

MAGIKIST

PULSE JET DE-ICER

WATER SERVICE LINE THAWER

OPERATING MANUAL MODEL PJDX-C (REV B)

SETUP

Initial Assembly

To facilitate in the shipment of your unit, some items require minor assembly. Refer to the Initial Assembly sheet included for instructions.

pressure pump oil or equivalent non-foaming, non-detergent, 40 weight #1 compressor oil. Do not use automotive, transmission, or hydraulic oils, or brake fluid.

Lubrication

Prior to initial operation ensure that the oil level of the pump is to the halfway mark of the oil gauge window. Do not overfill. Use only Magikist high

Instructions

Please read all instructions before operating your unit.

OPERATION

Pulse & Flow Modes

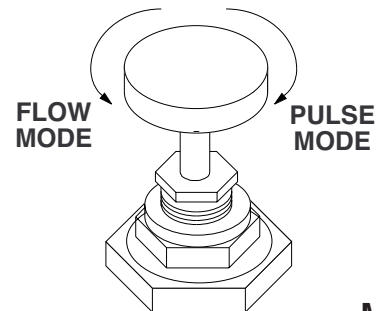
Your Pulse Jet De-icer is equipped with a special control that switches the unit between pulse mode and flow mode. Pulse mode provides the maximum pulsation action for moving the tubing in and out of the service line. The flow mode provides the maximum water flow and pressure to thaw the frozen section of the service line.

Generally one first sets the unit for pulse mode to move the tubing down the line. Once the frozen section of line is reached one switches to flow mode to thaw the frozen section. After the frozen section is thawed one reverts back to the pulse mode to remove the tubing from the line.

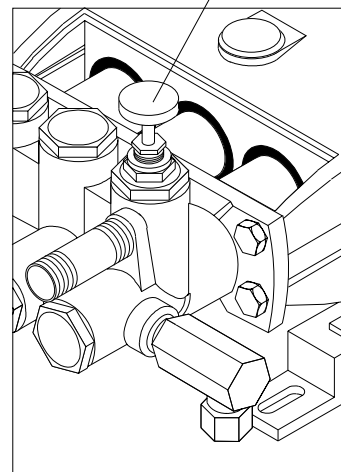
The diagram to the left shows the mode adjustment knob located on the front top of the pump that is used to set either pulse or flow modes. To set the unit to pulse mode, turn the mode adjustment knob fully clockwise until it stops. Conversely, to set the unit to flow mode, turn the mode adjustment knob fully counterclockwise until it stops.

Operating Procedure

Before proceeding ensure that the oil level of the pump is to the halfway mark of the oil gauge window as described in *Lubrication* subsection under *Setup*.

