

# Duro Jet

## Convertible Jet Pumps

Models DCJ500 (#6330) & DCJ750 (#6331)

## Operating & Installation Instructions

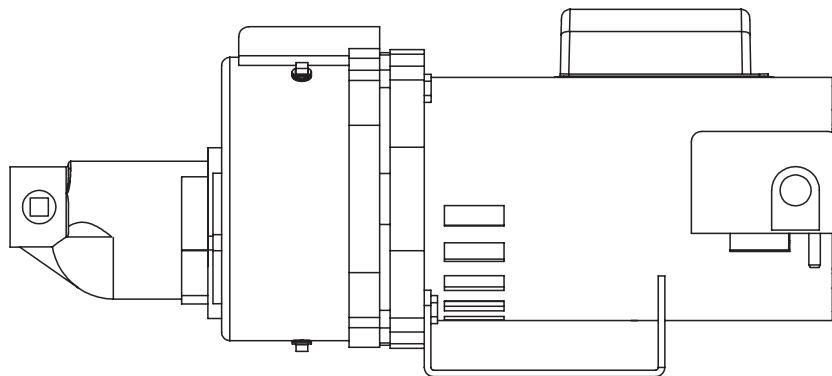
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Please read these instructions carefully. Failure to comply with instructions and designed operation of this system may void the warranty.

Your pump has been carefully packaged at the factory to prevent damage during shipping. However, occasional damage may occur due to rough handling. Carefully inspect your pump for damage that could cause failure. Report any damage to your carrier or your point of purchase.

This pump is designed for shallow well installation for water level up to 25 feet, with injector installed on pump body; or for deep well installation for water level up to 80 feet, with 1-1/4" pipes and injector down in the well. A pressure switch and pressure gauge are standard features. The pump starts when the pressure drops to a cut-in setting (30 psi) and cut-out setting (50 psi). The DuroJet Convertible Jet Pump can be mounted to either a pre-charged horizontal pressure tank or used with a pre-charged free standing pressure tank. The pumps can also be used with conventional air to water tanks. For deep well applications, replace the short tube in the ejector assembly to long tube #302922 (sold separately).

NOTE: Pre-assembled pump and pre-charged pressure tank packages are also available.



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**PROFESSIONAL SERIES**

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## General Safety Information

1. Know the pump application, limitations and potential hazards.
  - Always install a pressure relief valve to match the system pressure rating and the maximum flow rate.
  - Disconnect power and relieve all pressure from the system before attempting to install, service, relocate or perform any maintenance. Lock the power disconnect in the open position. Tag the power disconnect to prevent unexpected application of power. Install a screen around the inlet pipe to prevent entrapment of swimmers (if applicable).
2. Drain all liquids from the system before servicing.
3. Secure the discharge line before starting the pump. An unsecured discharge line will whip and possibly cause personal injury and/or property damage.
4. Check hoses for weak or worn conditions before each use. Make certain all connections are secure.
5. Periodically inspect pump and system components. Perform maintenance as required.
6. Personal Safety:
  - a. Wear safety glasses at all times when working with pumps.
  - b. Keep work area clean, uncluttered and properly lighted – replace all unused tools and equipment.
  - c. Keep visitors at a safe distance from work area.
7. When installing pump, cover the well to prevent foreign matter from falling into well and contaminating the water and damaging internal mechanical pumping components.
8. Always test the water from the well for purity before use. Check with local health department for test procedure.
9. Complete pump and piping system MUST be protected against freezing temperatures. Freezing temperatures could cause severe damage and void the warranty.
10. Do not run the pump dry or damage will occur.
11. The unit should be connected to a grounded circuit equipped with a ground fault interrupter device.
12. Before installing the pump, have the electrical outlet checked by a licensed or certified electrician to make sure the outlet is properly grounded.
13. Make sure the line voltage and frequency of electrical current supply agrees with the motor wiring.
14. Do not attempt repairs to the electric motor. All repairs to the motor must be completed at a licensed or certified electrical motor repair shop.

**Do not touch an operating motor. Modern motors are designed to operate at high temperatures.**
15. Avoid kinking the electrical cord and protect from sharp objects, hot surfaces, oil and chemicals. Replace or repair damaged or worn cords immediately.
16. Keep fingers and foreign objects away from ventilation and other openings. Do not insert any objects into the motor.

**Risk of electrical shock! Never connect the green (or green and yellow) wire to a line terminal!**
17. Use wire of adequate size to minimize voltage drop at the motor.
  - **Do not handle a pump or pump motor with wet hands, when standing on a wet or damp surface or when standing in water. Fatal electrical shock could occur.**
  - **Pump motor is equipped with an automatic resetting thermal overload protector and may restart unexpectedly. The overload protector tripping is an indication of motor overloading because of operating pump at low heads (low discharge restriction), excessively high or low voltage, inadequate wiring, incorrect motor connections.**
18. This pump has been evaluated for use with water only.

**Do not use to pump flammable or explosive fluids such as gasoline, fuel, oil, kerosene, etc. Do not use in explosive atmosphere.**

## **Pre-installation**

### **Tanks – Conventional Storage (Air to Water Tank)**

The function of the tank is to store a quantity of water under pressure. When full, the tank contains approximately 2/3 water and 1/3 compressed air. The compressed air forces the water out of the tank when a faucet is opened. An air volume control automatically replaces air lost or absorbed into the water. The usable water, or drawdown capacity, of the tank is approximately 1/6 of the tanks total volume.

