



AUTO CHASSIS STRAIGHTENING MACHINE
DODGE FLOOR SYSTEM

Installation/Operation & Maintenance Manual



MODEL: H-D2

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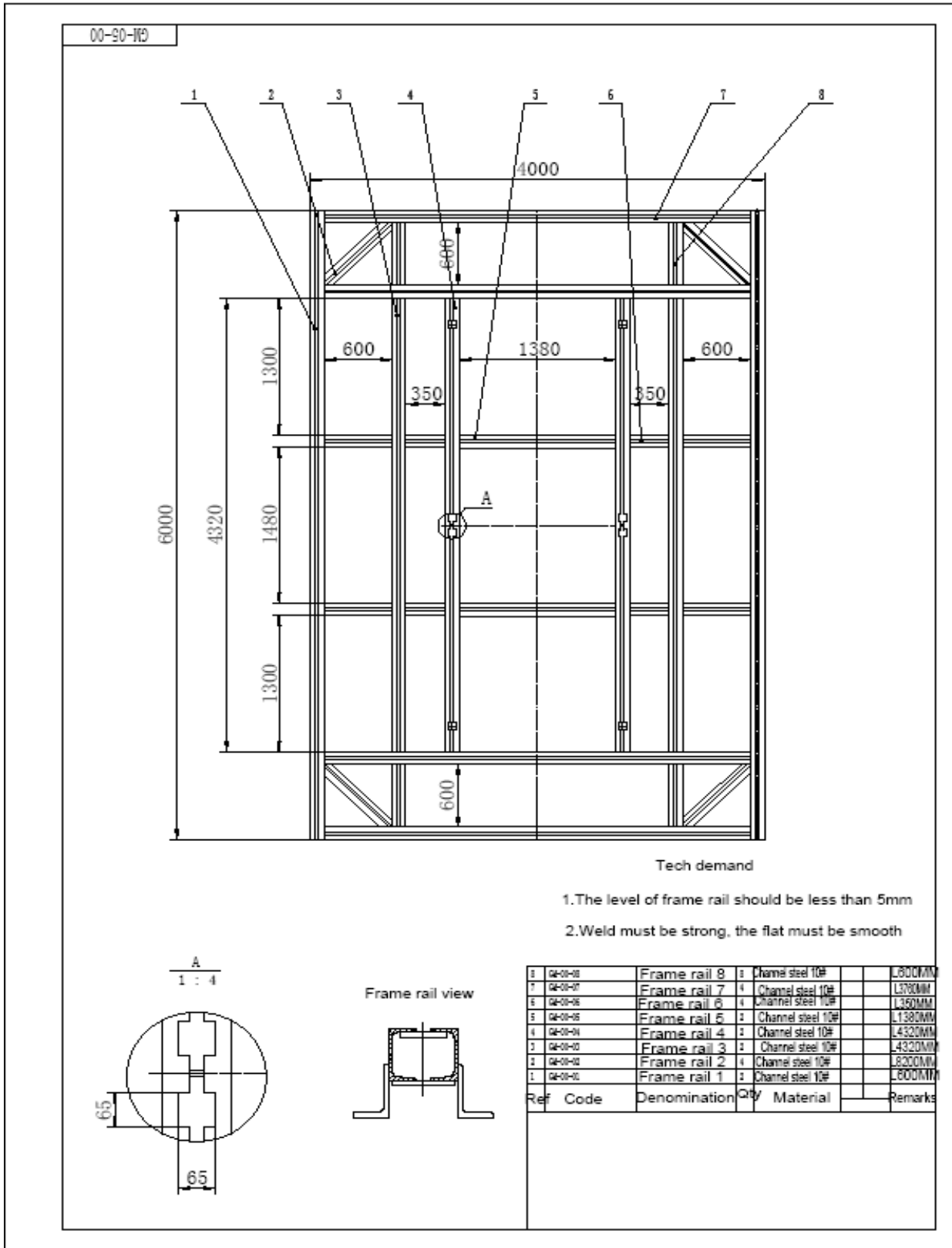
Chapter One Safety

Safety is the most important requirement. The workers should use the products very carefully.

