



- Pump Info/Specs & Diagram
- Parts, Repair Kit & Servicing
- Maintenance Check List & Trouble Shooting (11 pgs)

PUMP TX SERIES "63" DIAGRAM AND SPECIFICATIONS

GENERAL PUMP A member of the Interpump Group

FEATURES

- Flex coupling and bell housing available for direct drive
- Oversized bearings for long life
- New generation seal system for longer life
- Forged brass manifold with an exclusive lifetime warranty*

TX Series "63"

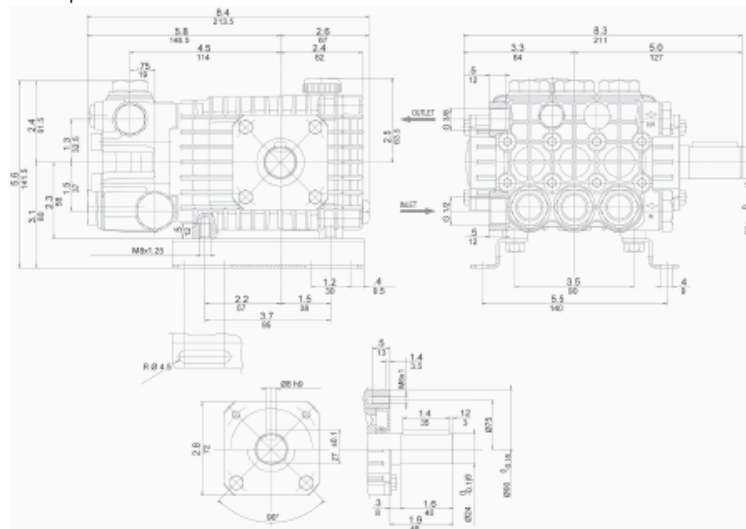
Triplex Plunger Pump, Solid Shaft



SPECIFICATIONS

Pump Model	TX1810S17	TX1812S17	TX1512S17	TX1506S34	TX1508S34	TX1510S34
Maximum Volume	3.2 GPM	3.8 GPM	2.6 GPM	2.6 GPM	3.0 GPM	4.0 GPM
Maximum Discharge Pressure	2500 PSI			3000 PSI		
Horsepower	4.2 EBHP	5.2 EBHP	5.3 EBHP	5.3 EBHP	6.2 EBHP	8.2 EBHP
Maximum Pump Speed	1750 RPM			3400 RPM		
Maximum Inlet Pressure	125 PSI					
Minimum Inlet Pressure	3 Ft. Water / 2.6 in. Hg.			Flooded		
Plunger Bore (in / mm)	.709 in / 18 mm		.591 in / 15 mm			
Plunger Stroke (in / mm)	.394 in / 10 mm	.472 in / 12 mm	.256 in / 6.5 mm	.315 in / 8 mm	.394 in / 10mm	
Oil Capacity	14.0 oz					
Maximum Fluid Temperature	165°F					
Inlet Port Thread	1/2 - 14 BSPP-F					
Discharge Port Thread	3/8 - 19 BSPP-F					
Shaft Diameter	.945 in / 24 mm					
Weight	19 lbs					
Dimensions	8.4 x 8.3 x 4.8 in					

