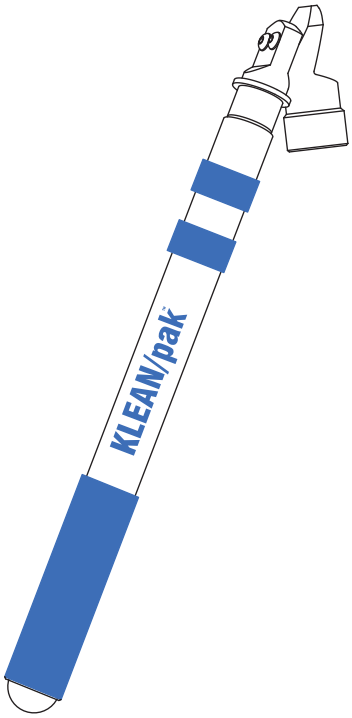
MANUAL: KLEAN/pak™ Portable Mass Disinfection System

INSTRUCTIONS FOR SAFE OPERATION AND MAINTENANCE

The KLEAN/pak is an industrial grade, portable mass disinfection system that is designed to provide disinfecting solution over a large area with an easy to use standard garden hose water supply. Using the KLEAN/pak, with appropriate disinfecting solutions, gives a quick and easy way to disinfect larger items and items with areas that are difficult to reach with a wipe.

Since the KLEAN/pak is not an aerosol dispenser, the spray droplets are larger and won't get carried away by the wind, resulting in more disinfecting solution making it to the items being disinfected. Ideal for indoor and outdoor disinfection of items such as outdoor furniture, gates and doorways, vehicles, shopping carts, and golf carts.



PATENT PENDING

This product is intended for mixing a disinfectant concentrate with water and discharging the solution from a spray nozzle and 5/8" (16 mm) garden hose. Maximum hose length from either side of the disinfectant reservoir is 50 feet (15 m).

TASK FORCE TIPS LLC
MADE IN USA • KLEAN-pak.com

3701 Innovation Way, Valparaiso, IN 46383-9327 USA
800-348-2686 • 219-462-6161 • Fax 219-464-7155

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PERSONAL RESPONSIBILITY CODE

Dispensing disinfectants comes with a risk of injury, requiring proper training in hazards and use.

1. It is your responsibility to read and understand these instructions
2. It is your responsibility for the safe handling and application of the disinfectants you will use
3. It is your responsibility to know that your equipment is in operable condition
4. It is your responsibility to use appropriate personal protective equipment

Failure to follow these guidelines may result in disinfectant exposure and injury to yourself or others.

MEANING OF SAFETY SIGNAL WORDS

A safety related message is identified by a safety alert symbol and a signal word to indicate the level of risk involved with a particular hazard. Per ANSI standard Z535.6, the definitions of the four signal words are as follows:

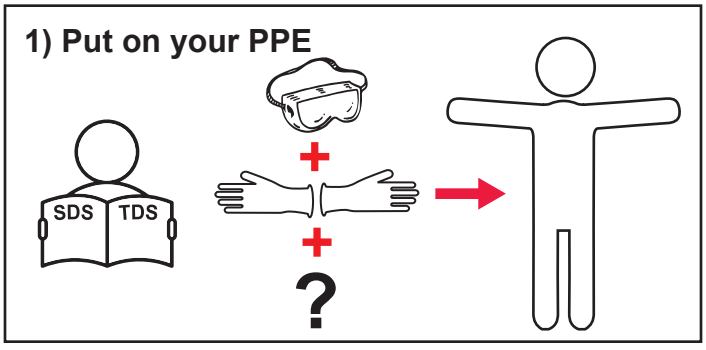
⚠DANGER **DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.**

⚠WARNING **WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.**

⚠CAUTION **CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

NOTICE **NOTICE is used to address practices not related to personal injury.**

1 PUT ON YOUR PPE (PERSONAL PROTECTIVE EQUIPMENT)

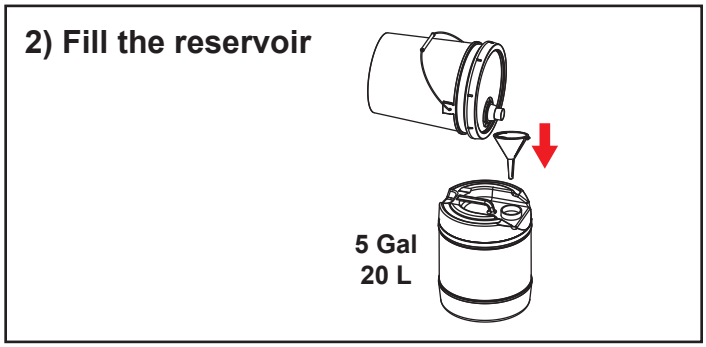


⚠WARNING

Dispensing disinfectants can be a risk. Keep yourself safe by;

