

YD-22 Type Hydraulic Tamping Machine Manual



Pass GB/T 19001-2008 idt ISO 9001 : 2008QMS Certification

Jinzhou Tiegong Railway Maintenance Machinery Co. Ltd

A. Applying Scope

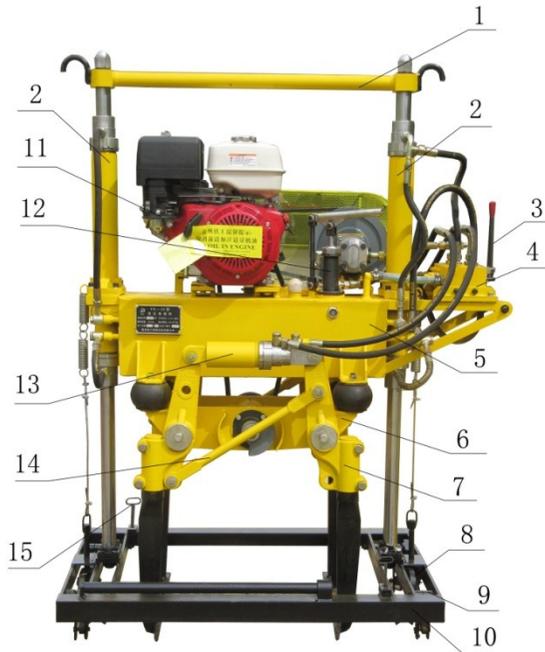
Collecting endusers' experience at home and abroad, adopting new material and technology, this type of machine is our upgrading product. Its basic structure and working principle reserves the original advantages, that is of double guide pillar frame and single cylinder lifting mode. it's able to to operate on II type concrete sleeper and III type concrete sleeper, and on various concrete sleeper and rail track. Its main technical performance is better than the old type. It's suitable for tamping operation on various rail and sleeper track after the overhaul and medium maintenance ballast cleaning operation, and also suitable for tamping operation on the new track ballast bed. This machine has the features of high quality performance, reasonable structure, safe and reliable operating capability and high working efficiency, which can satisfy the requirement of ballast tamping operation.

C. basic structure and working principle

Working Principle: YD-22 tamping machine is powered by petrol engine through triangular belt driving oil pump and vibrating axes respectively to generate pressurized oil and vibrating force, pressure oil passes through reversing valve into lifting cylinder and clamping-squeezing cylinder to achieve the process of tamping operation-rail clamping, inserting and inserting, rail clamping and ballast clamping-squeezing accordingly

Basic Structure :

8	rail clamp	1	beam
9	safety pin	2	hoist cylinder
10	bottom frame	3	operating handle of reversing valve
11	engine	4	multiplexreversing valve
12	manual hydraulic pump	5	oil tank
13	clamping-squeezing cylinder	6	vibrating frame
14	synchronizing bar	7	tamping pick
15	locating pin		



(图片仅供参考 , 以实物为准)

(MM: Figure without obligation)

D.Preparation before Working

- a. Fill the oil tank with proper hydraulic oil according to the season and ambient temperature(generally, select the oil 40# in summer, 20# in winter), regarding the oil scale as norm.
- b. Adjust the size of clamp jaw as per rail type (Normally Summer use 68#, Winter use 32#).
.(The clamp jaw has been adjusted for 60kg/m rail before leaving factory)
- c. Check if any part is loose abnormally .
- d. Start the engine and check if the operation is normal without abnormal sound. If there is any abnormal phenomenon, stop the engine at once and check for troubleshooting, after which restart the engine and allow idling for 20 minutes at least.
- e. while operating, move operating handle of reversing valve and check if the hoist cylinder and clamping-squeezing cylinder is working flexibly. Allow the cylinder to operate on a full scale for many times and check if there is any abnormal act.
- f. The operating handle of hoist cylinder and clamping cylinder can work independently or synchronously.
- g. Switch off the power, stop the operation of gear pump, operate the machine by using the manual hydraulic pump instead. The manual

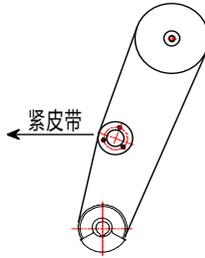
operation should be the same as when the power supplying to drive the hoist cylinder and clamping cylinder flexibly. It's necessary to test and adjust the manual hydraulic pump well enough to be adopted in case of emergency.

- h. Check whether the pick blade is loose or not, bolt is tight or not.
- i. Read the manual carefully and operate strictly according to the instructions. First allow the machine idle to preheat for a while, then shift the throttle and allow the machine operate normally..

