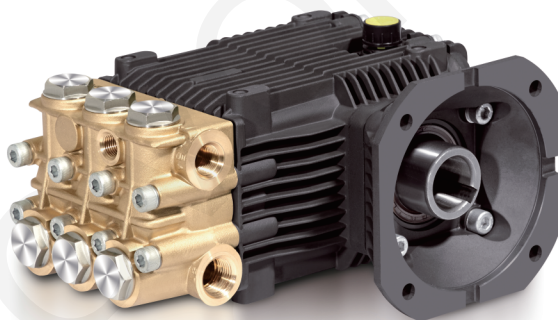


ANSTRUCTION MANUAL

TK High-pressure Plunger Pump



Please Read This Manual Carefully Before Use And Keep It Properly.

CATALOGUE

Application Field.....	1
Structural Characteristics.....	1
Main Technical Parameters.....	1
Safety Warning.....	2
Working Principle.....	3
Instructions.....	4
Storage And Maintenance.....	6
Installation Dimensions.....	6
Structure Breakdown Drawing And Accessories List.....	7
Troubleshooting.....	8

Warning: Do Not Use This Machine Without Reading The Instruction Manual!

APPLICATION FIELD

The engine is powered by gasoline engine, diesel engine or motor. After being assembled into a high-pressure washer, it can be widely used in the following fields:

1. Cleaning and maintenance of various vehicles, construction machinery, construction machinery and agricultural machinery.
2. Decontamination, descaling, cleaning and maintenance of military vehicles, tanks, ships, aircraft and other machinery.
3. Cleaning and disinfection of various containers at ports and terminals.
4. Strong cleaning, sanitation, epidemic prevention, disinfection and sterilization of livestock farms, slaughterhouses and livestock farms.
5. Daily cleaning of building exterior wall and office building glass doors and windows.
6. Cleaning and disinfection of public squares, amusement parks, hospitals, hotels, restaurants and courtyard environments.

STRUCTURAL CHARACTERISTICS

1. The injection pressure is high, and the maximum pressure of TK-1530C28 can reach 300 kg. f/cm².
2. Long service life, stable and reliable performance.
3. The gasoline engine, diesel engine or electric motor are used as the driving force, and the operation is simple and convenient.
4. Compact structure, high pressure, small heat, high efficiency, fast backwater and small volume.
5. The matched nozzle can produce high-pressure jet at different angles, and the reagent nozzle can realize the function of installing cleaning agent or liquid medicine at the water outlet automatically to meet your cleaning needs in different situations.
6. The outlet is equipped with quick change connector, which is easy to operate and quick to disassemble.

MAIN TECHNICAL PARAMETERS

High pressure plunger pump (TK series)

Model	Flow		Pressure			Speed	Power		
	L/min	gpm	bar	psi	Mpa	r.p.m	hp	kw	
TK1510	15	4.0	100	1450	10	1450	4	3	
TK1530	15	4.0	300	4350	30	1450	13	9	
TK1610	16	4.2	100	1450	10	1450	4	3	
TK2310	23	6.1	100	1450	10	1450	6	4	
TK2325	23	6.1	250	3625	25	1450	15	11	
TK3010	30	7.9	100	1450	10	1450	8	5.5	

SAFETY WARNING

1. When cleaning, be sure to hold the trigger handle of the spray gun with correct posture.
2. The high-pressure high-speed spray flow from the high-pressure washer will damage the surface of wood, glass, motorcycle paint and other surfaces, as well as the edges of various objects and various kinds of flowers, shrubs, etc. Before spraying, check the system first to ensure that the objects to be cleaned will not be damaged by the strong effects of spraying. Except for concrete and steel, the use of high-pressure concentrated jet streams should be avoided.