1. Safety is the most important requirement. The workers should use the products very carefully.
2. Before repairing the damaged vehicle, the workers must refer to the service manual of the manufacturer's manual, do as what the book says.
3. Before repairing, the workers must measure and analyze the damaged vehicle, then make adjustment process planning, and do according to it.
4. Before repairing the damaged vehicle, use the handbrake to avoid the movement of the vehicle.
5. During usage, pay attention to the tools, hydraulic tubes and air tubes, etc. it is forbidden to bake the hydraulic pump by fire.
6. Check the seal of hydraulic system often.
7. The workers who are not trained are forbidden strictly to operate the product.
8. Before pulling, the damaged vehicle must be clamped tightly. During the pulling, the vehicle is forbidden to move.
9. The pulling tools must be clamped tightly on the damaged parts, make sure that the pulling tools cannot come off during pulling.
10. During the pulling, it is forbidden to use jack to anchor the damaged vehicle.
11. During the pulling, the pressure gauge of the hydraulic pump should not surpass 6000PSI.
12. Before using the chain, check whether there are any bend, twist, knot, damaged parts, if there are, change the chain at once.

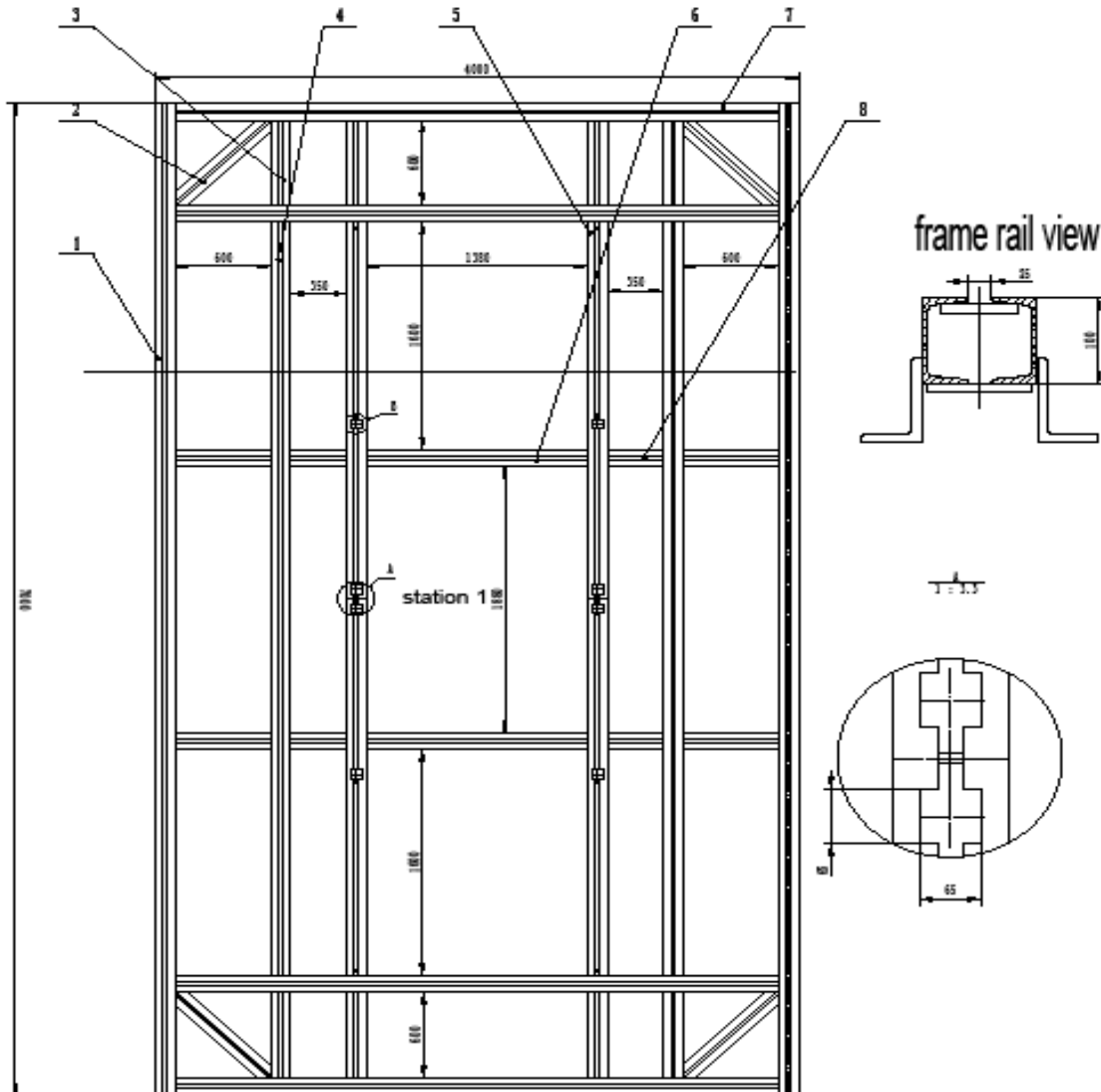
The chain is forbidden to use bolt or bend to make it longer or shorter, if necessary, use the special tool (e.g. DC-G4120). It is forbidden to bake the chain by fire.