DIMENSIONAL DRAWING



Ref 300195 Rev. G
06-16



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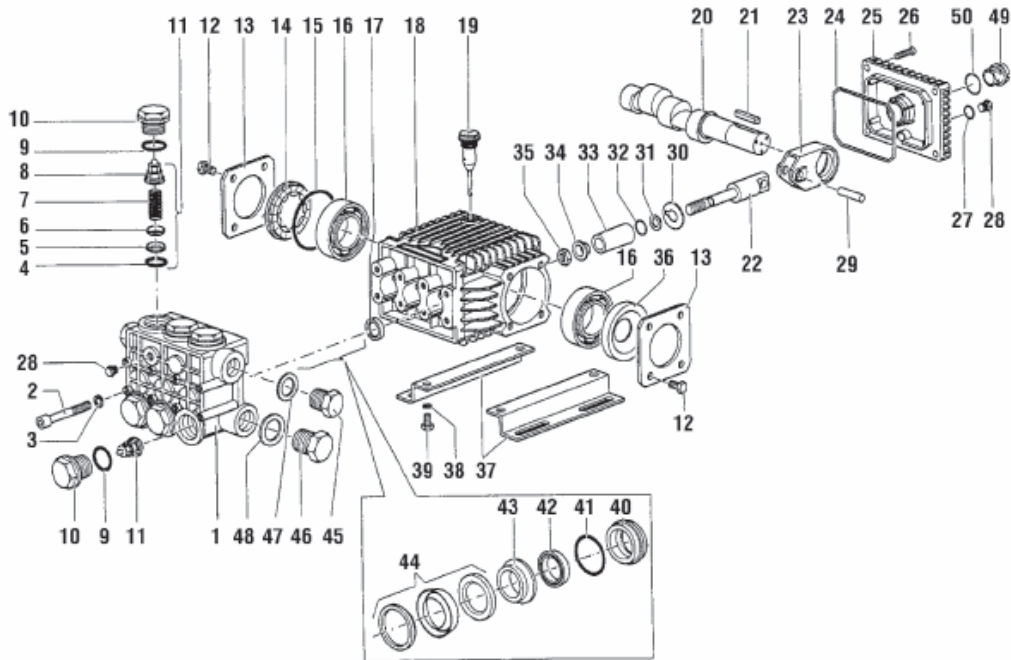


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TX SERIES "63" PUMP PARTS LIST & REPAIR KITS

TX Series "63"

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PARTS LIST

ITEM	PART NO.	DESCRIPTION	KIT NO.	QTY.	ITEM	PART NO.	DESCRIPTION	KIT NO.	QTY.	ITEM	PART NO.	DESCRIPTION	KIT NO.	QTY.
1.	63120041	Manifold, 15 mm		1	20.	63020865	Crankshaft, 8 mm		1	36.	90164100	Oil Seal		1
	63120341	Manifold, 18 mm		1		63021265	Crankshaft, 10 mm		1	37.	50200074	Rail		2
2.	99319200	Screw, M8 x 65		8		63021665	Crankshaft, 12mm		1	38.	96701600	Lockwasher, M8		4
3.	96701400	Lockwasher, M8.4		8	21.	91489200	Key		1	39.	99303700	Screw, M8 x 16		4
4.	90384100	O-ring	123	6	22.	63050066	Plunger Guide		3	40.	63080070	Seal Retn'r, 15mm	162,166	3
5.	36200366	Valve Seat	123	6	23.	63030022	Connecting Rod		3		63080170	Seal Retn'r, 18mm	163,167	3
6.	36200176	Valve Plate	123	6	24.	90392000	O-ring, Cover		1	41.	90360800	O-ring	166,167	3
7.	94737600	Spring	123	6	25.	63160022	Rear Crankcase Cover		1	42.	90260800	Seal, LP,15mm	160,166	3
8.	36202551	Valve Cage	123	6	26.	99183700	Screw, M6 x 14		4		90265000	Seal, LP,18mm	161,167	3
9.	90384700	O-ring	124	6	27.	701013	O-ring		1	43.	63216070	Int. Ring,15mm	164,166	3
10.	98222600	Valve Cap	124	6	28.	98204100	Plug, 1/4" G		2		63216170	Int. Ring,18mm	165,167	3
11.	36711501	Valve Assembly	123	6	29.	97733500	Connecting Rod Pin		3	44.	90261200	Packing Assy,15mm	160,166	3
12.	99180700	Screw, M6 x 10		8	30.	96707500	Flinger Washer		3		90265400	Packing Assy,18mm	161,167	3
13.	50150074	Bearing Cover		2	31.	660024	Anti-extrusion Ring		3	45.	98210000	Plug, 3/8" G		1
14.	44211801	Oil Level Indicator		1	32.	701009	O-ring		3	46.	98217600	Plug, 1/2" G		1
15.	90409700	O-ring		1	33.	52040009	Ceramic Plunger, 15mm		3	47.	96738000	Washer, M17.5		1
16.	91832900	Ball Bearing		2		44040109	Ceramic Plunger, 18mm		3	48.	96751400	Washer, M21.5		1
17.	90159500	Oil Seal	159	3	34.	44211570	Bushing		3	49.	63210051	Oil Level Indicator		1
18.	63010022	Crankcase		1	35.	92221600	Nut, M8		3	50.	90405100	O-ring		1
19.	98210300	Oil Dip Stick		1										