E.Operation Rules

- a. The operator should be familiar with the performance of this machine through training before operating it.
- b. If the machine is driven by electric engine, operator has to possess insulated protection article..
- c. Put the travelling frame on the track, the travelling wheels should be aligned with both of the rail, push the two tamping machines (whose hoist cylinders are lifted up to the top) onto the flat traveling frame in turn, align the position respectively, plug the fore-and-aft king bolts in position holes. Then fold up the off-track frame, clasp the supporting hook of the off-track frame with the shackle of the traveling frame. While working, the operator had better face towards the direction of the train coming.

- d. Connect the power source and turn on the combined switch (If using petrol engine, start the engine manually and press the throttle to the working position), carry out the tamping operation according to the track conditions. Once the tamping blade is inserted, one to three open-clamp cycles should be applied generally.
- e. During working, the operator should keep a close eye on the operating conditions of the machine and the track conditions. The two operators should coordinate and cooperate with each other closely and make every operating step harmoniously..
- f. While tamping, should keep away from the obstructers such as the anti-creeper, gauge-rod and supporting wood.
- g. After clamping the ballast, open the tine palm and at the same time shift the reversing valve lifting rod to lift the machine to the top position, then push it to the next tamping spot and continue operation.
- h. The lubricating oil should be applied once as the vibrating bearing has been put into operation for 50 hours in order to extend its working life.
- i. For the first time, stop operating after half an hour, adjust the tensening wheel to increase the belt tensening force and avoid belt falling.



(MM: Belt tensioner)

- j. The two operators should coordinate and cooperate with each other closely and make every operating step harmoniously..
- k. During working, in case that the rail clamp keeps clamping the rail tightly even after the tamping pick is lifted up, loosen the clamp jaw completely by pulling out the safety pin, which is done by using the grooved end of the pressing handle of the manual hydraulic pump.
- l. In case of any serious breakdown, remove the machine away from the track by using the manual hydraulic pump to lift up the tamping picks. Never do troubleshooting while the machine is parking on the track.

F.The process of Off-track and Store

When the working is over, remove the machines away from the track according to the following steps:

- a. Lift up the tamping picks to the top.
- b. Pull the support hook out to settle down the off-track frame properly.

- c. Push the tamping machine to the end of the off-track frame, move the operating handle to make the tamping picks down to the bottom.
- d. Detach the travelling frame.
- e. On the track with curve radius being less than 800m and superelevation being more than 125mm, pick off the traveling frame while the off-gauge freight train passing.
- f. The operators should hide between the train heading direction and the machine..
- g. After operation is over, detach the traveling frame and put it on the track shoulder, and do the daily maintenance. Cover the machines with rainproof cloth and bind it firmly. And arrange anti-slip measures.
- h. If the machine hasn't been used for a long time, the necessary measurements of dust proof and anti-rust should be arranged well.

G. Service and Maintenance

a. Service

● Daily Service

Do it after everyday's work, as follows:

- a) Clean the dust and oily dirt.
- b) Tighten the fasteners of every part.
- c) Eliminate any oil leakage.

- Periodic service

Once every 50 hours, as follows:

- a) Check or replace tamping pick, nylon bushes of clamping cylinder ears.
- b) Recondition or reshape the pick palm to the original design size by using welding technique.
- c) Filter or replace the hydraulic oil, clean the hydraulic cylinder, oil tank, oil-filter and oil pipe.
- d) Replace the failed fasteners.
- e) Reset the oil pressure to 4.5 ~ 5Mpa.
- f) Eliminate any oil leakage, replace the faulted sealing rings.
- g) Check and replace the dysfunctional rail clamp.
- h) Check the insulating condition of the electric appliances and the performance of the electric engine. ;
- i) Service the petrol engine as per the requirement.

Do the performance test after each periodic service and write down the necessary notice into the logbook..

- b. Maintenance

Check and maintain hydraulic tamping machine thoroughly after it has been used for 500 hours, make all the parts and every performance

restore to the design level, as follows:

- a) Dismantle the vibrating frame, check or replace the faulted bearings.
- b) Disassemble the hydraulic system, clean it thoroughly and replace bad sealing rings.
- c) Clean the piston rod and cylinder body, replace them if they are badly broken.
- d) Replace all the nylon bushes.
- e) Check and clean the bearings of the electric engine, fill grease. For petrol engine, maintain it as per its manual.
- f) Recondition or reshape the pick palm to the original design size by using welding technique or replace it.
- g) Check the aperture of all the parts piece by piece, replace the ones which were worn badly.
- h) The hydraulic pump and valve body should be tested by using test bench, replace or repair the dysfunctional one.
- i) The newly-maintained tamping machine should be put into idle operation for 3 hours and then into a tentative tamping work for 1 hour. Test and record every technical index. The machine can be used only when it is up to the design requirement.