**NOTE:** If you have a conventional tank using an air volume control, the tube to the air volume control must be connected to the pump suction pipe.

### **Tanks – Pre-charged Storage**

A pre-charged storage tank has a flexible bladder or diaphragm that acts as a barrier between the compressed air and the water. This barrier prevents the air from being absorbed into the water and allows the water to be acted on by compressed air at initially higher than atmospheric pressures (pre-charged). More usable water is provided than with a conventional type tank. Pre-charged tanks are specified in terms of a conventional tank. For example, a 20 gallon pre-charged tank will provide the same usable water or drawdown capacity as a 40 gallon conventional tank, but the tank is smaller in size.

### **Pressure Switch**

The pressure switch provides for automatic operation. The pump starts when pressure drops to a cut-in setting. The pump stops when pressure reaches a cut-out setting. The factory set pressure switch setting is 30 psi (cut-in) and 50 psi (cut-out).

### **Wells**

A new well should be pumped clear of sand before installing the pump. Sand will damage the pumping parts and seal. The drawdown level of the well should not exceed the maximum rated depth for the pump. The capacity of the pump will be reduced and a loss of prime may occur.

### **Location**

Select a location as close to the water supply as possible. Be sure to comply with any provincial/state or local codes regarding the placement of the pump. The equipment must be protected from the elements. A basement, frost-proof pit or heated pump house are good locations. Make sure the pump has proper ventilation.

### **Piping**

Piping may be copper, rigid PVC plastic or flexible polyethylene plastic.

The pipe must be clean and free of rust or scale. Use a pipe joint compound on the male threads of the metal pipe. Teflon tape should be used with plastic threads. All connections must be air tight to insure normal operation.

Slope all inlet piping upwards towards the pump to prevent trapping air. Unions or hose couplings can be installed near the pump to facilitate removal for servicing or storage.

### **Pipe Sizes**

Long horizontal pipe runs and an abundance of fittings and couplers decrease water pressure due to friction loss.

Friction losses in the suction pipe must be taken into consideration when the horizontal offset is greater than 50 feet. The suction pipes should be increased from 1" to 1-1/4" and from 1-1/4" to 1-1/2". This will reduce friction losses and allow the pump to give maximum performance.

**Never run the pump dry.** Damage to the seal may occur. fill pump body and suction pipe with before turning on the power.

## DuroJet Convertible Shallow Well Jet Pump Application

The DuroJet Convertible Shallow Well Jet Pumps have only one pipe between the pump and the water supply. This pump is designed for pumping potable water in applications where water is located less than 25 feet vertically from the pump.

### Drilled Well

1. Install a foot valve on the first section of pipe.
2. Lower the pipe into the well.
3. Add pipe until the foot valve is 5 feet below the lowest anticipated water level.

**CAUTION! The foot valve should be at least 18" from the bottom of the well or sand or sediment could be drawn into the system.**

4. After the proper depth is reached, install a well seal or pitless adapter to support the pipe and prevent surface water and other contaminants from entering the well.
5. Slope the horizontal pipe upward toward the pump to eliminate trapping air. Sloping the pipe will also aid in priming the pump.
6. Fasten the pump down securely in its permanent location to minimize pump vibration when operating.

### Driven Well (or Sandpoint Well)

1. Drive the point several feet below the water table.

**NOTE:** A packer-type foot valve can be installed in the well. This type of foot valve allows the well to be filled with water when priming and makes the inlet pipe much easier to test for leaks. Follow the manufacturer's instructions when installing the packer-type foot valve. As an alternative, an in-line check valve can be used with a driven well. The pipe between the check valve and the water level will always be under vacuum. Leaking joints or couplings will allow air to leak into the pipe and cause abnormal pump operation. Make sure to use pipe joint compound on all male pipe threads.

### Dug Out, Cistern, Lake and Spring Installation

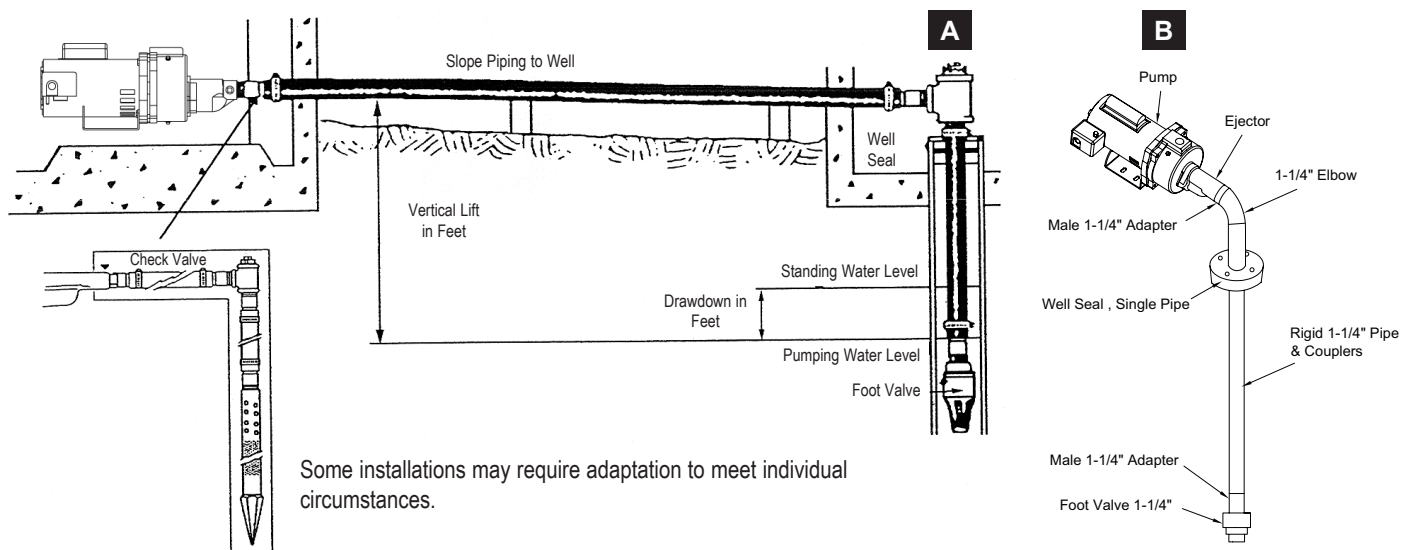
1. Install a foot valve on the inlet pipe and lower into the water.