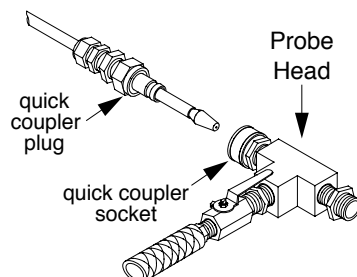


Mode
Adjustment
Knob



- 1) Fill the water reservoir with clean water until it is at least three quarters full. If possible use warm water (up to a maximum of 70°F) as this speeds the thawing process. **Do not use water hotter than 70°F (21°C) as this will result in damage to the tubing.**
- 2) If you wish to preheat the water, plug the immersion heater into a standard 115 volt 15 amp outlet. **Ensure that the immersion heater is and remains covered by water in the water reservoir. Failure to do so may result in severe damage to the immersion heater.** While heating the water, observe the temperature indicator located on the side of the reservoir to ensure that the water temperature does not exceed 95°F (35°C). The immersion heater supplied with your unit will provide approximately 5°F rise every 5 minutes to a full tank of water. Once the water has reached the desired temperature unplug the immersion heater. The electrical current draw of the immersion heater will not allow it to remain plugged in with the electric motor operating.
- 3) Ensure that the ON/OFF switch located on the front of the unit is in the OFF position. Plug the power cord for the unit (located next to the ON/OFF switch) into a standard 115 volt 15 amp outlet.
- 4) Test if the unit is primed properly by moving the ON/OFF switch to the ON position. If no water comes out of the probe tip after approximately 15 to 30 seconds you will need to prime the pump before continuing. Refer to the subsection *Purging Air* before continuing. Turn the unit OFF once it is primed properly.
- 5) Unwind all tubing off of the reel. To improve the pulsing action of the unit lay the tubing on the floor such that it is as straight as possible and not in little coils.
- 6) Disconnect the service line at the street side of the water meter and connect the probe head to the service line. Open the ball valve on the probe head as this allows back flow from the service line to drain back into the water reservoir and be reused.
- 7) Start the probe tip and tubing into the probe head and couple the quick coupler plug on the probe tubing to the quick coupler socket on the probe head.
- 8) Set the mode adjustment knob on the pump for pulse mode.
- 9) Turn the unit on by moving the ON/OFF switch to the ON position.
- 10) Feed the tubing down the service line by applying a gentle even pressure until the frozen section of the line has been reached. Frozen sections of a line will often have the feel of a gradual increase in resistance, not a sudden stop. If an obstruction is reached do not force the tubing. Instead pull the tubing back and try to move it forward again. One can tell if the obstruction reached is the curb stop by estimating the distance from the water meter to the curb stop and comparing this with how much tubing has been inserted into the line.

Note: Always ensure that there is sufficient water in the water reservoir for the pump to operate properly, especially as you are thawing and water from the reservoir is being pumped into the service line. If necessary, add water to the water reservoir.



- 11) Once the frozen section is reached, set the mode adjustment knob on the pump for flow mode. Maintain a moderate pressure on the tubing to ensure that the probe tip remains at the frozen section while it is being thawed. If, however, the frozen section of the line cannot be reached even after extending the 100 feet of tubing to its full length, then refer to the subsection *Servicing Lines Longer Than 100 Ft.* Thawing times vary depending on the size of the frozen section, distance from the unit, etc.
- 12) Once the line has been thawed, shut the ball valve on the probe head off to prevent over filling of the water reservoir.
- 13) Set the mode adjustment knob on the pump for pulse mode.
- 14) Pull firmly back on the tubing, with the unit still turned on, to remove it from the service line. As tubing is removed from the service line do not rewind it on the reel yet (as this reduces the pulsing action which in turn increases the resistance in removing the tubing).
- 15) Once all the tubing has been removed from the service line, turn the unit off by moving the ON/OFF switch to the OFF position.

- 16) Shut off the service line at the curb stop.
- 17) Open the ball valve on the probe head to bleed off the remaining water in the service line into the water reservoir.
- 18) Uncouple the quick coupler on the probe head. Remove the probe tip and tubing from the probe head and rewind the tubing onto the reel. Disconnect the probe head from the service line and reconnect the service line to the water meter.
- 19) Open the curb stop.
- 20) Drain the water from the water reservoir by removing the cap on the bottom back of the reservoir. Refer to the section *Freezing Conditions* for more information on protecting the unit from freezing conditions.

Purging Air

To purge air from the pump, open the needle valve labeled "OPEN TO PRIME" located on the left front of the pump. Open the needle valve until water flows out and all air is purged from the pump. Close the needle valve tightly afterwards.

If difficulty is encountered in priming refer to the *Troubleshooting* section.

Servicing Lines Longer Than 100 Ft

The pulse jet de-icer is normally supplied with 100 feet of tubing. An optional reel with 200 feet of tubing is also available. If after extending the 100 feet of tubing to its full length the frozen section of the service line cannot be reached, remove the tubing and replace the 100 foot reel with the 200 foot reel. Note, however, that one should always try the 100 foot reel first as this reel will give you the greater pulsing action.

Reels may be easily interchanged. To remove a reel, first uncouple the quick coupler at the inlet of the reel. If not already done, uncouple the quick coupler at the probe head and remove the probe tip and tubing from the probe head. Finally remove the unit 2 thumbscrews holding the reel to the unit.

To install a reel, fasten the reel to the unit with the 2 thumbscrews. Next couple together the quick coupler at the inlet of the reel.