REPAIR KITS

KIT NO.	K123	K124	K159	K160 or K161 (15mm) (18mm)	K162 or K163 (15mm) (18mm)	K164 or K165 (15mm) (18mm)	K166 or K167 (15mm) (18mm)
ITEM NO's INCLUDED IN KIT	4, 5, 6, 7, 8 (11)	9, 10	17	42, 44	40	43	40, 41, 42, 43, 44
NUMBER OF ASSEMBLIES IN KIT	6	6	3	3	3	3	1
NUMBER OF CYLINDERS KIT WILL SERVICE	3	3	3	3	3	3	1

TORQUE SPECS*

Pos.	Fl/lb	Nm
2	14.7	20
10	95.9	130
12	7.3	10
26	7.3	10
28	14.7	20
35	11.0	15
39	14.7	20
45	29.4	40
46	29.4	40

* Decrease torque by 20% if threads are lubricated



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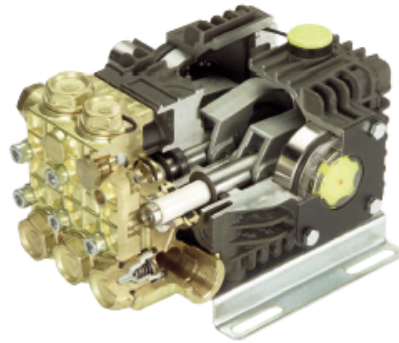
TX SERIES "63" PUMP SERVICING INSTRUCTIONS

GENERAL PUMP *A member of the Interpump Group*

TX Series "63"

Triplex Plunger Pump

SERVICING INSTRUCTIONS



SERVICING PUMP PROCEDURES

Valve Replacement: All inlet and discharge valves can be serviced without disrupting the inlet or discharge plumbing. The inlet and discharge valves are identical in all 63 series models.

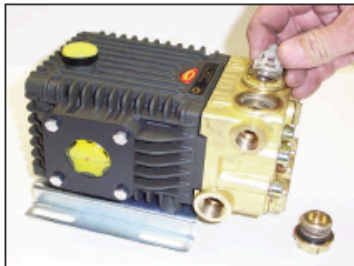
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To service any valve:

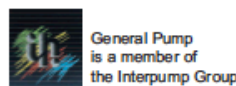
- 1) Remove valve cap and examine o-ring. Replace o-ring if there is any evidence of cuts, abrasions, distortion or wear.
- 2) Remove valve assembly (retainer, spring, valve, valve seat) from valve cavity.
- 3) Remove valve seat o-ring from valve cavity.
- 4) Inspect manifold for wear or damage.
- 5) Install new o-ring in valve cavity.
- 6) Insert valve assembly into valve cavity.
- 7) Replace valve cap and torque to specification.



NOTE: Only one valve kit is necessary to repair all the valves in the pump. The kit includes new o-rings, valve seat, poppet, spring and retainer. All are pre-assembled.



Ref 300685 Rev. B
02-12





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CONTINUED... TX SERIES "63" PUMP SERVICING INSTRUCTIONS

TX Series "63" Servicing Instructions

GENERAL PUMP A member of the Interpump Group

Removing/Installing Manifold:

- 1) Remove fasteners retaining manifold.
- 2) Separate manifold from crankcase.