**CAUTION! The foot valve should be at least 18" from the bottom or sand or sediment could be drawn into the system.**

**NOTE:** When a lake is used as a water supply, make sure the inlet pipe is deep enough to be submerged at all times. Slope the horizontal piping upward toward the pump to prevent trapping air. The pipe must be removed during winter months or protected against freezing.

- Protect the pipe from damage from swimmers and boats.
- Install a screen around the inlet pipe to prevent entrapment of swimmers.

## Typical DuroJet Convertible Shallow Well Jet Pump Installation



**Pump for shallow well**

## DuroJet Convertible Shallow Well Jet Pump with Conventional Storage Tank

1. Install air volume control on tank.
2. Connect the tube from the air volume control to the tee in the suction. Be sure the connections are tight. Leaking can cause the pump not to prime.
3. Install a valve and an isolator hose between the tank and the hose plumbing to aid in pump removal for servicing and for reducing the noise transmitted to the house through the piping.
4. Provide a hose bib (faucet) at the lowest point in the system to drain the system for service or storage.

## DuroJet Convertible Shallow Well Jet Pump with Precharged Storage Tank

1. Shut off the power to the pump.
2. Open the faucet nearest the tank and allow all water to drain from the tank.
3. Measure the tank precharge at the valve stem using a tire pressure gauge.
4. If necessary, precharge with an air pump to 2 PSI below the cut in pressure of the pump.
5. Slope the horizontal pipes upward toward the pump to prevent trapping air. If the horizontal distance exceeds 25 ft.

## DuroJet Convertible Deep Well Jet Pump Installation Instructions

The DuroJet Convertible Deep Well Jet Pumps have two pipes and the injector is down in the well. This pump is designed for pumping potable water in applications where the water level is up to 80 feet.