Freezing Conditions

The unit must be protected from freezing conditions. If the unit is to be exposed to freezing conditions, the pump, water reservoir, and all lines must be well drained. Most water can be removed from the pump by operating the unit briefly with the reservoir empty.

For full protection one can run a non-toxic plumbing or RV anti-freeze through the unit. This can be done by disconnecting the suction coupling which connects the suction line to the reservoir. The end of the suction line can then be placed in a container of non toxic anti-freeze and the unit operated until anti-freeze comes out of the probe tip.

Pump Pressure

Your unit is preset to operate at 300 PSI. Never exceed this pressure. If pressure adjustment is necessary, this can be done by turning the pressure regulating valve on the pump clockwise to increase pressure and counterclockwise to decrease pressure.

MAINTENANCE

Pump Lubrication

Always ensure that the oil level of the pump is to the halfway mark of the oil gauge window. Do not overfill. Use only Magikist high pressure pump oil or equivalent non-foaming, non-detergent, 40 weight #1 compressor oil. Do not use automotive, transmission, or hydraulic oils, or brake fluid.

Change crankcase oil after first 50 hours of operation, after which change oil at regular intervals of 500 hours or less depending on operating conditions. Oil can be conveniently drained via the drain cock and tube located near the rear side of the pump crankcase.

Each plunger has an oiler that is accessible through the plunger cover. Oil each oiler every 100 hours of use or once a week, whichever comes first.

Water Suction Strainer

Ensure that the strainer at the end of the water suction hose in the water reservoir has no breaks in the screen and that it is free of particles which

might restrict flow. Never operate the unit without the strainer. Foreign material entering the pump can easily create problems or contribute to premature wear.

Probe Tip Replacement

If the probe tip needs to be replaced, cut off the end of the tubing to remove the old probe tip. Heat the end of the tubing just enough to allow the new probe tip to be inserted. Do not overheat the end of the tubing as it will get too soft.

Pump Packings

The X series pumps are packed with a series of durable packings and adapters. As packings wear, some additional adjustment of the gland nut may be necessary. Tighten the gland nut firmly but not excessively. If excessive pressure drop is experienced and other sources of potential pressure drop have been ruled out, the packings may require replacement. When replacing the packings, note the correct order of replacement, as shown in the exploded view diagram.

SAFETY

Your unit was designed and constructed with safety foremost. When using the unit it is best to observe the following precautions:

- Take extra care when moving the unit up and down stairs. It is recommended that a second person grasp the grip/cord wrap on the front bottom of the unit to assist in moving. Proper non-slip footwear should be

used. To aid in moving the unit up stairs, the water reservoir should be empty.

- Always keep clear of moving couplings and shafts.
- Always take extra precautions when handling electrical equipment around wet areas.

OPTIONAL EQUIPMENT

Part#	Description
PJD125	reel complete with 100 ft 1/4" tubing
PJD130	reel complete with 200 ft 1/4" tubing
PJD135	reel complete with 100 ft 5/16" tubing
PJD140	reel complete with 200 ft 5/16" tubing