Note: it may be necessary to rotate the crankshaft, or tap the manifold lightly with rawhide mallet to loosen the manifold from crankcase.

Caution: When sliding head from crankcase use caution not to damage plungers.

- 3) The seal assemblies may come off with the manifold. At this point examine the ceramic plungers. Plunger's surface should be smooth and free from scoring, pitting, or cracks; if not, replace.
- 4) Coat each plunger with grease.
- 5) Align outside pistons in the forward position.
- 6) Reinstall manifold and torque to specifications per sequence described below.

TORQUE SEQUENCE FOR TIGHTENING MANIFOLD:

- Install all manifold bolts finger tight.
- Torque to 10 foot pounds in sequence as shown.
- Next torque to specification; again, in sequence.

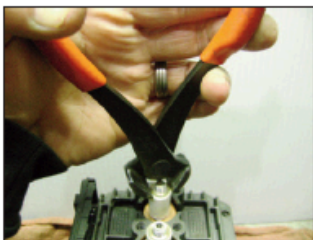
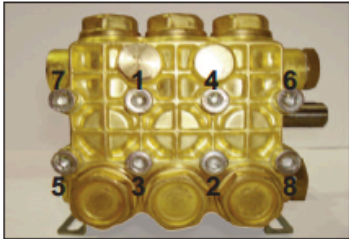
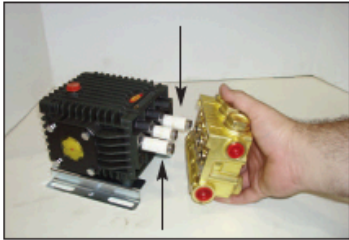
Replacing ceramic plungers:

- 1) Remove the stainless steel fasteners retaining the plungers.
- 2) Remove the brass bushing and ceramic plunger from piston rod.
- 3) If copper slinger washer comes off with plunger, be certain this is replaced before new plunger is installed.
- 4) Install new o-ring and Teflon back-up ring on piston rod.

NOTE: a film of grease on the outside of the o-ring insures a better installation.

- 5) Slide new plunger over the piston rod, insert new brass bushing.
- 6) Apply a drop of removable anaerobic thread sealant to threads of piston rod.
- 7) Install the stainless steel fasteners retaining the plungers and torque to specifications.

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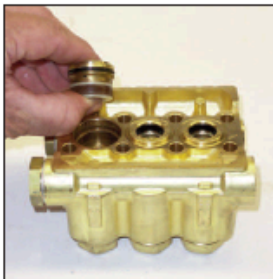
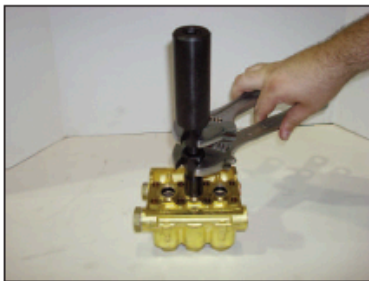
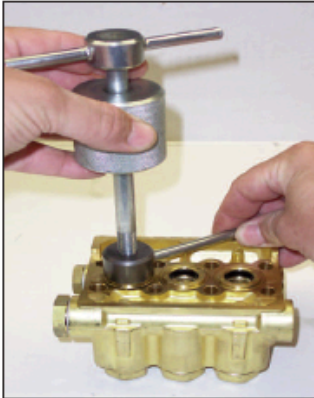




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CONTINUED... TX SERIES "63" PUMP SERVICING INSTRUCTIONS

TX Series "63" Servicing Instructions



GENERAL PUMP A member of the Interpump Group

Replacing packings:

- 1) Remove manifold from crankcase.
- 2) Insert proper extractor collet through main seal retainer. Tighten collet and extract retainers, packings and head rings.
- 3) Apply grease to the packing assembly before installing in cylinders.
- 4) Place proper insertion tool in cylinder and install packing assembly, retainer and low pressure seal retainer using the proper insertion tool.
- 5) Repeat this sequence for each cylinder.
- 6) Align outside pistons in forward position.
- 7) Coat each plunger with grease.
- 8) Install manifold and torque retainers to specifications.

