machine H-100 standard type is composed as follows:

Table 2:

NO	MAIN PART	PART	QUAN.	UNIT
1	FRAME ASSEMBLY	Frame	1	Set
		Pulling tower	2	Set
		Main chain	2	Piece
		Chain with hook	2	Piece
		Loading ramp	2	Piece
		Overhead boom	1	Set
2	CLAMPS/SUPPORT ASSEMBLY	Main clamps	4	Set
		Air hydraulic pump	2	Set
		Air hydraulic cylinder	3	Set
3	ACCESSORY ASSEMBLY	Pulling tools	14	Piece
		Tools board	1	Set
		Secondary Air Jack	1	Set
4	Measure System	2-dimension measure system	1	Set

2.1.1 FRAME ASSEMBLY

The frame assembly is the place where the maintenance and repair process is carried out. It is divided into the following subgroups:

A. Frame.

The maximum applicable lifting weight of the frame with a basement is 3000 Kg.



ATTENTION: it is not permit to overload the maximum lifting weight on the frame indicated in the Table 1.

B. Pulling tower.

The pulling tower can mobile 360 degrees around the frame.

C. Loading ramps.

The loading ramps are mounted on the frame that help the vehicles load on the frame.

D. Overhead puller.

The overhead puller is mounted on the tower that repairs the top area of accident vehicle .

2.1.2 CLAMPS/SUPPORT ASSEMBLY

The CLAMPS/SUPPORT DEVICE of MEG210C is consisted of four main clamps and two wheel brackets. The clamp system is used to locate, clamp and support the vehicle. These clamps can be adjusted up and down. The wheel bracket is used to support the accident vehicle the way the wheel is.

Main clamp



2.1.3 HYGRAULIC SYSTEM

Two air hydraulic pumps are included.


2.1.5 ACCESSORY ASSEMBLY

1. Pulling tools assembly.

It consists of a tools board and dolly, 14 pieces of pulling tools. The different pulling tools are used according to different distortions. The pulling tools may be used by themselves or in conjunction with other tools. The use method is not rigid but adaptable according to the model of vehicle, the degree of damage, and personal preference. It may develop the preference of operators and supply more convenience. These 17 pieces of pulling tools are part of a 20 tool set.

Table 3: A list of available pulling tools are shown below

NO.	DESCRIPTION	QUAN.
1	Scissor Clamp	1(Set)
2	Small Clamp	1(Set)
3	Heavy duty Clamp	1(Set)
4	Big mouth Clamp	1(set)
5	Handy Hook	1(Set)
6	Frame rack clamp	1 (Set)
7	Steel wire	1(Set)
8(9)	Chain	2(Piece)
10	Gallus	1(Piece)
11	Double connector	1(pieces)
12	Mini-clamp	1(pieces)
13	Handy Clamp	1(Set)
14	Down pulley assembly	1(Set)

 **ATTENTION:** When operating, do not exceed the Max Load capacity as far as the data attached on the tools are concerned. Subject to manufacture alterations.

2.2APPLICABILITY

Frame machine H-100 is used to repair accident vehicles.

Frame machine is used only for repairing the accident vehicles; any other use is to be considered improper and incorrect.

Any modification of the machine not previously authorized by the manufacturer absolves the manufacture from damages derived or referable to the aforementioned actions.

Chapter 3 INSTALLATION

3.1 UNPACKING

After transportation, remove the wrapping and ensure that:

- a. The content of the package corresponds to what was agreed upon in the order.
- b. There are not visibly damaged parts.

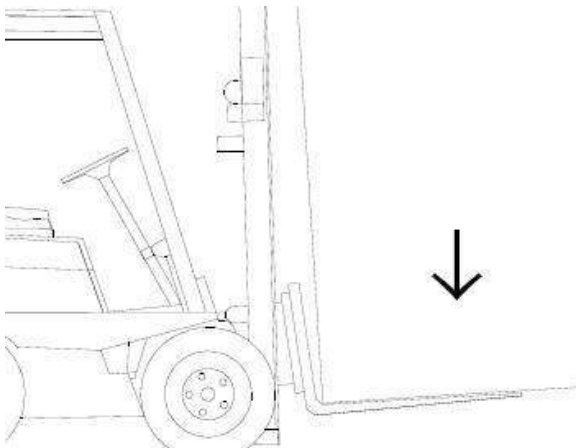
In both cases, if problems are encountered, do not proceed with the installation of the machine and warn the manufacturer immediately of the damage and/or of the missing parts on opening the wrapping.