TROUBLESHOOTING

Symptom	Probable Cause	Correction
<ul style="list-style-type: none"> •Motor does not start 	<ul style="list-style-type: none"> •Motor not connected to power supply. •A fuse has blown or breaker has tripped. •Thermal overload tripped. •Pump is frozen. 	<ul style="list-style-type: none"> •Connect the motor to the power supply. •Change the fuse or reset the breaker. •Allow the motor to cool. Check that the operating pressure is not too high and that the power supplied to the motor matches that required. Press the reset button on the motor. •Allow the pump to thaw.
<ul style="list-style-type: none"> •Motor stops 	<ul style="list-style-type: none"> •A fuse has blown or breaker has tripped. •Thermal overload tripped. 	<ul style="list-style-type: none"> •Change the fuse or reset the breaker. Check that the power supplied to the motor matches that required. •Allow the motor to cool. Check that the operating pressure is not too high and that the power supplied to the motor matches that required. Press the reset button on the motor.
<ul style="list-style-type: none"> •Reduced pulse. 	<ul style="list-style-type: none"> •Air in pump. •Tubing wound in small coils or wound on reel. •Probe tip partially or complete blocked. •Tubing kinked. •Foreign material in pump. 	<ul style="list-style-type: none"> •See <i>Purging Air</i> subsection under OPERATION. •Lay tubing on floor such that it is as straight as possible. •Remove and clean, or replace probe tip. •Replace tubing. •Service pump and check strainers.
<ul style="list-style-type: none"> •Irregular working pressure. 	<ul style="list-style-type: none"> •Air in pump. •Water level in water reservoir too low. •Suction air leak. •Probe tip partially or complete blocked. •Foreign material in pump. 	<ul style="list-style-type: none"> •See <i>Purging Air</i> subsection under OPERATION. •Add water to water reservoir. •Check water suction hose, clamps, and fittings for air leaks. •Remove and clean, or replace probe tip. •Service pump and check strainers.

Symptom	Probable Cause	Correction
<ul style="list-style-type: none"> •Working pressure too low. 	<ul style="list-style-type: none"> •Air in pump. •Suction air leak. •Pressure regulator out of adjustment. •Pump packing worn. 	<ul style="list-style-type: none"> •See <i>Purging Air</i> subsection under OPERATION. •Check water suction hose, clamps, and fittings for air leaks. •Adjust pressure regulator to increase pressure. •Replace packings in pump.
<ul style="list-style-type: none"> •No Working pressure. 	<ul style="list-style-type: none"> •Air in pump. •No water in water reservoir. •Suction air leak. •Water suction hose strainer plugged. •Water suction hose foot valve stuck closed. •Tubing frozen. 	<ul style="list-style-type: none"> •See <i>Purging Air</i> subsection under OPERATION. •Fill water reservoir with sufficient water to cover suction strainer. •Check water suction hose, clamps, and fittings for air leaks. •Check strainer and clean or replace if necessary. •Check that ball in the water suction hose foot valve moves freely. •Allow tubing to thaw.

WARRANTY

Magikist units are warranted by the manufacturer to be free from defects in material and workmanship for one year from date of manufacturer's shipment, provided the equipment is installed and operated in accordance with factory recommendations and instructions. This warranty is limited to repairing or replacing products which manufacturer's investigation shows were defective at the time of shipment by the manufacturer. This warranty does not cover normal wear, nor does it cover damage caused by neglect, misuse, accident, faulty installation or tampering in a manner to impair its normal operation. All products subject to this warranty shall be returned **freight prepaid** to Magikist Ltd., Winnipeg, Canada for examination, repair, or replacement.

The express warranty set forth herein is in lieu of all other warranties, express or implied, including without limitation any warranties or merchantability or fitness for a particular purpose and all such warranties are hereby disclaimed and excluded by the manufacturer. Repair or replacement of defective products as provided is the sole and exclusive remedy provided hereunder and the manufacturer shall not be liable for any further loss, damages or expenses, including incidental and consequential damages, directly or indirectly arising from the sale or use of this product.

This warranty is subject to the installation and operating conditions as described in this manual. This warranty does not apply to optional equipment which may have been supplied with your pump. Refer to the warranty supplied with the optional equipment for information on that equipment's warranty.

Parts originally manufactured by Magikist Ltd. must be used or this limited warranty will be voided. Magikist Ltd. will be absolved of any liability if parts other than Magikist Ltd. manufactured parts are used.

There are no warranties which extend beyond the description of the face thereof.



PARTS LIST
MODEL PJD_X-C, PJD_X2-C (REV B.1)

ORDERING INFORMATION

Find the item number from the exploded view diagram. Use the item number to reference the correct part number in the following parts list.