Recommended Tools/Supplies:

- 1) **KINSTX63** Packing Insertion Kit, 63 Series
- 2) **100783** Complete Extraction Kit
Includes the following tools:

2530016	handle	2530020	15mm sleeve
2530017	bolt	2530021	18mm sleeve
2530018	pin		
- 3) **190446** Oil Drain Kit
- 4) **100295** General Pump Series 100 Oil (1-16 oz. bottle)
100214 General Pump Series 100 Oil (6-16oz. bottles)
100216 General Pump Series 100 Oil (24-16 oz. bottles)



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PUMP TROUBLESHOOTING CHART



TROUBLESHOOTING



PROBLEM	CAUSE	REMEDY
Pulsation	Valve stuck open.	Check all valves, remove foreign matter.
	Faulty pulsation damper.	Check precharge; if low, recharge it or install a new one.
Low pressure	Worn nozzle.	Replace nozzle, of proper size.
	Belt slippage.	Tighten or replace; use correct belt.
	Air leak in inlet plumbing.	Disassemble, reseal and reassemble.
	Relief valve stuck; partially plugged or improperly adjusted valve seat worn.	Clean, adjust relief valve; check for worn and dirty valve seats. Kit available.
	Inlet suction strainer clogged or improperly sized.	Clean. Use adequate size. Check more frequently.
	Worn packing. Abrasives in pumped fluid or severe cavitation. Inadequate water.	Install proper filter. Suction at inlet manifold must be limited to lifting less than 20 feet of water or -8.5 PSI vacuum.
	Fouled or dirty inlet or discharge valves.	Clean inlet and discharge valve assemblies.
	Worn inlet, discharge valve blocked or dirty. Leaky discharge hose.	Replace worn valve seats and/or discharge hose
Pump runs extremely rough, pressure very low.	Restricted inlet or air entering the inlet plumbing.	Proper size inlet plumbing; check for air tight seal
	Inlet restrictions and/or air leaks. Stuck inlet or discharge valve.	Replace worn cup or cups, clean out foreign material, replace worn valves.
Water leakage from under manifold. Slight leakage.	Worn packing.	Install new packing.
	Cracked plunger.	Replace plunger(s).
Oil leak between crankcase and pumping section.	Worn crankcase piston rod seals. O-rings on plunger retainer worn.	Replace crankcase piston rod seals. Replace o-rings.
Oil leaking in the area of crankshaft.	Worn crankshaft seal or improperly installed oil seal o-ring.	Remove oil seal retainer and replace damaged o-ring and/or seals.
	Bad bearing.	Replace bearing and any spacer or cover damaged by heat.
Excessive play in the end of the crankshaft pulley.	Worn main bearing from excessive tension on drive belt.	Replace crankcase bearing and/ or tension drive belt.
Water in crankcase.	May be caused by humid air condensing into water inside the crankcase	Change oil intervals. Use General Pump SAE 30 non-detergent oil.
	Worn packing and/or piston rod sleeve, o-rings on plunger retainer worn.	Replace packing. Replace o-rings.
	Cracked plunger	Replace plunger(s).
Oil leaking from underside of crankcase.	Worn crankcase piston rod seals.	Replace seals.
	Scored piston rod.	Replace piston rod.
Oil leaking at the rear portion of the crankcase.	Damaged crankcase, rear cover o-ring, drain plug o-ring, or sight glass o-ring.	Replace cover or-ring, drain plug o-ring, or sight glass o-ring.
Loud knocking noise in pump.	Pulley loose on crankshaft.	Check key and tighten screw.
	Broken or worn bearing on rod(s).	Replace bearing or rod(s).
	Valve stuck open or shut, or not opening enough.	Replace bad valve.
	Scored, damaged or worn plunger.	Replace plungers.
Frequent or premature failure of the packing.	Overpressure to inlet manifold.	Reduce inlet pressure.
	Abrasive material in the fluid being pumped.	Install proper filtration on pump inlet plumbing.
	Excessive pressure and/or temperature of fluid being pumped.	Check pressures and fluid inlet temperature; be sure they are within specified range.
	Overpressure of pump.	Reduce pressure.
	Running pump dry.	Do not run pump without water.
	Upstream chemical injection.	Use downstream chemical injection.