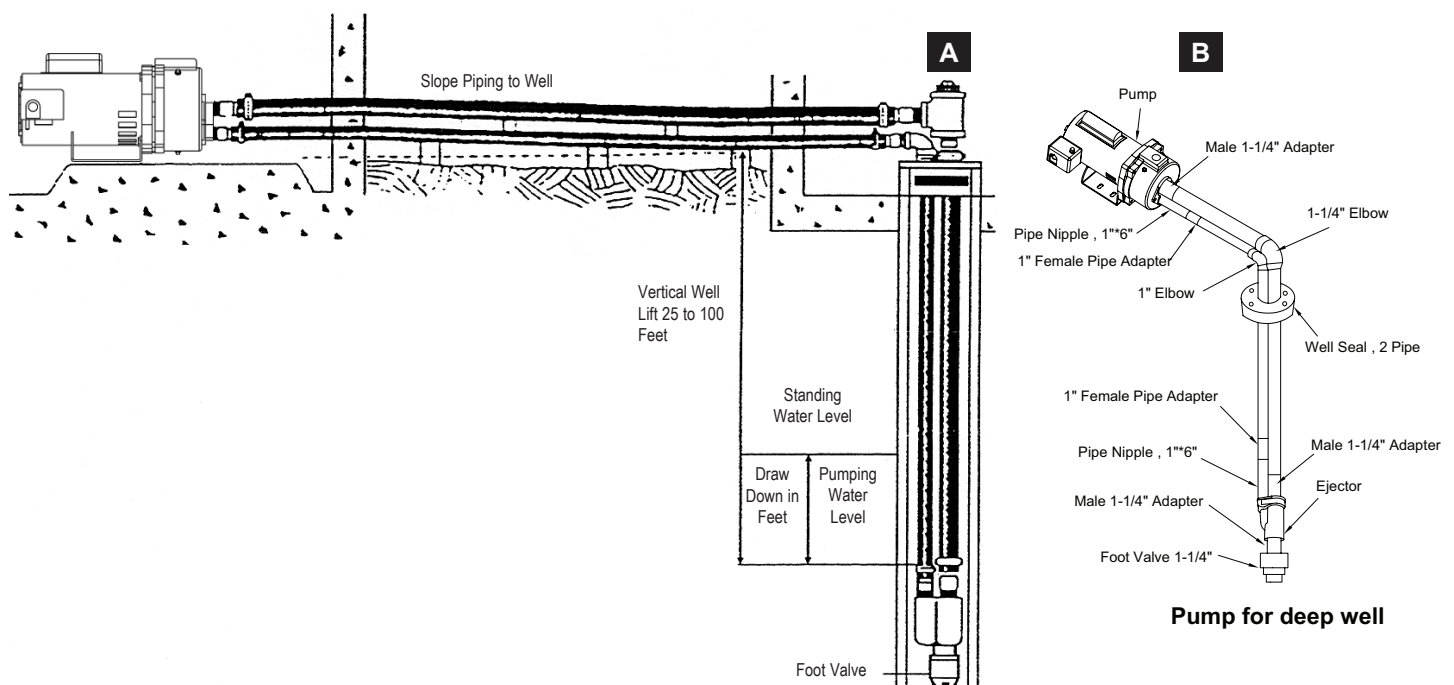
### Drilled Well

1. Assemble the foot valve to the ejector. The short tube in the ejector assembly needs to be replaced with long tube (#302922).
2. Connect suction pipe and drive line to the ejector as shown in the diagram on the following page.
3. Install the assembly so foot valve is submerged at least 10 feet below pumping level. Mechanical seal could be damaged by running the pump dry.

**CAUTION! The foot valve should be at least 18" from the bottom of the well or sand or sediment could be drawn into the system.**

4. After the proper depth is reached, install a well seal or pitless adapter to support the pipe and prevent surface water and other contaminants from entering the well.
5. Horizontal Piping - Connect horizontal piping to the well assembly. Gradually slope pipe up to the pump location, eliminating all dips and high spots and using as few elbow connections as possible. All pipe connections should be absolutely air tight for best pump performance.
6. Fasten the pump down securely in its permanent location to minimize pump vibration when operating.

## Typical DuroJet Convertible Deep Well Jet Pump Installation



## Electrical

**WARNING - Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding:**

- a. When the means of connection to the supply-connection box is other than grounded metal conduit, ground the pump back to the service by connecting a copper conductor, at least the size of the circuit conductors supplying the pump, to the grounding screw provided within the wiring compartment.
  - b. This pump is provided with a means for grounding. To reduce the risk of electric shock from contact with adjacent metal parts, bond supply box to the pump-motor-grounding means and to all metal parts accessible at the well head.
1. **THIS PUMP MUST BE INSTALLED BY QUALIFIED PERSONNEL.** Check local electrical and building codes before installation.
  2. The Jet Pump Motors are pre-configured at the factory for 230VAC, 60 Hz operation. If 115VAC operation is required, the Jet Pump Motor can be easily switched from 230VAC to 115VAC, 60 Hz. Refer to the Motor Label at the motor. If the motor is converted from a 230 VAC to 115 VAC, an electrician should insure the electrical branch circuit can handle the higher currents. The Voltage Selector should be reviewed to insure the voltage selected at the motor matches the voltage supplied.

Check the pump label for the proper voltage required. Do not connect to voltage other than that shown on the label. Cross check the power supply voltage with a voltmeter and the motor selector knob.

3. A separate branch circuit is required. The pump should be connected to a separate electrical circuit directly for the main electrical service panel. Do not use an extension cord.
4. It is mandatory that a permanent ground connection be made from the pump motor to the grounding bar at the service panel. Do not connect the pump motor to a power supply until the pump is permanently grounded. The ground wire should be copper and at least as large as the power supply wire size. The power supply wire should be copper.
5. Recheck the voltage after the pump motor has started. There should be some voltage drop, but voltage drop should be no more than 5% of the nominal voltage.

**CAUTION:** Failure to ground this unit properly may result in severe electrical shock.

**The motor has been factory connected for 230V. Refer to motor nameplate and instruction sheet for reconfiguration to 115V. Use copper conductors only for field wiring connections.**

**CAUTION:** This pump has been evaluated for use with water only.

**WARNING:** To reduce the risk of electric shock, see instruction manual for proper installation procedure. Risk of electric shock – This pump has not been investigated for use in swimming pool areas.

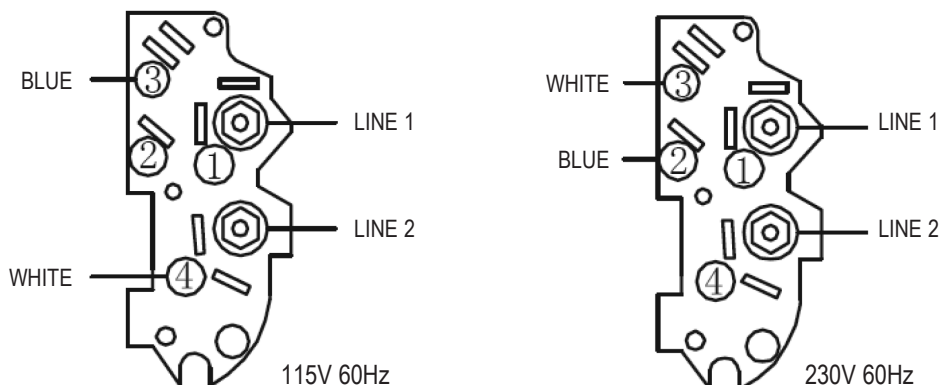
### Wire Selection Guide

NEC allows a 5% voltage drop between the Service Panel and the Pump. The table below reflects the Maximum Wire length to comply with NEC.