Chapter Two Tightening System



Assemble sketch map for 4m*6m rails

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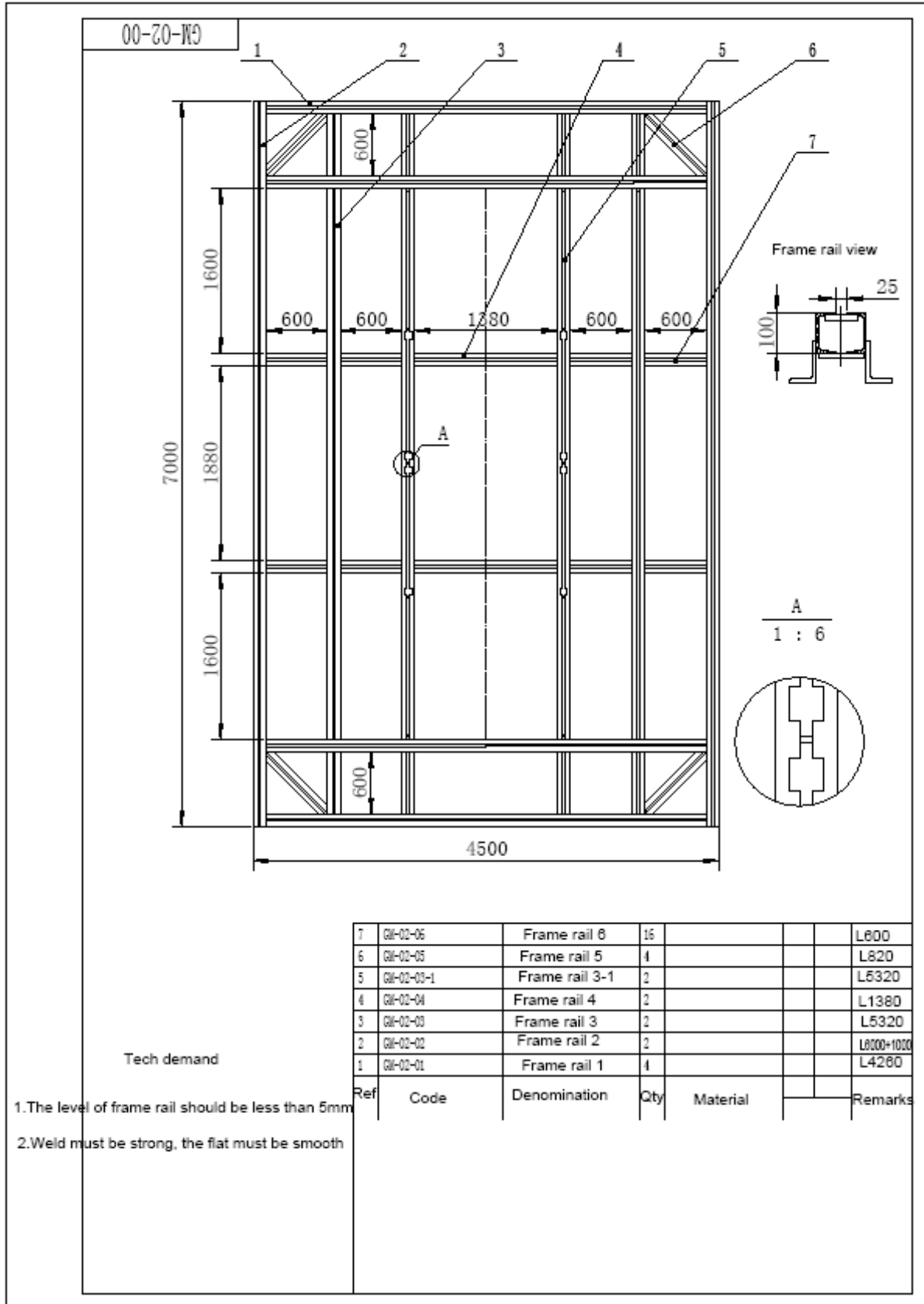