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MAINTENANCE

Regularly scheduled maintenance is the best preventative maintenance to minimize unexpected breakdowns. Learn to watch for signs from your pump that indicate maintenance may be needed.

DO NOT IGNORE these signs. DO NOT CONTINUE TO RUN the pump when these conditions exist.

- A drop in pressure
- Fluctuating pressure
- Vibration
- Unusual noises
- External leaking of water or oil
- Excessive pump heat
- Water in crankcase oil
- Premature wear of parts

PUMP AND GENERAL SYSTEM MAINTENANCE CHECK LIST:

- **Documentation:** Maintain a Maintenance Service Log with date and maintenance performed.
- **Change 5 micron filter** at least once per operating season. To insure the long life of the pump the external filter element needs to be replaced at least every 6 months (once per season generally from Oct 15 - April 15th). The time in between replacements will vary depending on the use of the system and the condition of the water.
- **Replacing Pump Filter Cartridge** at least once per operating season: Shutoff Humidifier and water supply. Use filter wrench to unscrew housing and remove old filter and insert new filter; replace filter and housing. Tighten with filter housing tool by turning clockwise. **Do not overtighten as this can damage o-ring.** Slowly open water supply. Observe for any leaks. Turn on humidifier system.
- **Change oil every 500 hours of operation:** Oil should be changed after the first 50 hours of operation and then once a year or every 500 hours of operation, whichever comes first. Run pump 15 minutes prior to changing pump oil. This will warm pump allowing the oil to flow better when draining the pump. To avoid electrical shock, always disconnect power to pump skid prior to servicing. Remove yellow breather cap located on top side of the pump head. Locate drain port on pump. Remove cap and drain into container. Dispose of used oil at a proper oil disposal facility. After draining is completed, replace the cap and fill with non-foaming 30 weight oil such as Mobil 60018-9 or Chevron 232105 or Pump oil part #93222 from Industrial Humidity Control LLC. The pump holds 15 ounces. Oil will show half full in sight window when pump is full. Replace breather cap (hand tight) and pump cover. The pump oil should be changed every 500 hours of operation. Check the pump for leaking water seals while the pump is running. Replace as needed.
- **Service Packings and Seals (Seal Kit) (Every 2-2500 hours):** This pump contains water seals that wear with use and will need to be replaced periodically. Water seals are NOT a warranty item. Depending on operating conditions and water quality, the water seals will last between 500 and 2500 hours of operation. Seal problems are usually indicated by water leaking from the bottom of the pump head between the brass manifold and the crankcase. This would be a sign of low pressure seal wear. If this is not repaired, the next failure point will be the high-pressure seals which is indicated by water showing up in the crankcase oil (oil looks milky and foamy). If this is not repaired there will be lubrication failure causing crankcase issues. Failure to replace the seals once they have begun to leak will cause extensive damage to the pump.
- **Check plungers** and non-sealing items for acceptable working condition.



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CONTINUED...PUMP AND GENERAL SYSTEM MAINTENANCE CHECK LIST:

Service Valve Assembly (Valve Kit) (Every 2500 hours). Valve issues are generally taken care of with this periodic maintenance. Valve problems can be caused by debris or mineral buildup in the valves. This can cause heavy vibration, loss of pressure and load knocking.