- **Understanding the operating manual before use. Obtain safety information at KLEAN-pak.com**
- **Always wearing appropriate PPE (Personal Protective Equipment) like eye protection, gloves, etc. Recommendations are found in the disinfectant manufacturer's TDS and SDS (Technical Data Sheet and Safety Data Sheet).**
- **Never apply liquids to live electrical equipment**
- **Do NOT spray flammable alcohol solutions from this device**
- **Determine suitability of the disinfectant for your application by referring to EPA's List N: Disinfectants for Use Against SARS-CoV-2. https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2**

2 FILL THE RESERVOIR



Unscrew the fill lid by turning counterclockwise. Fill reservoir to bottom of fill lid. Disinfectant may seep out if over filled. Close the lid by turning clockwise.

⚠WARNING **Mixing different types of disinfectants can cause harmful reactions and/or produce unpredictable results. For example mixing ammonia or peroxide with bleach causes a reaction that can overflow or burst the reservoir while generating toxic fumes. Never mix different types or different brands of concentrate. Always rinse reservoir and passages clean before changing concentrate types.**

⚠WARNING **Make sure that the disinfectant concentrate in the reservoir is the right type for the situation. (Refer to concentrate manufacturer's recommendations for proper disinfectant choice.)**

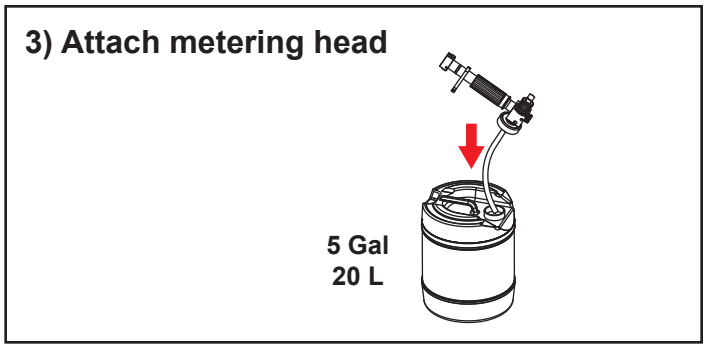
NOTICE **Components of the KLEAN/pak may be subject to degradation by harsh disinfectants such as bleach by limoline and other strong solvents. Avoid long-term storage of disinfectant that may damage the reservoir, lid, or other components. It is the responsibility of the end user to determine the disinfectant compatibility between the KLEAN/pak and any solutions to be stored in it. Some solutions may require additional dilution with water. Consult the solution manufacturer or distributer if necessary.**

Clearly label the contents of the reservoir according to the Technical Data Sheet and local requirements. Secondary container labeling requirements may be found in standards such as;

- GHS Labeling; The Globally Harmonized System of Labeling, United Nations GHS (Rev.8) (2019)
- ANSI Z129.1 Precautionary Labeling Preparation
- Right-to-Know (RTK) labels per OSHA's Federal Hazard Communication Standard 29 CFR 1910.1200
- Hazardous Material Information System (HMIS) labeling per DOD INSTRUCTION 6050.05

Transfer of disinfectant concentrates to secondary containers may be avoided if the original packaging is compatible with the KLEAN/pak's 2.75" (70 mm) screw cap.

3 ATTACH THE METERING HEAD

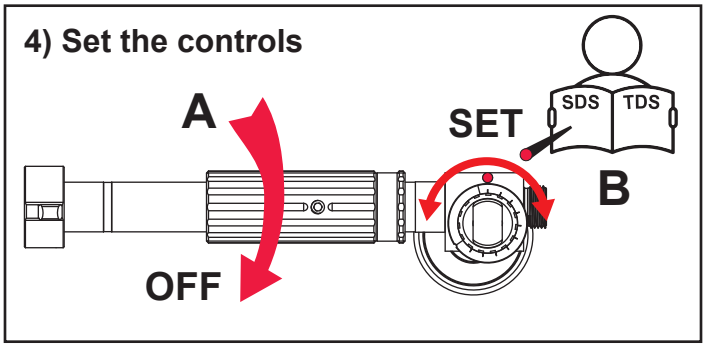


Insert the pickup tube into the jug and screw on the fill lid, align the waterway with the jug handle.