Demand

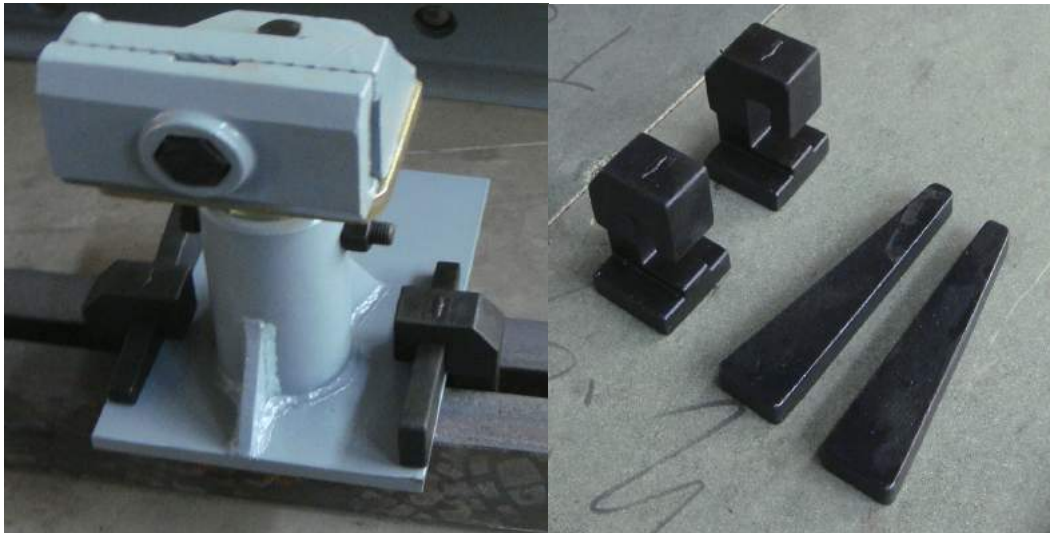
1. The level of frame rail should be less than 5mm
2. Weld must be strong, the flat must be smooth

8	DC-KL-ZB-003-08	Frame rail 8	4	GB Masteel 10#	350	
7	DC-KL-ZB-003-07	Frame rail 7	4	GB Masteel 10#	3760	
6	DC-KL-ZB-003-06	Frame rail 6	2	GB Masteel 10#	1380	
5	DC-KL-ZB-003-05	Frame rail 5	2	GB Masteel 10#	5120半圆	
4	DC-KL-ZB-003-04	Frame rail 4	2	GB Masteel 10#	5320	
3	DC-KL-ZB-003-03	Frame rail 3	15	GB Masteel 10#	600	
2	DC-KL-ZB-003-02	Frame rail 2	4	GB Masteel 10#	820	
1	DC-KL-ZB-003-01	Frame rail 1	2	GB Masteel 10#	7000	
Ref	Code	Denomination	Qty	Material		Remarks

Assemble sketch map for 4.5m*7m rails



Assemble sketch map for 4.5m*7m rails



1. To load the damaged car according to the damaged position. To load the car above the rails. To make sure the tower and the damaged position is no less than 50~70mm.
2. Brake the car.
3. Spy the chassis of the car, form a clear idea of clamping the car to the basement.
4. Lift the damaged car with air bag or jack.
5. Put the main clamps under the edge where can be griped. Lower the car to put the edge of the chassis into the opened main clamps.
6. To fasten the main clamps one by one. To fasten the main clamps one by one again after the first fasten. To make sure the car is totally fastened to the basement. If not injury or damage will be occurred.