Item#	Part#	Description	Qty
1	MTEL0051AW115	motor 1/2HP, wired (note 3)	1
2	X8P	pump w/mode adjustment	1
3	BLVA36	belt, with X8 pump	1
	BLVA39	belt, with X20 pump	1
6	PLV28A10-1	motor pulley 1-3/4" with X8 pump	1
	PLV3210-1	motor pulley 2" with X20 pump	1
8	PJD8	mode adjustment knob	1
9	PJD9	belt guard	1
11	HOCB06	return hose, 3/8" x 10' long	1
15	PJD15	suction hose, 30"	1
16	BFD115-D	street elbow, 1/2"	1
18	MSFSNR-G07	gear clamp, size 7	2
19	MSFSNR-G10	gear clamp, size 10	2
22	81106	suction coupling	1
24	RV-1/2	strainer	1
26	BFD139-10D	elbow 1/2"m x 5/8" hose barb	1
27	BFD101-D	tee 1/2"	1
28	PJD28	recirculating hose, 1/4"	1
33	QC3EM3	quick coupler socket, 3/8" male	1
34	QCE3F3	quick coupler plug, 3/8" female	1
36	QC2EF2	quick coupler socket, 1/4" female	1
37	QCE2M2	quick coupler plug, 1/4" male	1
39	8139	drain cap	1
40	BFD122-DC	1/2" x 3/8" nipple	1
44	PJD44	reel washers	2
45	PJD45A	probe tip (for 1/4" tubing)	1
	PJD45B	probe tip (for 5/16" tubing)	1
46	PJD46	reel pipe	1
48	BFD125-6C	3/8"m x 3/8" hose barb	1
51	PJD51	discharge hose	1
52	PJD52	motor cover w/ handle	1
53	BFD122-C	3/8" nipple	1
54	PJD54	ss tank + neck	1
58	BFD139-6C	3/8" male x 3/8" barb 90°	1

Item#	Part#	Description	Qty
60	PJD60	filler cap	1
62	WHL1016B	wheel	2
64	PJD64	motor mount/baseplate	1
65	PJD65	wheel retainer cap	2
66	SF60UA6-4	swivel 90° 3/8m x 1/4f	4
67	PJD67	handle with bolt/nut	1
68	PJD68A	reel assembly 1/4" tube (no tubing)	1
	PJD68B	reel assembly 5/16" tube (no tubing)	1
69	ELCMSHE1500	immersion heater unwired	1
	ELCMSHE1500W	immersion heater wired	1
71	ELCSW10SS	switch	1
75	PJD75	handle swivel (brass)	1
77	BV0375	ball valve 3/8"	1
79	PJD79A	tubing 1/4" OD per ft (note 1)	100
	PJD79B	tubing 5/16" OD per ft (note 1)	100
80	BFD69-4C	comp fitting 90° 3/8"m (1/4" tubing)	1
	BFD69-5C	comp fitting 90° 3/8"m (5/16" tubing)	1
82	BFD110-CB	reducing bushing, 3/8" x 1/4"	1
83	PJD83A	comp fitting 1/4"m (1/4" tubing)	1
	PJD83B	comp fitting 1/4"m (5/16" tubing)	1
88	BFD101-C	tee, 3/8"	1
93	PJD93	recessed bumper	2
95	HPS38	swivel	1
98	PJD98	temperature strip	1
106	PJD106	1/4" x 3/4" machine screw	1
107	PJD107	1/4" x 1/2" machine screw	7
108	PJD108	1/4" x 3/4" capscrew w/ nuts	3
109	PJD109	1/4" x 3/4" wing bolts	2
110	PJD92	hose hanger ss	1
-	PJD125	reel complete w/100ft 1/4" tubing	1
-	PJD130	reel complete w/200ft 1/4" tubing	1
-	PJD135	reel complete w/100ft 5/16" tubing	1
-	PJD140	reel complete w/200ft 5/16" tubing	1
-	BFD960-4P10	comp sleeve (1/4"tube) 10-pack	1
-	BFD960-5P10	comp sleeve (5/16" tube) 10-pack	1

NOTES

1. PJD79A and PJD79B tubing are available in lengths of 100, 200, 300, 400 and 500 feet.
2. PJD78C - Probe feeder assembly includes parts 33, 40, 48, 53, 77, and 88.



EXPLODED VIEW MODEL PJDX-C (REV B)