H.Common faults and troubleshooting

Breakdown Phenomenon	Cause	Troubleshooting
Oil pump is inactive	a Trend of oil pump is not right b The level of oil tank is too low c Oil-filter,oilsuction pipe or oil outlet chokes dOilsuction pipe or seal leaks	Reverse direction of oil pump. Fill oil to the specified height of oil level Clean Eliminateair leakage
Actionof oil cylinder is forceless	a The set pressure of overflow valve is too low b The pressure adjustment of the outflow valve fails c Air leakage of diversion valve is serious d Oil pump worn seriously e Air leakage of oil cylinder is serious	Set up it again Maintain Maintain or Replace Maintain or Replace Replace type O sealing ring or other damaged parts

<p>Oil cylinder creeps</p>	<p>a Hydraulic system is mixed with air</p> <p>b Seal is bad of inside part of oil cylinder</p> <p>c Both guide pillars are of flexural deformation</p>	<p>Oil level is too low, fill the oil, eliminate the position where air leaks of oilsuction pipe and oil pump seal</p> <p>Replace seal components</p> <p>Repair or replace</p>
<p>Clamping cylinder is self running</p>	<p>aThe pin bush of tamping picks and nuts on both sides are uneven</p> <p>bFrictional resistance of inside part of oil cylinder on both side is unequal</p> <p>c Oil leakage is serious inside oil cylinder on one side</p> <p>d Oil way chokes on one side or resisting force is too big</p>	<p>Adjust</p> <p>Select oil cylinder whose resistance is in accordance with the resistance on test bench to match</p> <p>Repair or replace</p> <p>Clean or adjust</p>

Loud noise	<p>a Clearance of pick board bushes is big</p> <p>b Clearance of level cylinder, synchronizing bar and nylon bushes is big</p> <p>c Fasteners loose or come off</p> <p>d Performance of spare parts is abnormal</p>	<p>Replace</p> <p>Replace</p> <p>Repair and make up fasteners</p> <p>Check or repair and replace</p>
Working mechanism falls by itself seriously after lifting	<p>a Oil leakage is serious in hoist cylinder</p> <p>b Internal part of diversion valve leaks</p> <p>c Oil pipe, oil pipe joint or cylinder lid leaks</p>	<p>Replace type O sealing ring or other damaged parts</p> <p>Overhaul or replace</p> <p>Eliminate leakage</p>
The oil of hand pressure pump is not out or the displacement is small	<p>a Oil suction pipe or oil screen chokes</p> <p>b Seal of oil-absorbing and oil drain one-way valve is not tight</p> <p>c Seal between piston and cylinder is not tight</p> <p>d Oil is thick</p>	<p>Clean</p> <p>Clean, repair or replace</p> <p>Replace</p> <p>Change oil as per rule</p>
Temperature rise of bearings of vibrating shaft overruns	<p>a Lubrication is bad</p> <p>b Bearing worn overruns</p>	<p>Fill the grease</p> <p>Replace</p>

The function of rail clamping device is bad	a Jaw worn overruns b Opening is oversize or undersize	Replace jaw iron Adjust jaw
Breakdown of 1 petrol engine		As per diesel engine instruction

l.others

About standard accessories , refer to the packing list. Within one year after selling, our company is responsible for maintaining and replacing the product being failed to use due to quality reason.

packing list

product	hydraulic tamping machine (one group)	type	YD-22II
release		inspector	
No.	description	QTY.	
1	manual	one copy	
2	certification	two copies	
3	mainframe	two sets	
4	diesel engine manual and tools	two sets	
5	tine bush	four pieces	
6	tine palm bush	eight pieces	
7	$\phi 40 \times \phi 50 \times 8$ sealing ring	two pieces	
8	O ring 63X2.65	four pieces	
9	O check ring 63×53×2	two pieces	
10	O ring 63×5.7	two pieces	

11	O ring 34×3.1	one piece
12	45×56×7 sealing ring	two pieces
13	check ring 63×51×2	two pieces
14	ring63×51×14	two pieces
15	O ring16×2.4	ten pieces
16	compound gasket φ18	five pieces
17	compound gasket φ22	two pieces
18	small hook spanner 45-52	one piece
19	big hook spanner78-85	one piece
20	allen wrench 8	one piece
21	allen wrench 6	one piece
22	solid wrench 14-17	one piece
23	solid wrench 22-24	one piece
24	manual pump handle	two pieces
25	off-track frame pin	six pieces
26	traveling frame, off-track frame	one piece each

27	marquee	two pieces
28	locating pin	four pieces
remark :		