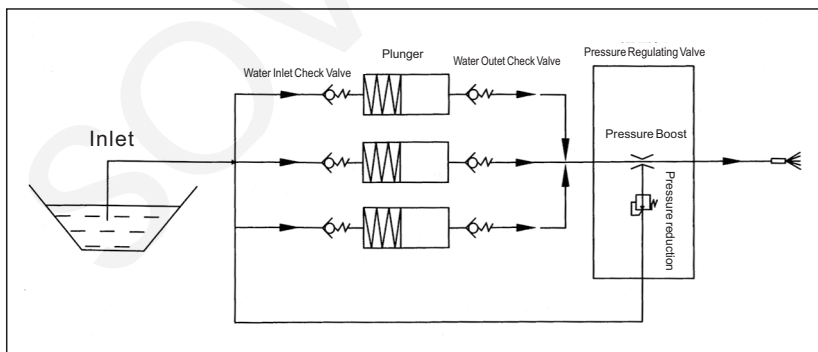
It is forbidden to spray water on people, animals or electrical equipment, otherwise serious damage will be caused.

3. Do not spray flammable or toxic liquid directly with the high-pressure washer. The high pressure of the washer and the resulting high temperature will cause explosion or poisoning.
4. When the machine is working, the continuous water supply must be ensured. Running the cleaning machine without water will cause damage to some equipment. Please try not to let the pump run for more than 2 minutes when the spray gun is turned off.
5. As the rebound water flow still has a high speed, do not twist the high-pressure water pipe when using it. Straighten the water pipe to avoid loops. Flipping the trigger handle of the spray gun will cause rebound, and the rebound force should be minimized.
6. Clean water without sand shall be used, and the filter screen shall be cleaned frequently.
7. Do not use cleaning agents containing chlorides and any bleach. Do not use acidic chemicals, gasoline, kerosene and other combustibles. Such substances may cause irreversible damage to the machine.
8. High pressure outlet pipe and connector are critical to the safety of the equipment. Please use the relevant parts recommended by the manufacturer. If the relevant parts are damaged, please replace them immediately.
9. Do not allow children or inexperienced people to use the cleaning machine, otherwise it will cause accidental injury.
10. When running the machine, place it in a safe and stable place with the supporting power. And the machine shall be operated and guarded by a specially assigned person. It is forbidden to let the machine run when nobody is on duty.
11. In case of problems, please do not use the machine. The maintenance of the machine must be carried out with the power disconnected.
12. The operation shall be carried out in strict accordance with the relevant safety specifications of the power provided. The company will not be responsible for any accident or improper operation caused by non specified operation.

WORKING PRINCIPLE

The motor or gasoline engine or diesel engine is used to drive the high-pressure pump shaft of the cleaning machine to rotate. The pump shaft makes the plunger reciprocating through the crankshaft connecting rod mechanism. When the plunger movement increases the pump chamber volume of the cylinder block, the water inlet check valve opens, the water outlet check valve closes, and the water enters the pump chamber through the water inlet check valve from the water inlet pipe. When the movement of the plunger reduces the volume of the pump chamber, the water inlet check valve is closed and the water outlet check valve is opened. The water in the pump chamber flows through the water outlet check valve and the water outlet pipe to the trigger type spray gun. After the trigger of the spray gun is pulled, the water is shot from the spray gun. When the trigger of the spray gun moves, the water pressed out of the pump chamber pushes the differential plunger in the pressure regulating valve, and the water returns to the water inlet from the water outlet, that is, the water circulates inside the high-pressure pump. At this time, the water temperature will rise rapidly. Therefore, the high-pressure pump should avoid closing the spray gun for a long time during operation to avoid damage to the high-pressure pump.

Working Principle Diagram



INSTRUCTIONS

When opening the package to check the packed items, please inform the dealer of any damage during transportation.

1. Use requirements

- The inlet pipe diameter is more than Dn20.
- This machine has the function of automatic water absorption. The water supply can be directly connected to water supply equipment such as tap water or placed in still water, with the water supply flow of 30L/min.
- The water supply temperature shall not exceed 40 ° C (104 ° F) and the pressure shall not exceed 0.3 Mpa.
- If the gun needs to be turned off during use, we strongly recommend that it should not exceed 2 minutes.