- **Isolate pump** and check flow and pressure after maintenance.
- **Check motor** for appearance and function.
- **Belts:** Check and adjust alignment and tension of belts. Drive Belt Inspection: When ever changing the oil, check the belt tension and inspect for cracks or abnormal wearing. If the belt has more than ½” deflect, loosen the mounting bolts for the motor and slide the motor away from the pump to create the necessary tension. Tighten motor mounting bolts securely.
- **Fasteners:** Check that all fasteners are in place.
- **Fittings:** Check for leaking fittings.
- **O-rings:** Check/Replace stem and o-rings in regulator.
- **Hoses:** Check hoses for leaks and abraded spots.
- **Filters:** Check/replace filter screens/bags.
- **Check for Plugged Nozzles** – The nozzles, anti-drip valve, and auto drain valves should be inspected twice a year to ensure proper performance.

Nozzle Observation: If a nozzle spray is erratic, restricted or plugged it should be cleaned or replaced with proper size nozzle. To replace nozzles, Shut down pump by placing control switch into “off” position. Turn nozzle counter clockwise by hand to remove. Replace with correct nozzle size. Turn nozzle clockwise by hand to tighten. Turn control switch to “on” position to restart. Visually check that nozzles are spraying properly.

To Clean a Nozzle: Make sure system is “off” and pressure has been relieved. A minimal amount of pressure (< 25 psi) remains in the lines to speed start-up. Be prepared to retain water when removing nozzle from fan(s). Nozzle tip can be removed from nozzle base by rotating counterclockwise by hand. (Slight twist with a wrench/backup wrench may be necessary)

Tip: a simple procedure for cleaning nozzles – the head of the nozzle unscrews and the spring and ball with the valve can be removed. Soak all pieces in warm vinegar and water solution or soak in “Works” toilet bowl cleaner for 60 seconds, rinse and reassemble – you should have a new working nozzle with restored performance. Note: almost all nozzle fouling is controlled with proper water treatment. If mineral deposits (calcium/scale) affect the operation of the nozzles, remove the nozzles and clean as suggested above and/or use Nozzle Cleaner part #10103 (ordered from Industrial Humidity Control LLC). If cleaning does not improve the performance, the components should be replaced.

Observe for further blockage. Replace if necessary. Replace nozzle tip to base by rotating clockwise by hand until tight.



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CONTINUED...PUMP AND GENERAL SYSTEM MAINTENANCE CHECK LIST:

- **Zone Valves:** Check that zone/stage valves are functioning properly.
 - **Irregular Vibration and Noises:** Check system during operation for vibration and noises.
 - **Check inlet pressure** during test.
 - **Check Fuses:** This unit contains fuse(s) that provide short circuit and thermal protection for the branch circuit which includes the hour meter, the contactor coil, and inlet solenoid valve. The exhaust fan has its own internal thermal protection. Blown fuses must be replaced. Two replacement fuses are provided for each fuse size. These spare fuses can be found with the instruction manual.
 - **Circuit Breaker:** This unit contains a circuit breaker which provides short circuit and thermal protection for the entire unit, including the motor circuit. When the breaker is tripped, the lever will be in the down position and the green indicator will be visible. Blown circuit breakers must be reset. To reset the circuit breaker, pull the lever up and ensure the red indicator(s) are visible.
- Extended Shutdown (Two Options for off season non use):** It is recommended that the system distribution lines be drained or periodically purged if the system is shutdown for extended periods of time. This can be accomplished by:
- a. Purging the lines from the pump skid to the fans. It may be necessary to remove the drain loop connection at drain solenoid valves and remove several nozzles to allow system drain down. Compressed air can be used to assist purging.
 - b. As an alternative to purging, the system can be cycled "on" (once every two weeks) to maintain fresh water in lines.



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PUMP TROUBLE SHOOTING

Fuses: In the event of any trouble shooting procedure, always begin by checking fuses and breaker(s).

Pulley/Belt Adjustment: The motor is mounted to a 2 piece base plate that allows the adjustment of the motor position (left and right) without having to loosen the 4 motor mounting bolts. This 'tension' bolt is located on the back side of the motor base plate and moves the top section of the motor base plate to adjust tension.