Chapter Three Hydraulic system

Dodge series hydraulic system includes Pumps and Cylinders, both of which are from Power Team America. Main components are hydraulic pumps, cylinders, oil tubes, gauges and throttle valves.

1. Safety Checking:

- A. Pay attention to the required pressure and bearing capacity. The working pressure cannot surpass the required pressure given on the gauge.
- B. Check the connectors. The connectors should be tightened with hands.
- C. Check the connectors of the oil tube. If it is seriously bent or broken, change it at once.
- D. The air pump should use water/oil separator. The workers should often empty the water and replace worn parts.

2. Operation:

- A. Before working, check the connectors and oil tubes.
- B. Connect the oil tube with the lift cylinder under the platform. As picture
- C. Connect the air pump to the air supplier. The required air pressure is 0.8Mpa.
- D. When operating the air pump, the gauge works. Use the air pump to control the tower pillar and platform.
ATTENTION: The air pressure cannot surpass 6000PSI.
- E. Operate the pump slowly and the pressure outlet valve, make the pulling posts loosen slowly.

3. Maintenance

- A. Check the joints and connectors regularly. The loosen connectors and oil leakage will make the hydraulic system work unstably.
- B. Check the hydraulic oil regularly.
- C. The hydraulic oil must be changed after working of 200-300 hours. If the working environment is dirty, the hydraulic oil must be changed after working of 35 hours.
- D. Keep the hydraulic parts from the pollution of dust and grease.
- E. Check the hydraulic oil after working of 40 hours every time.

4. Specifications of the hydraulic system.

A. Air pump:

Power: 10000PSI:

Air supply required: 0.8Mpa

B. Hydraulic cylinder:

The longest travel: 10 inches

Bearing capacity: 10~15T

5. The troubles of operation

- A. The unstable trouble of cylinder. If air mixed in the hydraulic system, it will work unsteadily. When the workers meet this problem, he can put the pump higher than the tube and the cylinder, this process will make the air inside go back to the oil reservoir. Turn off the valve. Repeat this process three to five times.
- B. The cylinder cannot last for the whole process. Usually not enough oil in the reservoir causes this problem. So the worker should check the reservoir. If needed, fulfill it with oil.
- C. The hydraulic cylinder cannot return. This problem is caused by too much air or oil. The worker should check the reservoir to keep reasonable oil inside. The worker should also check whether the bolt is bent or not and the connectors are broken or not.
- D. The cylinder descends automatically when pressure is supplied. The worker should check whether the oil valve is turned off or not. If it is turned off and the cylinder still descends, check the ball valve of the oil and use alcohol or kerosene to wash it. If there is still trouble, repair the pump at once.
- E. The system only work for one time. Maybe the valve is dirty, wash it and add some oil.

ATTENTION!

If the air pump, hydraulic cylinder, hydraulic pipe, gauge, etc. don't work well. And if these parts are still in the period of repair warranty, these parts must be repaired by technician or the customer can post the bad tools to the seller for repair. If the customer takes apart these parts without admission of the seller, further more, if there is any damage in the tools. The seller has no responsibility for it; the customer must pay it by himself or herself.

Chapter Four Measuring system

Dodge series is equipped with the most useful and precise 2-dimensions measuring system. For Doocar Company take good consideration of the actual measuring works: all of the auto data given by auto producer are point to point distant, so it is hard for the repair men to read the 3-dimensions data. The 2-dimensions measuring system helps them to measure according to the basic data, which prepared by original auto producer.



1. Theory of Measuring

A. Measurement

The measuring points are on the chassis.

The worker should measure the distance from bolts, holes, etc. to the auto body centerline. Sometimes, the measuring positions are different. The worker can find the chassis dimension from upper right of every page in data book.

The measuring positions are on the body.

The worker can measure the positions, which are easy to find on the top. For example, welding seams, bolt centers. The workers can use measuring pointers or tape measure to do measurement.

B. Construction

Inner Separation Space for Passengers

The worker can use this data to repair the damaged vehicles.