Debris entering the reservoir can plug up the concentrate intake passages resulting in questionable disinfection. Avoid potential problems by using clean funnels, reservoir openings, caps, and contents. Lay the metering head and pickup hose on a clean area during filling. Rinse it clean before recapping the reservoir.

⚠WARNING **Disinfectant concentrates can be ineffective if not used at the correct concentration. Make sure that the concentrate ratio knob is set to the correct concentration for the type of disinfectant being used.**

4 SET THE CONTROLS



Turn the concentrate ratio knob to the required Oz/Gallon (ml/l) concentration per the disinfectant manufacturer's Technical Data Sheet. You may need to use the dilution equivalent table to convert concentration from other units to oz/gallon (ml/l).

EXAMPLE: Concentrate is specified for dilution of 2 oz/gal. Set the concentrate ratio knob to 2.

To increase accuracy of ratios specified at less than 1 oz/gal, solution may be diluted in the reservoir. Mix the solution at 1 part concentrate to 9 parts water. Multiply the specified ratio by 10 to determine the concentrate ratio knob setting.

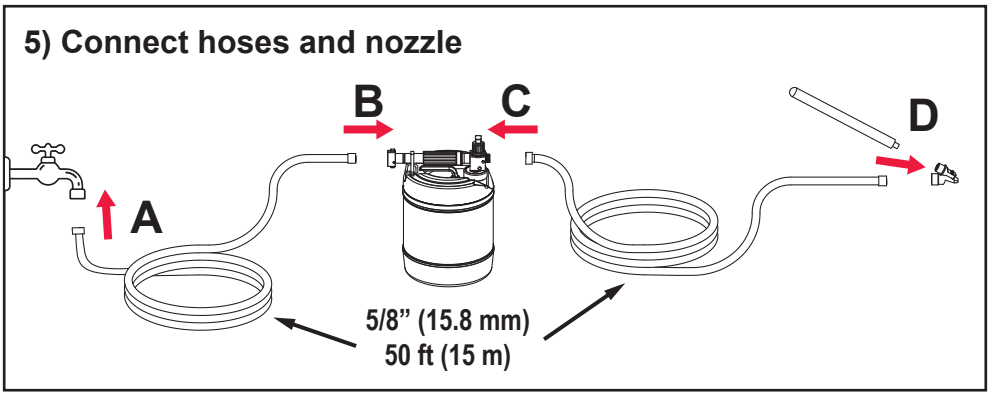
Example: Concentrate is specified for dilution at 0.3 oz/gallon. Mix the solution at 1 part concentrate to 9 parts water. Set the concentrate ratio knob to 3.The knob may be turned to the RINSE position which shuts off chemical feed when you need to spray water only.

⚠CAUTION **Make sure the Flow Control Valve is off and the correct nozzle and Outlet Hose are securely attached to the metering head before the hose line is charged.**

⚠WARNING **Disinfectant concentrates can be ineffective if not used at the correct concentration. Make sure that the concentrate ratio knob is set to the correct concentration for the type of disinfectant being used.**

DILUTION EQUIVALENTS				
Oz/Gallon	**or**	**Ratio**	**Percentage**	**ml/l**
0.3	2 US teaspoons	1:427	0.23%	2.3
0.5	1 US tablespoons	1:256	0.39%	3.9
0.64	1-1/4 US tablespoons	1:200	0.50%	5.0
1	2 US tablespoons	1:128	0.78%	7.8
1.3	2-1/2 US tablespoons	1:100	1.0%	10
2	1/4 US cup	1:64	1.6%	16
3	1/3 US cup	1:43	2.3%	23
4	1/2 US cup	1:32	3.1%	31
6	3/4 US cup	1:21	4.7%	47
7	7/8 US cup	1:16	5.5%	55
8	1 US cup	1:16	6.3%	63
9	1-1/8 US cup	1:13	7.0%	70

5.0 CONNECT HOSES AND NOZZLE



⚠CAUTION **Dispensing disinfectants at uncertain concentrations will give questionable results. Changing hose, nozzle, or adding a shutoff will cause additional back pressure which can prevent intake of concentrates, or cause unintentional back flow of water into the reservoir, artificially diluting its contents resulting in ineffective disinfection.**
Never add more than 50’ of 5/8” (15 m of 16 mm) hose between the metering head and the nozzle
Never install a shutoff between the KLEAN/pak and the nozzle.
Use only the flat fan nozzle supplied with the KLEAN/pak.