3.2 INSTALLATION

3.2.1 INSTRUCTIONS AND RECOMMENDATIONS

Before beginning the installation work it is necessary to make sure that the environment that will keep the frame machine is in conformity with the characteristics below:


Before proceeding to the installation of the frame machine it is necessary to prepare a device which may lift the frame, for example illustration 1 or other equipment in order to have an installation environment.




3.2.2 INSTALLATION

1. TOWER INSTALLATION

- a. Firstly the frame of Frame machine should be in an appropriate place. Taking into consideration that the suitable distance should be left between the frame and the surrounding walls (recommended about 3 meters) in order to operate conveniently.
- b. Lift the tower equal to the edge of the outboard frame orbit, and then push the tower to land onto the orbit of the frame edge.
- c. Joint the lock-arm and tower with M12 screw, and then there should be left a gap of 3-4mm between lock-arm and orbit in order to make the tower around the frame edge without obstruction.
- d. Prepare the necessary parts.
- e. Install the stopper screw.
- f. Install two handle screw.

 **ATTENTION:** When operating the tower, the handle screw should be fastened. And there should be a gap between the top of handle screw and the lower plane of frame in order to make the tower around the frame edge without obstruction. Illustration.

- g. Install the Guide-ring.
- h. Install the hydraulic cylinder. Insert the cylinder into the bottom of Tower. Make the connect hole of cylinder is equal to the hole of tower. Then insert the Crossbar for cylinder. Illustration.

 **ATTENTION:** After Crossbar for cylinder is inserted, don't forget installing the block ring.

- i. Install Tower collar.
- j. Pass upwardly the end without a hook of the chain through the wheel of guide-ring, then pass the chain Tower collar and fix the chain.
- k. Install the overhead boom.



- l. Install the connector onto the cylinder. And attach the hose with the swivel connection.
- m. Attach the pump on the other end of the hose. Then attach the thin hose on the compressor.

Chapter 4 SECURITY NORMS

4.1 GENERAL RULES

 **ATTENTION:** Follow carefully the supplied indications.

The manufacturer is exempted from any responsibility which concerns damage derived from not respecting the following norms.

- a. Keep the use and maintenance manual always within arm's reach at the place of work.
- b. Frame machine is produced in accordance with the actual technical level and the recognized technical safety rules. Nevertheless it is possible that risks for the consumer may occur during use.
- c. Observing the accident-prevention safety regulations.
- d. Keep to all the signal of danger and safety posted on the frame machine.

4.2 QUALIFYING THE PERSONNEL

- a. The personnel employed to operate the frame machine, before beginning the work, has to study the "SECURITY NORMS " chapter. Because during the work there will not be the

time to study.

b. The personnel in vocational training will only be able to operate the frame machine if they are constantly supervised by experienced persons.

4.3 SPECIFIC NORMS

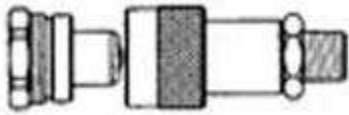
In the paragraphs below are listed all the regulations and prohibitions to be Observed in order to prevent possible accidents:

4.3.1 INSIDE THE REPAIRING OPERATION ENVIRONMENT

1. It is prohibited for persons who are not be trained operate the frame machine.
2. During the operating process, the operator must consult the operation instructions of the vehicle and adopt the operation method which vehicle manufacturer recommended in the vehicle manual.
3. During the operating process, the vehicle must remain N block and apply the brake in order to avoid slipping.
4. While hoisting or falling the frame, operators must pay attention to not pressing the hydraulic hoses and the air hoses, etc.. The hydraulic hoses must keep be in good condition (not allowing to bake the hydraulic hoses).
5. During the operating process, that the operator works under the auto is not allowed.
6. During the operating process, the oil pressure gauge of the air hydraulic pump is not allowed beyond 6000PSI.
7. While hoisting or falling the frame, anybody is not allowed to stand behind the auto. And while loading and unloading the frame, there is the person to instruct the direction.
8. During the operation process, anybody is not allowed to stand behind the tense chains or the pulling tools that is working.
9. Before using the chains, check that the chain have not been twisted or knotted. The chains must be checked periodically.
10. It is right that to increase or shorten the length of the chain by special tools, instead of intercrossing or knotting or forelocking the chain.
11. It is forbidden to heat up the chain.
12. The pulling tools must be located hard on the surface of the vehicle.

4.3.2 USING HYDRAULIC OPERATION

1. Attention related pressure range. Do not exceed equipment ratings.
2. Never attempt to lift a load weighing more than the capacity of the hydraulic system.
3. Checking the sealed capability of the hydraulic system constantly, and if it is not be in good position, repair and replace it immediately.
4. Do not screws down the connection excessively, only do it by hand.



5. Recommend that use the hydraulic gauge to measure the pressure.
6. Recommend that use the oil-water segregator and drain timely.

4.3.3 USING PULLING TOOLS

1. Before using the pulling tools, make the clamps clean.
2. Check frequently the fastness between the distortion position and pulling tools in order to avoid falling off.
3. When installing the pulling tools, do not damage the electric line or hydraulic line of vehicle.
4. Pay attention to give a appropriate power when pulling the welding line.
5. During the operation, nobody is allowed to stand behind the tight chain or pulling tools.
6. Do not exceed the Max Load capacity as far as the data in table 3 are concerned.

Chapter 5 OPERATION INSTRUCTIONS

5.1 PRELIMINARY USE INSTRUCTIONS


Before starting the frame machine it is necessary to do the following controls:


1. Check that the screws of the various components have not been loosened during the installation.
2. If the national law requires the approval of use it has to be certified by the expert nominated on the periodic control card reported at the back of the manual.
3. In order to keep the suitable pulling power within the limit. Generally if the power is too high it is necessary to increase the power little by little.
4. OPERATION BASIC RULES:
Commend pulling a little every time, and then loosen the chain. Measure and pull again. When operation, follow the rules of " from inside to outside".
 - a. Pull lengthways the vehicle along the central line.
 - b. Pull in the breadthways direction.
 - c. At last the vertical direction..

After having prepared the vehicle, please follow the indications specified in the paragraph:

5.2 CLAMP PROCESS

Before operation, the accident vehicle must be clamped in order to avoid slipping.

1. According to the degree of damage and part of damage, operators may confirm a appropriate location where the accident vehicle may be clamped. Commend about 50cm to 70cm should be left between the tower post and vehicle body.
2. Make the vehicle onto the frame.
-  ATTENTION: During the operation, nobody is allowed to stand behind the vehicle.
3. Make the vehicle remain N block and apply the brake in order to avoid slipping. And fix the vehicle tire by the triangular-wood.
4. Observe the shape of the vehicle chassis, and then choose which clamps are available.
5. Adjust the clamp system to the anticipant height (the height is decided by the degree of damage and the habit of the operators.), and then loosen the screws of the clamps.
6. Lift the vehicle to the appropriate height by the secondary-lift in order to install the clamps.
7. Tighten the screws of the clamps in order to attach the vehicle body to the clamps.

 ATTENTION: After every pulling operation and before the next pulling operation, check all the screws of the clamp system and screw down them again. If the screws

loosen, the vehicle body may slip to cause the person injured.

5.3 FRAME PROCESS

5.3.1 The operations for the frame lifting process are:


1. Before lifting the frame, each tower should be located on the respective longer edge of frame, and then fix them. Illustration.