Construction Space of Engine

The picture of construction space is "stand in front of the vehicle and look down". Centerline is for worker to measure the base of cross width. The picture shows all the bolts, holes and other parts on the construction space.

The Dimension of Holes

The worker should measure the distance of two holes center.

C. Base

Centerline

The distances from each side of the body to the centerline have the same dimension. All the width, length and diagonal are the distance from point to point.

Side view

If the worker takes apart the mechanical parts of the damaged vehicle, he will see the side view of the body bottom. All the length on the side view is parallel with the datum line. The height measurement should be vertical with the datum line and the measurement should be from the datum line. The measurement of the height is the distance from the hole, bolt to the datum line.

Datum Plane

Datum plane is an imaginary plane parallel to the under body of the vehicle. The datum plane is a reference

plane. It is the datum height. The measurement is vertical to the datum line. The datum line is the parallel line between the "0" and reference point.

"0" point and named point

"0" point and named points are the key measuring points.

Reference Point

Reference point is used to check the damaged points on the basis of "0" point.

D. Measuring tools

The workers should use tape measure, ruler and measuring system to measure the auto body. The tape measure can be used to measure length, width and diagonal. The ruler can be used to measure the mechanical parts. The measuring system can be used to measure the length, width and height.

Chapter Five Tools and clamps

Dodge gives a long list of accessories. According to the worker's need, he can use the accessories alone or together.

Except the accessories talked above, we still prepare other useful tools, such as: loading trolley, electric auto puller, 10t hydraulic auto repairing work group, side step and air bag.

CAUTION:

- A. During the pulling, the workers should check the clamp position to avoid the dropping of tools.
- B. Be careful when using tools to pull welding parts, there is a broken sound when the weld joint is set apart.
- C. Before the pulling, the worker should check the teeth and make sure the teeth are clean.
- D. During the pulling, the worker should take good care of the electrical parts and hydraulic tubes.
- E. Any persons cannot stand behind the chains or repair tools during the pulling.
- F. All persons cannot stand behind the chains or repair tools during the pulling.
- G. All tools are not allowed to be overloaded.
- H. Watch the gauge carefully; make sure the pressure does not surpass the dangerous pressure.

NOTE:

Please use these tools as the given pounds. If using tools surpass the given pounds, may cause accident or destruction. The seller has no responsibility for this problem. And the seller has the authority to change the kinds or numbers of the accessories, the tools' kinds and number will exactly as the packing list says.

Chapter Six Pulling Tower

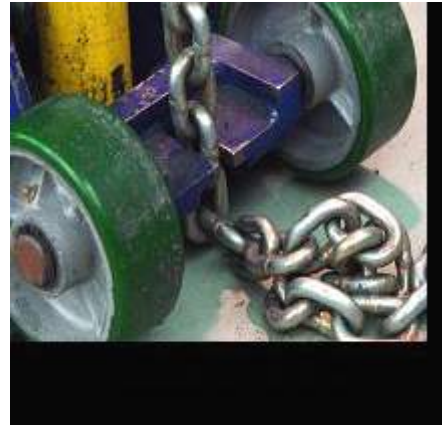


1. Operation:

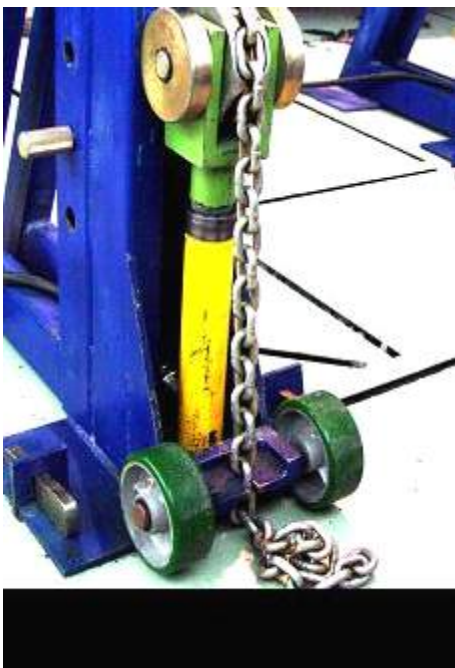
- A.** Move the pulling post to the damaged part and fix it. If the damaged part is too strong, the worker should use two posts to pull.