Pump Model	Voltage	Name Plate Amps	Max. Wire Length in Feet, AWG Size			
			#14	#12	#10	#8
DCJ 500 (1/2 HP)	115	11.6	103	163	260	413
	230	5.8	411	653	1,038	1,651
DCJ 750 (3/4 HP)	115	12.8	93	148	235	379
	230	6.5	367	582	926	1,473

### Wiring at Pump

Remove the plate from the motor compartment and wire the motor as shown below.



## Operation

### Priming the DuroJet Convertible Shallow Well Jet Pumps

To prevent damage to the pump, do not start motor until pump has been filled with water.

1. Remove prime plug.
2. Fill pump and piping completely full of cold water.
3. Replace the prime plug.
4. Open a faucet to vent the system.
5. Start the motor. Water will be pumped within a few minutes. If the pump fails to prime within 5 minutes, stop the motor and refill the pump with cold water. The priming time is proportional to the amount of air in the inlet pipe. Refill as often as necessary.
6. Let the system operate for several minutes to flush all pipes.
7. Close the faucet and allow the pump to build pressure in the tank. When the pressure reaches the cut-out setting, the motor will stop.

The system is now in operation and will automatically cycle on demand.

**Disconnect power and release all pressure from the system before attempting to install, service, relocate or perform any maintenance. Lock the power disconnect in the open position. Tag the power disconnect to prevent unexpected application of power.**

**CAUTION! Protect pump from freezing during winter conditions.**

### Draining the DuroJet Convertible Shallow Well Jet Pump

Drain openings are provided on all models. To drain the pump:

1. Remove the drain fitting and the prime plug to vent the system.
2. Drain all piping to a point below the freeze line.

### Priming and Setting the DuroJet Convertible Deep Well Jet Pumps

When using DuroJet pumps on deep well applications, longer tube for ejector assembly is required. WaterGroup's part number for the long tube is (#302922).

1. Remove prime plug from the pump discharge.
2. Fill pump and piping completely full of cold water.
3. Replace the prime plug
4. Make sure that the long tube is replaced with short tube in the ejector assembly.
5. Start the pump. When the pump is properly primed, a high pressure will show immediately on the gauge.
6. If no pressure is shown, stop the pump and repeat Steps 1 - 3. Several attempts may be required before the pump is primed.
7. The pressure obtained in Step 6 will be the minimum operating pressure of the pump.
8. When the correct pressure is set, close the faucets. Pressure will rise to close the pressure switch and the pump will stop automatically.
9. With the pump primed and set, check operation by opening and closing faucets as necessary, allowing the pump to cycle automatically.

**NOTE:** Systems with long offset lines or driven well points may take several attempts to prime. If your pump does not prime within one or two minutes, repeat Steps 1 to 3. When the pump is primed and running, check operation by opening and closing faucets as necessary, allowing the pump to cycle automatically.

**Disconnect power and release all pressure from the system before attempting to install, service, relocate or perform any maintenance. Lock the power disconnect in the open position. Tag the power disconnect to prevent unexpected application of power.**

**CAUTION! Protect pump from freezing during winter conditions.**

## **Draining the DuroJet Convertible Deep Well Jet Pumps**

Drain openings are provided on all models. To drain the pump:

1. Remove the drain fitting and the prime plug to vent the system.
2. Drain all piping to a point below the freeze line.

## **Draining the Tank**

Conventional tanks can be drained by opening an outlet at the lowest point in the system. Remove a plug or the air volume control to vent the tank.

Precharged tanks force virtually all the water from the tank when the system pressure is released. No draining is necessary.

## **Restarting Pump**

If the pump has been serviced, drained, or has not been used for some time, be sure there is water in the pump housing (volute) and the piping to the well. There must be water in the pump housing (volute) at all times when the pump is running to avoid internal damage of seal members (see page seven for priming information).

## **Precharged Tank**

Some air is lost through the bladder in any tank. To prevent tank failure, check the tank precharge on a yearly basis.

1. Open a faucet nearest the tank and allow all water to drain from the tank.
2. Measure the tank precharge at the valve stem using a tire gauge.
3. If necessary, adjust the precharge with an air pump to 2 PSI below the cut-in pressure of the pump.

## **Lubrication**

The bearings used in the pumps are lifetime lubricated at the factory and require no additional lubrication.

## **Diagnosing Waterlogged Tanks – Conventional**

When a tank system has an inadequate ratio of air and water, the pump will start and stop often and erratically.

1. Disconnect the power to the pump.
2. Open the lowest faucet in the system to release all pressurized water in the system.
3. Prime the pump.
4. Reconnect the power to the pump.

**NOTE:** As the pump refills the tank with water, the air volume control supplies the tank with the correct air to water ratio for the system to operate. If the air volume control is good, the pump will shut off at the desired cut-off and will be adjusted correctly.