2. Check whether the hydraulic lines and air lines are in good condition. Make the connection firm and insure there is not any heavy on the pipeline.
3. Install the loading ramps on the edge of the frame.
4. (1) If the vehicle may start, drive it onto the frame.
(2) Or tow the vehicle onto the frame by the special attractive device.
(3) If the front-wheels have already been broken, put the saddles under the broken front-wheels and tow it onto the frame.
5. Make the vehicle remain N block and apply the brake in order to avoid slipping.
6. Make use of the air hydraulic pump to lift the frame equal to the available height.
7. Then pull lightly the release valve, here the frame will be lifted slowly until the pneumatic mechanical lock is locked firmly.

5.3.2 The operations for the frame landing process are:

1. Before landing the frame, each tower should be located on the respective longer edge of frame averagely, and then fix them.
2. Attach the hydraulic pump to the connection of the frame base.
3. Start the air hydraulic pump to lift the frame in order to open the self-stop mechanism.
4. Then pull lightly the release valve, here the frame will be falling slowly until the frame is fallen to the floor.

 **ATTENTION:** During loading and unloading the vehicle, the operators are allowed standing behind the vehicle. At the same time, make the vehicle remain N block and apply the brake, and fix the vehicle by the triangle-wood or the chain.

When falling the frame, it is lightly that the operator pulls the release valve in order to

avoid the damage caused by falling more quickly.


5.3.3 Operating the pulling tower

1. Locate one pulling tower near the distortion of the accident vehicle. Considering two pulling towers pull together if the degree of damage is very bad.
2. Install the tower onto the inside orbit and the outside lower orbit of the frame firmly.
3. Tighten every tower.

(1) Firstly fix the stopper screw which is used for connecting the tower to the edge of the frame.

(2) Secondly fix two handle screws under every tower.

(3) Thirdly fix the fixed screw onto the frame.

 **ATTENTION:** Tighten all the screws used for fixing the towers in order to ensure the firmness. 3 steps must be in proper order.

4. Check the operation of step 3 and screw down again in order to avoid the tower post slipping.

5. Choose appropriate pulling tools, and then fix them on the distortion of the vehicle. Attach the pulling tool to the chain of the tower.

6. Avoid sharp bends and kinks. Adjust the chain if it is.


7. Adjust the height of guide-ring according to the pulling angle.

8. Strain the chain and check whether the chain is fit for the self-locking device on top of the tower post.

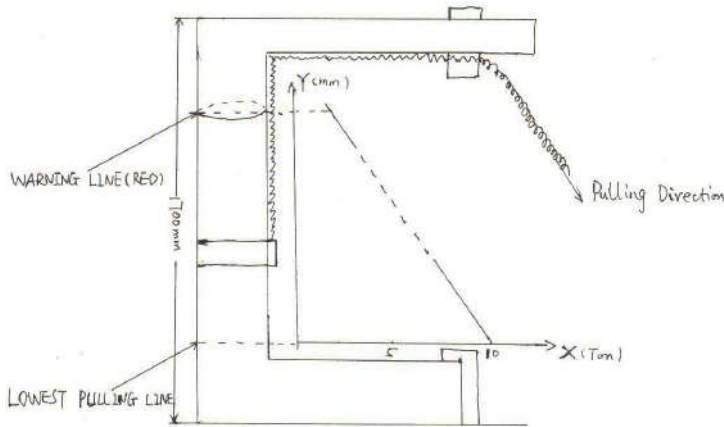
9. Start the hydraulic system.

 **ATTENTION:** Do not overexert when operating the pump.

10. During the pulling operation, some parts need knocking in order to eliminate the internal power, so the operators should observe the tension of the chain.

 **ATTENTION:** The higher of the guide-ring is heightened, the little the power should be put on by the hydraulic system. The height of guide-ring cannot be beyond the red warning line marked on the tower post. Do not load greater than pulling power at 2000PSI. Please see the drawing and strictly according to the drawing explanation.





11. If preceding the next operation or pulling again, the operator should open the return-to-tank valve in order to release the pressure. Then the tower post will be returned to the primary position.

12. Adjust the chains, guide-ring and other accessories. Then repeat from step 1.

CAUTION: During the operation, nobody is allowed to stand behind the tower post and the pulling tools in order to avoid the damage caused by chains or tools fly backwards.