Connect the post and the rail and tighten them



put the chain into slot when you pull



The installation instruction photo of cylinder

- B.** Fix the post with bolts. Check if the post has been tightened well, if not please re-fix them, otherwise, the traction post will slide during pulling.
- C.** Connect the air pump with hydraulic oil tube. The quick connection joint can be tightened by hands only without the help of tools.
- D.** Install the clamp on the damaged part, and connect the chain hook with the clamp.
- E.** Check the chain to find whether there is knot or twist.
- F.** Adjust the height of the traction post's chain ratchet according to the repairing position and angle.

The instruction photo of chain and ratchet's installation

- G.** Lock the chain.
- H.** Check the chain, collar clamp again and control the air pump to supply pressure, during the process, take good care of the clamp and connection.
- I.** During the pulling, any person is forbidden to stand behind the post and the pulling tools.
- J.** During the pulling, the worker should use hammer to tap the damaged part to relieve the stress.
- K.** The post is more far from the platform, so the pull strength should be less. The collar should be lower than the marked yellow tape. And the hydraulic pressure should not surpass 2000PSI.
- L.** After the pulling, the worker should open the oil-turn valve of the air pump and release the pressure, the ram will come down. Then adjust the chains, collars, etc. if it needs, pull other parts by doing the same process.
- M.** After the pulling, the worker should release the pressure, and put back the chains and accessories.
- N.** Loosen the bolt fixing the main clamp. Push it to a proper position for the convenience of next time.

NOTE: Operators should not stand behind the pulling post under pressure, in case the chains or clamps jerks and causes injury.

CAUTION: Do not knock the chain while pulling. Do not pull before locking the post. Chains should not be knot while pulling.

Chapter Seven Collision Repair

1. Collision repair theory

If the damaged part is small, the worker can use pulling system to pull it out. But if there is a big damaged part or knot, the worker cannot repair it by pulling to the opposite direction. So collision repair needs the following tools:

- A. Clamp system
- B. Body repair tools
- C. Pulling system
- D. Measuring system

2. Collision repair technology

One direction pulling is suitable for frame body. It is easy for workers to repair and adjust the body. But it is not suit for unibody. The unibody is more complex, and the collision energy is easier to expand to the whole body. Most of the unibody repair needs several pulling. During the repair process, it needs more pulling points and directions. DC-D300 can fulfill the above requirements. It gives you a long list of repair accessories to avoid the construction damage for the vehicle.

3. Collision repair process

A. The analysis of damaged body

Before repairing, the worker should take off the damaged parts, for the collision energy is easy to manage far away.

B. Pull

After analysis, the worker should plan the repair process and do as it.

C. The repair order

The metal of unibody is easy to move and bend. So the worker should repair the vehicle by different parts and direction. Or it may damage other normal parts.

4. Pulling process

A. Length. Pull the damaged parts by the direction parallel to the centerline.

B. Width. Pull the damaged parts by horizontal direction.

C. Height adjustment. If some damaged parts are folded tightly, during the pulling, the worker should heat the damaged parts. The heated places can only be the edges or two tightened metal plates. Heating is a kind of way to relieve the stress but not a good way to soften any section. Pull the selected section to restore the original dimension slowly and relieve the stress of the bent steel. The damaged vehicle will be repaired correctly.

5. Damage repair of special places

A. Collision of the front section. The damage of the front section is decided by the crashing speed and damage section, etc. If the beam, bender and other accessories are damaged, the worker should pull the front beam on the side where the damaged parts should be changed. Sometimes, the collision energy will expand to the A pillars. The worker should take apart the front beam and bender and pull it, at the same time; the worker should push the damaged part from inside.





B. The damage of rear section. The structure of rear section is more complex than the front section. The collision energy will expand easier. Usually the rear bumper. The fender will be damaged and cause the quarter panel to move to the front side, this will also changes the gap of other parts. If it is possible, the damage will also influence the ceiling doors and body center pillar. When the workers use the pulling system to pull the damaged rear beam, floor or the rear hood. Then should measure the dimension under the body and decide the repair process according to the gap between the metals.