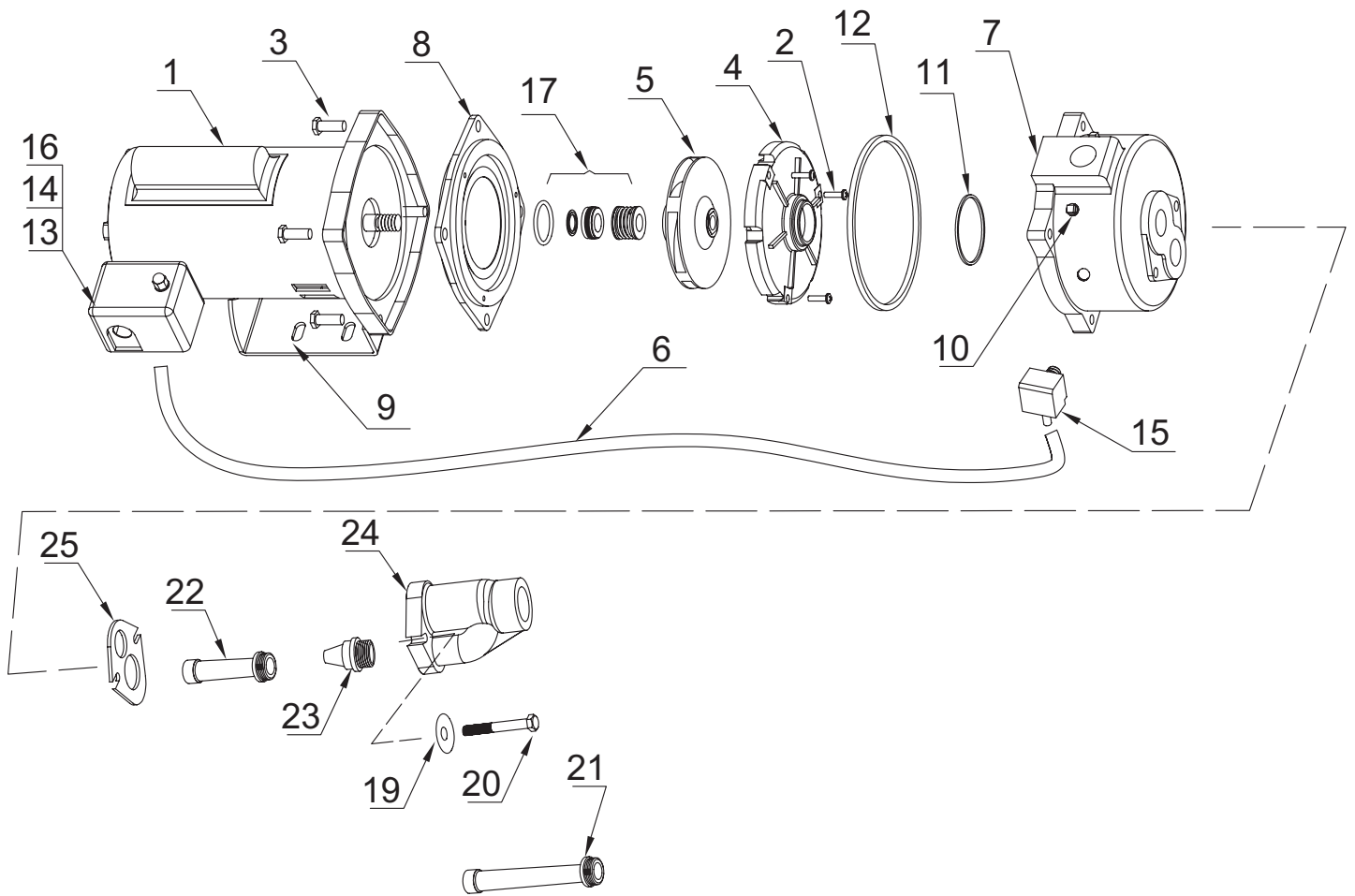
## **Diagnosing Waterlogged Tanks – Precharged**

If a precharged tank becomes waterlogged, the bladder is normally leaking or broken.

1. Test the tank by depressing the air valve. The air valve will expel water if the bladder is broken.
2. Replace the tank.



# Parts Breakdown - For Deep Well Application DCJ500 (#6330) & DCJ750 (#6331)



Drawing #	Item Numbers	Part Description	Qty
1	302900	MOTOR, 1/2 HP, DCJ500	1
	302901	MOTOR, 3/4 HP, DCJ750	
2	302902	SCREW, DIFFUSER, 1/4-20 * 7/8"	3
3	302903	SCREW, HOUSING, 3/8-16 * 1-1/2"	4
4	302904	DIFFUSER, DCJ500, DCJ750	1
5	302905	IMPELLER, 1/2 HP, DCJ500	1
	302906	IMPELLER, 3/4 HP, DCJ750	
6	302907	PRESSURE TUBE, 0.38 Meter	1
7	302908	HOUSING, DCJ500, DCJ750	1
8	302909	SEAL PLATE, DCJ500, DCJ750	1
9	302910	BRACKET, DCJ500, DCJ750	1
10	302911	PLUG, DRAIN, PRIME, DCJ500/750, 1/4" -18NPT	2
11	302912	O-RING, DIFFUSER, DCJ500/750, OD 34.5*3.5	1
12	302913	O-RING, HOUSING, DCJ500/750, OD 154.5*3.5	1
13	302914	ADAPTER, PRESSURE SWITCH, DCJ500/750	1
14	302915	NUT, ADAPTER, PRESSURE SWITCH, DCJ500/750	1
15	302916	ADAPTER, PRESSURE TUBE, DCJ500/750, 1/4 -18NPT	1
16	302917	PRESSURE SWITCH, DCJ500/750	1
17	302918	MECHANICAL SEAL, DCJ500/750	1
19	302920	WASHER, EJECTOR, DCJ500/750, 3/8"	2
20	302921	SCREW, EJECTOR, DCJ500/750, 3/8-16*1-1/4"	2
21	302922	LONG TUBE, DCJ500/750, FOR DEEP WELL	1
22	302923	SHORT TUBE, DCJ500, 1/2HP, SHALLOW WELL	1
	302924	SHORT TUBE, DCJ750, 3/4HP, SHALLOW WELL	
23	302925	NOZZLE, DCJ500	1
	302926	NOZZLE, DCJ750	
24	302927	EJECTOR, DCJ500/750	1
25	302928	WASHER, EJECTOR, DCJ500/750	1