IF the motor and pump pulley are not properly aligned (visually identified by making sure the two pulleys are parallel to each other) , it will usually be a matter of loosening the four motor mounting bolts and slightly shifting the position of the motor until the pulley is 'squared' to the pump pulley. The belt will have to be removed to release any tension and allow the motor to be slightly shifted. This is rarely an issue but it is possible that the motor has shifted.

Changing Belt: Use a long screwdriver slightly angled between one of the pulleys and the belt and turn the other pulley to 'walk' the belt off. Use the same concept (without the screwdriver) to 'walk' the new belt back on the pulleys.

Test Closing of Drain Valve: When the pump is operating, no water should come from the Drain port (other than an initial pulse of water or a little dripping of excess water in the plumbing). If there is a steady stream from this fitting, the drain valve is not closing and should be dis-assembled and cleaned. The stem can be removed using a large crescent wrench or a 1 1/8" wrench. The internal nut would require a 10mm socket.

Danfoss Valve:

- First confirm whether the drain valve is in fact closed when the pump is running and if not, then:
- Remove the coil from the top of the Danfoss valve. Remove the stem using a large wrench. There is a plunger swaged inside the stem. It will not move. Inside the cavity you will see a small nut. Remove that using a socket.
- Disconnect the inlet and outlet hose from the valve to create an open port.
- Blow out with compressed air and look for any debris or obstruction. Typical culprits include a strand of Teflon tape, or a shaving of brass. Reassemble.

Checking Pump Valves (six total): Six check valves are located inside the brass part of the bare pump. It will require a 27mm socket and a breaker bar (a length of tubing that will fit over the handle of the ratchet to provide additional leverage as these are very tight from the factory). Once the caps are removed, the valves can be removed with a pair of needle nose pliers. Remove the valve and check the spring assemblies to make sure it is completely closing and no debris is in the way. Also confirm that the plastic housing of the valve is not broken. Use compressed air to clear any debris that may be in the way. Also, while all the valves are removed, use compressed air to blow out all 6 ports. Be careful to not loose the o-rings that are inside these ports below the check valve.

Inlet Solenoid Valve (Brass): To check if the inlet valve is opening, remove the outlet from the pump and replace with a short length of hose (so that you can control where the water goes). Turn on the pump. Water should gush out at line pressure. If not, the inlet solenoid is not opening. This could be caused by a lack of power to the coil, a bad coil, or some other failure inside the valve housing.



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CONTINUED...PUMP TROUBLE SHOOTING

Checking the coil, the din connector, and the power to the din connector:

Initially, if you place your fingers on the coil and turn the pump on, you should feel the internal piston 'clicking' into position which means the coil, the din, and the valve are probably working as needed. You can also sometimes hear the clicking (if it is a relatively quiet pump).

If you cannot determine the valve function using this simple test, check the coil by simply inspecting it to make sure there are no protrusions (caused by a short in the coil and a resulting 'explosion' that changes the outer profile of the coil body). You will typically see a bulging side or an actual hole in the coil body.

If the coil looks bad, it will need to be replaced. To determine the cause (which is not always determinable), remove the coil from the valve stem and inspect the valve stem to see if there is any discoloration or rust or the presence of water that would cause the coil to short. If there is, the valve stem will need to be replaced.

If the coil does not look bad, remove the small Phillips screw from the front face of the din connector (the connector is the component that is attached to the three prongs on the coil) and remove the din connector from the coil. Check the prongs for discoloration (usually carbon buildup as a result of a short circuit). If there is obvious damage, the din will need to be replaced. This failure can be caused by moisture but more likely caused by the connections in the din connector being crossed or two of the wires touching.

If none of this leads to an answer, place the din back on the coil leaving enough room to get the prongs from a multi meter between the din and the coil so that you can touch each prong to one of the top two prongs check to make sure the coil is actually getting the power from the source. If there is no power at these prongs, then the power source for the coil is not being energized. If none of this checks out, then the valve is not likely failed.