2. Preparation before startup

Before starting the machine, check whether the nuts and screws of the machine are loose, add CD15W-40 # engine oil into the crankcase, and the oil level should be added to the center of the oil pointer.

3. Outlet pipe joint

Connect the quick change plug of the high-pressure water outlet pipe to the quick change connector of the pump water outlet, and connect the quick change plug at the other end to the quick change connector on the spray gun. (The connection method of the quick change connector is: move the snap ring of the quick change connector with the left hand, quickly insert the needed quick change plug with the right hand, release the snap ring of the quick change connector, and push it back to the original position).

4. Nozzle selection

A/ Round hole nozzle

This kind of nozzle can produce beam shaped strong jet, which is used for surface cleaning with especially serious dirt.

B/ Sector nozzle

This kind of nozzle can produce fan-shaped jet, with small fog angle and strong cleaning force, and can be used for rapid cleaning of large-area dirt surface.

C/Black reagent nozzle

This kind of nozzle is used for spraying chemicals and cleaning liquid. When using this nozzle, the water pressure sprayed by the washer is low, but the flow rate is large. (When using, place one end of the transparent reagent straw with filter screen in the reagent or cleaning agent, and directly install the other end of the reagent straw on the suction nozzle of the pump).

5. Connect the water inlet pipe to the water inlet of the machine, connect the other end to the water source, connect the water source, open the handle of the spray gun trigger, and start the power (motor or engine). Pay attention to make sure that the water inlet pipe is tightly and firmly connected, otherwise the pump may not be able to absorb water due to the intake of air.

6. After power startup, the cleaning operation can be carried out only after the air in the pump is exhausted. To speed up the air exhaust time in the pump, it is better not to install a nozzle when the pump is started, until the water sprayed from the nozzle does not carry air, and it flows out continuously, then close the nozzle and install a nozzle for cleaning.

7. Clean water without sand shall be used, and the filter screen shall be cleaned frequently. During cleaning, the distance between the nozzle and the surface to be cleaned should not be too far, generally not more than 1 m.

8. Regulated pressure: The preset pressure of the pump at the time of delivery can enable the washer to obtain the optimal water pressure and cleaning function, without trying to increase the pump pressure. The higher the pressure, the greater the danger of the pump. The pressure reduction can be achieved through the following methods: adjusting the pressure adjusting handle of the pump; Keep away from the surface to be cleaned gradually; Reduce the engine speed; Replace with sector nozzle. Adjust the pressure adjustment handle of the pump. Turn the pressure adjusting handle counterclockwise to obtain lower pressure. After using the washer, adjust the pressure adjusting handle clockwise to return it to its original position.

10. When using agents or cleaning agents, first connect the suction pipe with the liquid medicine suction nozzle, place the other end in the prepared agent or cleaning agent solution, and then replace it with a black agent nozzle.

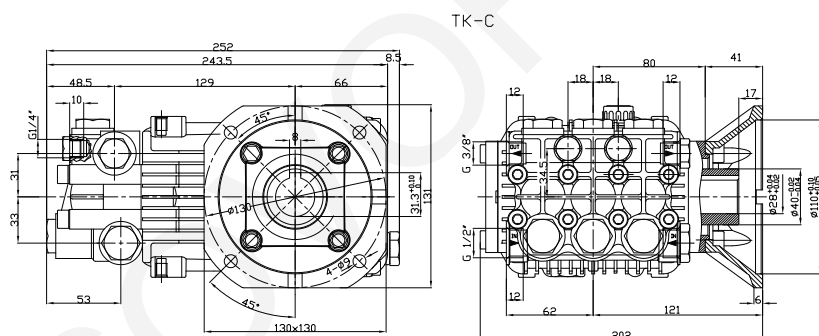
11. After using the agent or cleaning agent, the residual agent will damage the high-pressure pump. Clean the suction pipe and pump. The suction pipe and pump can be thoroughly cleaned by injecting clean water into the suction pipe and spraying the water out. Do not use detergent and soapy water to clean the suction pipe and pump.