# Shallow Well Performance

## 1/2 HP Jet Pump

Lift (FT)	Discharge Pressure in PSI						Shut Off PSI
	30	40	50	60	70	80	
	Capacity in USGPM						
2	15.1	12.2	7.7	3.7			67.0
4	14.8	11.7	7.2	3.5			66.0
5	14.6	11.5	6.9	3.0			66.0
6	14.2	11.2	6.6	2.8			66.0
8	13.8	10.9	6.4	2.6			66.0
10	13.6	10.7	6.2	2.4			66.0
12	13.1	10.5	6.0	2.3			65.0
14	12.8	10.2	5.7	2.1			65.0
15	12.6	10.1	5.5	2.0			65.0
16	12.3	9.9	5.2	1.7			65.0
18	12.1	9.5	5.0	1.5			63.0
20	11.8	9.4	4.7	1.4			63.0
22	10.6	8.3	4.5	1.2			62.0
24	9.4	7.3	4.3	1.1			62.0
25	8.3	6.7	4.2	1.1			61.0
26	8.1	6.5	4.0	0.8			61.0
28	7.8	6.1	3.7	0.6			60.0
30	7.6	5.9	3.3	0.2			60.0

## 3/4 HP Jet Pump

Lift (FT)	Discharge Pressure in PSI						Shut Off PSI
	30	40	50	60	70	80	
	Capacity in USGPM						
2	20.7	14.9	8.1	1.4			62.0
4	20.2	14.4	7.8	1.2			61.0
5	19.5	13.5	7.2	1.0			61.0
6	18.7	13.2	7.1	0.8			61.0
8	18.5	13.1	6.8	0.7			60.0
10	18.1	12.7	6.6	0.6			60.0
12	17.9	12.4	6.4	0.5			60.0
14	17.8	12.2	6.1	0.5			60.0
15	17.3	11.8	5.9	0.5			60.0
16	16.5	11.4	5.7	0.4			60.0
18	15.2	11.1	5.5	0.1			60.0
20	14.7	10.5	5.1				57.0
22	13.4	9.8	4.9				55.0
24	12.9	9.3	4.5				53.0
25	11.5	8.1	4.4				53.0
26	11.1	7.9	4.1				
28	10.9	7.6	3.8				
30	10.7	6.9	3.7				

# Deep Well Performance

## 1/2 HP Jet Pump

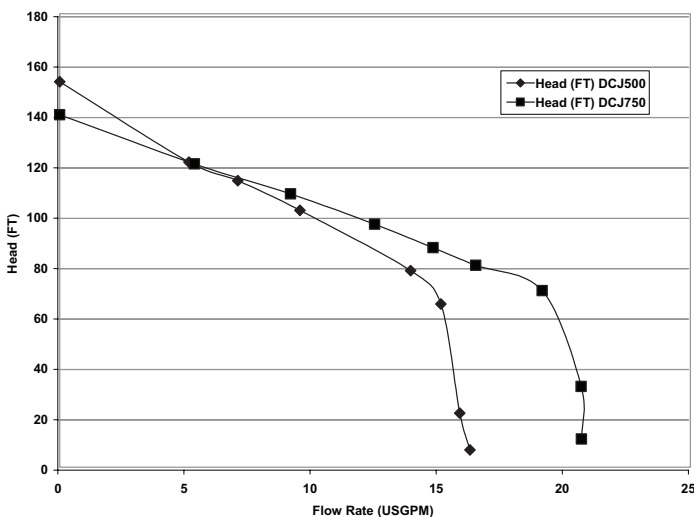
Lift in Feet						
30	40	50	60	70	80	
Capacity in USGPM at 20 psi						
6	6	6	5	4	3	
Capacity in USGPM at 30 psi						
6	6	5	4	3	2	
Capacity in USGPM at 40 psi						
5	4	3	2	1		
Capacity in USGPM at 50 psi						
3	2	2	1	1		
Capacity in USGPM at 60 psi						
2	1	1	1			