Sometimes, the damage of front section will cause the twist. The worker should clamp the lower part of rear section. The basic adjustment can only adjust some lower parts. Then, install the clamp system again to keep

the adjustment and go on the adjusting other damaged parts. Once the upper part can install the clamp system, the worker should install the clamp system at once and take off the serious damaged parts and install a new one.

C. The beside damage

If the beside part of the vehicle is damaged. The floor will be changed also. To repair this kind of damage, the worker should pull the front and rear section firstly if they want to pull the damaged part from center section. If the worker wants to adjust the damaged part from the upper section, they should fix the bottom on the platform to the opposite direction.

D. The damage of ceiling

The damaged ceiling metal will cause the damage of the side pillar, bender and windshield. When the worker to repair the damaged part, they can use hydraulic ram to push from inside and use draw aligner to pull other parts.

The operation of down pulling.

6. Attention process of the collision repair

The basic rule of the collision repair is that: if the damaged part is possible for adjustment, the repairman repairs the part to the original shape. During the adjustment, the worker can weld the damaged part when the bent edge become smooth or the cut welding part is moved to the back on the same line. When the bent part becomes straight, the worker should use the hammer to relieve the stress. If it is a unibody, usually the parts depend on each other, so the damaged parts may be given more stress to the neighbor part. For this reason, the worker should pull it slowly and periodically, at the same time, check the movement of the parts, make sure the pull of the damaged place is effective. If the damaged part is not moved, the worker should change the pulling direction or pulling part.

The pull strength is opposite to the damaged strength. So the damaged part is as strong as undamaged. The damaged parts all resist the pressure and there is a strong stress that destroys the pull. In fact, the adjustment and part changing cannot be done for the same time during the repair. So the worker has to measure the adjustment by eyes during the adjustment. If the adjustment is good, before going on the next adjustment, the worker has to finish every kind of repair.

When it is the time to repair the close bent part, the worker can use the clamp pincers to clamp the bent part, then the adjustment direction is on the image line to the strength and this line is the prolong line of the original position.

For the unibody, do not try to cut every part of the damaged part, and lately repair the part by welding another strengthened part. Because the modern design body construction is designed for the controlled damage, this can avoid delay the damage of the important part. So if the part is broken, torn or not well repaired, the worker should change the whole part. Usually the damaged part will meet the most strong stress than neighbor part, so during the repair, all the important control pointer must be measured and controlled to avoid the excessive adjustment.

Chapter Eight Maintenance

1. After using the equipment, clean the working place.
2. It is forbidden to put other goods on the bench rack.
3. Check the hydraulic oil regularly.
4. Change all of the oil if the hydraulic oil is bad.
5. The hydraulic cylinder and pump cannot overload for a long time. Or the leakage of the oil will damage the pump.
6. If the pump or the cylinder leaks oil, repair them at once.
7. The parts of hydraulic system and measuring system cannot be pressed when used.
8. Check the joints often, if necessary, put some grease on them.
9. Check the chains often, if they are damaged, change them at once.

The End

This manual introduces the universal using method of the Dodge, pictures and operating contents are for reference.

The main processes of the collision repair include: the bent adjustment, reverse or change of the damaged welding steel panel. So the worker must have a whole repair plan when repairing the collision. And the main processes are as following:

1. Analyze the collision and make a plan
2. Dismount the decoration part and mechanical part.
3. Put the damaged vehicle on the bench rack, and decide to change or to repair the damaged part according to the actual condition.
4. Pull the damaged vehicle.
5. Rusty dealing.
6. Paint.
7. Restore all the dismantled parts.
8. Exercise the vehicle

The crash will influence the car very much. If the car is crashed, the body design will let the front and rear part to be easy damaged, because this steep will create an energy absorbing structure, and insure the safety of passenger seat. At that time, the worker should find the data, construction, direction, speed and the collision angle and direction, etc. before the right estimate, try best to learn about the fact and make a decision of the repairing plan.

This manual talks about the installation and the use of the equipment, notice process, etc. and introduce clearly the collision analyzing. But for each damaged car, the worker should analyze the car and make a clear plan.