12. After cleaning, turn off the power first, then turn off the water source, and finally turn off the spray gun, so as to avoid the danger of high pressure in the outlet pipe and spray gun that may hurt people. 13. If abnormal noise or black smoke occurs in the engine, it is caused by high pressure. At this time, please reduce the operating pressure of the washer appropriately.

STORAGE AND MAINTENANCE

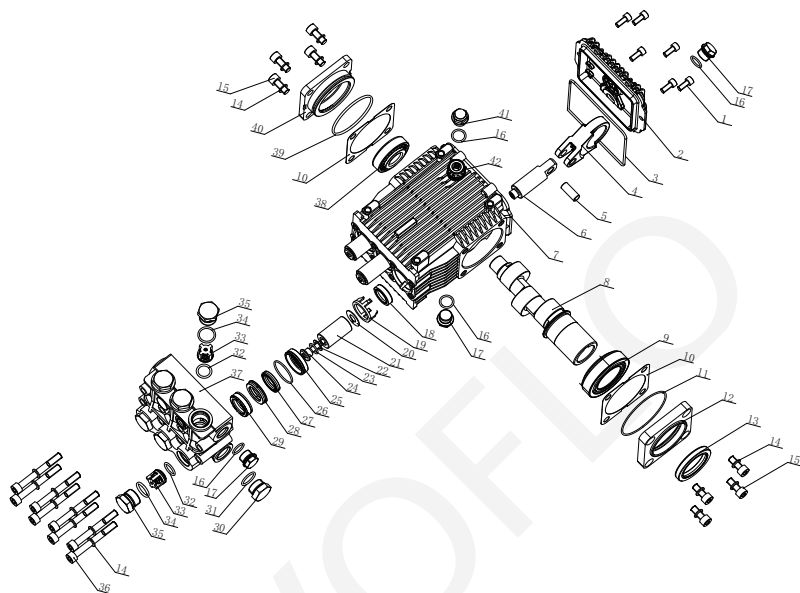
1. The engine oil must be replaced after 50 hours of use. First remove the oil drain bolt, drain the engine oil in the crankcase, and then inject diesel oil from the oil filler hole to clean the crankcase until the discharged diesel oil is clean. Finally, after installing the oil drain bolt, inject new engine oil. In the future, replace the engine oil every 500 hours, which is very important to prolong the service life of the pump.
2. When not in use for a long time, the suction pipe and outlet pipe shall be removed and the residual water in the pump shall be drained and properly placed.
3. When storing in a too cold place, proper antifreeze measures or antifreeze solution should be considered to prevent the parts in the pump from freezing and cracking.