5.4 HYDRAULIC SYSTEM PROCESS

1. Check the safety of the hydraulic system. Check every connection and avoid sharp bends and kinks when routing hydraulic hoses.
2. Attach the hoses of the hydraulic pumps to the connections of tower post and frame.
3. Attach the hydraulic system to air supply, and the air pressure is around 0.8 Mpa.
4. Check the oil level of the pump and add oil if necessary.

Make sure the pump reservoir is vented. This pump must always be vented prior to use.

Use either the “Vent Screw” or “Vent/Fill Plug”.


5. Treadle operation.

- a. To advance the cylinder and to retract the cylinder. Depress the “PRESSURE” end of treadle and the pump will start to pump hydraulic oil to the system so that the tower post or the mobile legs of the frame are lifted; Depress the “RELEASE” end of the treadle to retract cylinder so that the tower post or the mobile legs of the

frames have fallen. To stop the cylinder from retracting, release the treadle and return it to the hold position.

- b. To hold the cylinder position. The pump will stop and hold pressure when the treadle is in the free/neutral position (treadle is not depressed in either “PRESSURE” or ”RELEASE” positions.).

CAUTION: Do NOT pull quickly when operating the release valve.

 ATTENTION: The working pressure of the hydraulic system is designed for a Max. pressure of 6000PSI.

Chapter 6 MAINTENANCE

6.1 GENERAL RULES

Maintenance has to be a preventive and planned activity, seen as a fundamental need to obtain safety, as a presupposition that the machines and the apparatus are subject to wear which is a potential cause of breakdowns. Therefore the safety of the frame machine depends also on a good preventive maintenance that allows the substitution of the objects subject to wear out before the verification of the technical faults.


- a. Keep the working yard clean, and clean the frame machine after finishing the operation.
- b. Do not put any sundries on the frame of the frame machine.

6.2 DETAILED RULES


Ordinary maintenance is a kind of periodic maintenance. The procedures of ordinary maintenance as a rule had better be done by qualified and authorized personnel.

1. Operators should check periodic connections of hydraulic systems in order to insure the tightness.
2. Operators should check periodically oil level of pump with all cylinders or tools in the fully retracted position and add oil if necessary. If add oil when the hydraulic cylinder is advanced, the reservoir will overfilled when they are retracted.

3. Operators should change hydraulic oil every 200 to 300 working hours. If there is lots of dust in the work environment, the frequency should be controlled every about 35 working hours.

 **ATTENTION:** The hydraulic oil must be changed full.

4. Operators should insulate the dust, grease and scrap from the hydraulic components.
5. Operators should lubricate periodically all the joint parts.
6. The pulling tools subject to wear have to have scheduled maintenance. Repair or replace them if necessary.
7. The chain subject to wear also has to have scheduled maintenance. Ensure there is no notch, twist and other wearing position. Replace them if necessary.

 **ATTENTION:** If the frame machine is used with greater continuity or for heavy work, it is necessary to carry out checks with greater frequency.

6.3 FREQUENTLY QUESTIONS

See the chart below for any small problems.

MALFUNCTIONING	PROBABLE
Pump will not start	Air turned off or line blocked
Motor stalls under load	Low air pressure Inlet filter plugged, insufficient air flow
Pump fails to build pressure	External leak in system Internal leak in pump Internal leak in system component Low oil level
Pump builds less than full pressure	Low air pressure Internal relief valve set low External system leak Internal leak in system component
Pump builds pressure, but load does not move	Load greater than cylinder capacity at full pressure Flow to cylinder blocked
Cylinder drifts back on its own	External system leak Internal leak in system component
Cylinder will not return	Return flow or coupler restricted / blocked
A) Single-acting type	No load on a "load return" cylinder Return spring broken on cylinder



Cylinder will not return
B)Double-acting type

Release valve malfunction
Return flow or coupler restricted/blocked

Low oil flow rate

Reserve not vented
Inadequate air supply
Dirty air filter
Clogged inlet filter

Chapter 7 MAINTENANCE REGISTER

TYPE OF MAINTENANCE	DETAILED CONTENT	DATA	SIGNATURE
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