## 3/4 HP Jet Pump

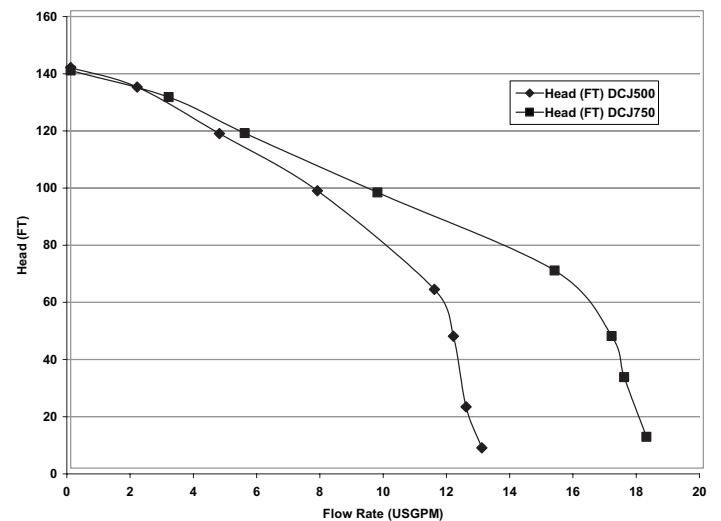
Lift in Feet						
30	40	50	60	70	80	
Capacity in USGPM at 20 psi						
6	6	6	5	5	4	
Capacity in USGPM at 30 psi						
6	6	6	5	4	3	
Capacity in USGPM at 40 psi						
5	4	4	3	2	1	
Capacity in USGPM at 50 psi						
4	4	3	2	1		
Capacity in USGPM at 60 psi						
3	3	2	2	1		

# Performance Curves

## Shallow Well Performance



## Deep Well Performance (Lift in 5 FT)



## Trouble Shooting Checklist

Problem	Cause	Solution
1. Motor will not run	a. Power supply failure b. Burned out motor	a. Make sure power is turned on. Check for blown fuses, loose or broken wires, low voltage supply, malfunctioning pressure switch. b. Replace. Check with dealer for warranty coverage.
2. No water supply	a. Motor not running b. Improper priming. c. Air leak in suction line d. Foot valve not submerged	a. See No. 1 above. b. Stop motor and re-prime pump. Repeat until all air is removed. A leaky foot valve could prevent proper priming in deep well pumps. c. Check by plugging pump discharge and screw Schrader valve into tapping on right hand side of pump. Raise pressure to about 80 lbs. with tire pump. If pressure falls off quickly, leak is present. Inspect all connections and pipe sections. Check with soapsuds. d. Check vertical distance to water level in well. Replace piping with longer length if necessary.
3. Motor overload - kicks out	a. Improper wiring b. Voltage too low c. Inadequate ventilation d. Pump cycling too often	a. Check wiring diagram to make sure connections are properly matched to voltage. b. Check at pump with voltmeter. Make sure wiring is heavy enough for long runs from power supply. c. Take steps to increase air flow through pump location or air circulation around motor. d. See No. 6 below.
4. Water supplied is below rated amount	a. Nozzle or impeller clogged b. Well lift too high c. Leak in piping d. Pressure control set too high e. Offset piping too small f. Failure in impeller or diffuser vanes	a. Disassemble pump and check nozzle, tube and impeller. b. Check water level in well to see actual pumping level. Measure vertical distance to pump and compare to tolerance for pump type. c. See No. 2c above. d. Compare minimum pressure on which capacity is based with operating pressure shown on gauge. e. Replace suction and drive lines with larger diameter pipe. f. Inspect for wear on impeller nose or internal blockage.
5. Pressure too low to shut off switch	a. Plugged ejector nozzle b. Switch out of adjustment c. Well lift too high d. Offset piping too small e. Foot valve partially plugged	a. Remove plug and clean out nozzle. b. Check cut-in and cut-out pressures with accurate gauge. Switch may have to be reset to lower pressure. c. See No. 4b above. d. Replace suction and drive lines with larger diameter pipe. e. Inspect foot valve screen and clear if necessary.
6. Pump cycling too often	a. Waterlogged pressure tank b. Hidden water loss	a. Check for faulty AVC or low pressure in pre-charged tank (see Diagnosing waterlogged tanks). b. Check for leaky faucets and pipes drawing from tank. Also check for leaks in foot valve bleeding water back to well.
7. Air delivered through faucet at low pressure	a. Air in pressure tank b. Leak in suction line	a. Check AVC tubing for loose fittings. b. See No. 2c above.
8. Pump is noisy	a. Suction line is plugged	a. Clear blockages from foot valve, ejector or piping.

# **GUARANTEE**

This pump is guaranteed to do the work for which it is intended when properly installed and operated. It is warranted to be free of defects in material and workmanship for a period of two years from date of manufacture. The only exception shall be when proof of purchase or installation is provided and then the warranty period shall be from the date thereof.

## **How To Claim This Warranty**

The dealer from whom you purchased your pump has a thorough knowledge of its operation and maintenance. If trouble develops, please consult the dealer.

If a pump or part should prove defective within 24 months, return it to your dealer, transportation charges prepaid. The repair will be made or a replacement pump or part will be supplied free of charge. The serial number of the pump must be supplied.

This warranty does not obligate the manufacturer to bear the cost of field labor or transportation in connection with the replacement or repair of defective parts or units, nor shall it apply to any product upon which repairs or alterations have been made, unless authorized by the manufacturer.

The manufacturer shall in no event be liable for consequential damages or contingent liabilities arising out of the failure of any product, its power unit or its accessories to operate properly. No express, implied or statutory warranty other than herein set forth is made authorized to be made by the manufacturer.

**Toll Free 1-877-288-9888**

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