INSTALLATION DIMENSIONS



STRUCTURE BREAKDOWN DRAWING AND ACCESSORIES LIST

Structural Breakdown of TK22-C High Pressure Pump



Spare Parts List of TK22-C High Pressure Pump

No.	Article No.	Description	Q'ty	No.	Article No.	Description	Q'ty
1	590201014	Hexagon Socket Round Head Screws	6	22	500102210	BM Red Copper Gasket	3
2	301030101	BM Rear Cover Assembly	1	23	590101270	O-ring	3
3	590101011	O-ring	1	24	500102220	BM Ceramic Pipe Locking Bolt	3
4	500602100	TK Connecting Rod	3	25	500601040	TK22 Rear Guide Ring	3
5	500602120	TK Plunger Pin	3	26	590101073	O-ring	3
6	500602030	TK20 Plunger Rod	3	27	590105005	22 Auxiliary Water Seal	3
7	500602010	TK20 Crankcase	1	28	500601060	TK22 Branch Ring Selector	3
8	500602200	TK14-C28 Crankshaft	1	29	590104011	22 Three Piece Set Of Main Water Seal	3
9	590303003	Tapered Roller Bearing	1	30	500010002	Plug	1
10	500602110	TK Clearance Adjustment Gasket	2	31	590101035	O-ring	1
11	590101109	O-ring	1	32	590101025	O-ring	6
12	500602130	TK-C Right Cover	1	33	500201070	KBM Check Valve	6
13	590108007	TC Frame Oil Seal	1	34	590101042	O-ring	6
14	590204103	Double Sided Tooth Pad	16	35	500601090	TK22 Check Valve Screw	6
15	590201004	Hexagon Socket Round Head Screws	8	36	590201001	Hexagon Socket Round Head Screw	8
16	590101019	O-ring	4	37	500601010	TK22 Pump Head	1
17	500010001	Plug	3	38	590303002	Tapered Roller Bearing	1
18	590107003	TC4 Skeleton Oil Seal	3	39	590101097	O-ring	1
19	500602080	TK22 Support Frame	3	40	500602150	TK Left Cover	1
20	500602090	TK18 Water Retaining Pad	3	41	101702010	BM Oil Plug	1
21	500602060	TK22 Ceramic Tube	3	42	301150101	BM Oil Pointer	1

TROUBLESHOOTING

Fault	Reason	Exclusion Method
No pressure or low pressure (Initial use)	<p>The water supply is insufficient.</p> <p>The suction screen is blocked.</p> <p>The outlet pipe leaks.</p> <p>The nozzle is blocked.</p> <p>Air is mixed in the outlet pipe.</p> <p>The pump is not pressurized or there is no pressure.</p>	<p>Water supply shall be at least 151/min.</p> <p>Remove and clean the filter screen.</p> <p>Tighten or replace.</p> <p>Remove the nozzle and clean it.</p> <p>Remove the nozzle to let the spray bar directly discharge water until the outlet is level and stable.</p> <p>Turn the pressure regulating handle clockwise to pressurize.</p>
No agent or cleaning agent	<p>The suction nozzle is not used and the water is discharged under high pressure.</p> <p>The suction pipe screen is blocked.</p> <p>The pipette screen is not in solution.</p> <p>The cleaning agent is too thick.</p>	<p>The black suction nozzle shall be replaced to keep the outlet water low pressure.</p> <p>Clean the suction pipe strainer.</p> <p>Fully immerse the suction pipe filter screen in the suction solution.</p> <p>Dilute the cleaning agent to make it fully dissolved in water.</p>
Low pressure, weak (After a period of use)	<p>The check valve is severely worn or blocked.</p> <p>The machine speed is not enough.</p>	<p>Replace or clean.</p> <p>Adjust or replace.</p>
Water leakage at the connection of spray gun/spray bar	<p>The O-ring is severely worn.</p> <p>The connection of rubber hose is loose.</p>	<p>Check and replace.</p> <p>Lemon is tight.</p>
Water leakage in high-pressure pump	<p>The connector is loose.</p> <p>The plunger connection is severely worn.</p> <p>The water seal is seriously worn.</p> <p>The pump casing or other parts are broken.</p>	<p>Lemon is tight.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Oil leakage in the pump	<p>The oil seal is severely worn.</p> <p>The filler cap or drain screw is loose.</p> <p>O-ring of oil drain cover is severely worn.</p> <p>There is too much oil in the pump.</p> <p>The oil grade in the pump is incorrect.</p>	<p>Replace.</p> <p>Lemon is tight.</p> <p>Remove and check, and replace if necessary.</p> <p>Add the appropriate amount of oil.</p> <p>Drain the oil and replace it with oil of the correct brand.</p>
Pressure runout	<p>The nozzle is blocked.</p> <p>The check valve is blocked.</p>	<p>Remove the nozzle and clean it.</p> <p>Replace or clean.</p>
Noise	<p>Air intake.</p> <p>The connecting rod is broken or the bearing is worn.</p>	<p>Check the water inlet pipe.</p> <p>Check or clean and replace.</p>

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