⚠WARNING **YOU MUST HAVE a fully functional backflow preventer that meets all applicable codes in your area installed at your water source connection to protect against any concentrates entering your drinking water supply.**

⚠CAUTION **There is no check valve in the KLEAN/pak eductor system. Do not install a shut off valve between the KLEAN/pak and the fan nozzle. This can cause the disinfectant reservoir to fill with water and dilute the disinfectant concentrate.**

⚠CAUTION **The air gap between the metering control and the tank is needed to equalize the tank pressure and ensure a proper vacuum. Do not seal or restrict this air gap. Doing so may affect concentrate ratio adversely**

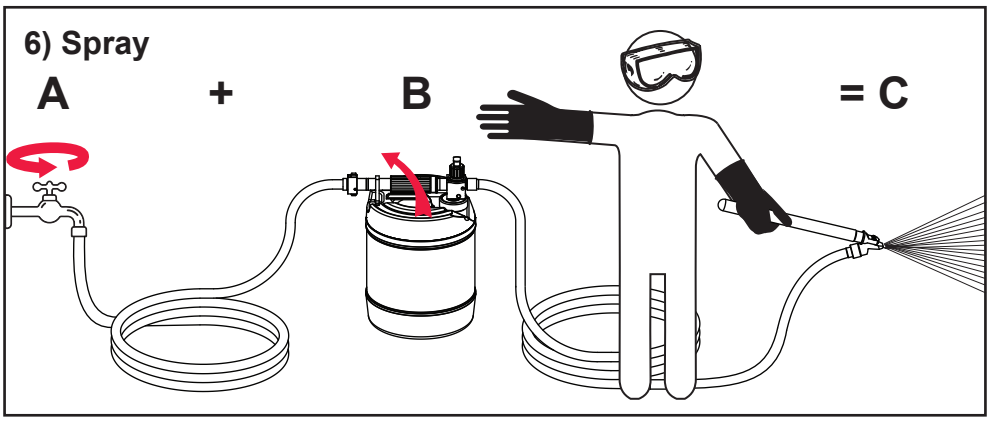
A Attach 5/8” (16 mm) garden hose to the water source. More hose can be added to the metering head inlet as needed, if the pressure at the metering head inlet is at least 30 PSI (2 bar) while flowing.

B Screw the inlet coupling on the KLEAN/pak onto the hose.

C Attach 5/8” (16 mm) x 50ft (15 m) garden hose to the outlet threads of the KLEAN/pak.

D Screw flat fan nozzle onto the garden hose output. Screw the wand into the nozzle. The wand connection is a standard extension pole thread. Use extension for longer reach and safer distance from disinfectant spray.

6.0 SPRAY



Pressurize the hose line. Turn the flow control valve to start water flowing through the KLEAN/pak. Grasp the wand with the hose feeding upwards from below the wand, directing spray away from people. Keep the wand above the hose to avoid contact with disinfectant dribble. Always turn the control valve completely on or off..

⚠WARNING **Avoid directing disinfectant onto the faces of yourself and other personnel. Improper use of disinfectant could result in death or serious injury, including damage to the eyes. To reduce the chance of injury, you and other personnel must wear eye protection at all times.**

7.0 SPECIFICATIONS

	U.S. Units	Metric Units
Reservoir Capacity	5 U.S. gallons	20 liters
Weight Empty	5.45 lb (2.47 kg	2.47 kg
Length x Width x Height	13.75 x 11.75 x 18.875 in	34.9 x 29.8 x 47.9 cm
Metering range (maximum)	9 US Oz/Gallon	70.3 g/l
Pressure range	30-300 PSI	2 to 20 bar
Hose connections	Garden Hose Thread	Garden Hose Thread
Hose length (feed)*	50 ft	15 m
Hose length (discharge)*	50 ft	15 m
Discharge nozzle	Low pressure flat fan	
Spray coverage (distance)	4 ft width at 4 ft	1.2 m width at 1.2 m
Maximum spray (reach)	9 ft	2.7 m
Packaged size	18 x 18 x 24 in	46 x 46 x 61 cm
Packaged weight	12 lb	5.4 kg
Packaged Pallet size (8)	48 x 40 x 42 in	122 x 102 x 107 cm
Packaged Pallet weight	96 lb	43.5 kg

* User Supplied

8.0 PART IDENTIFICATION

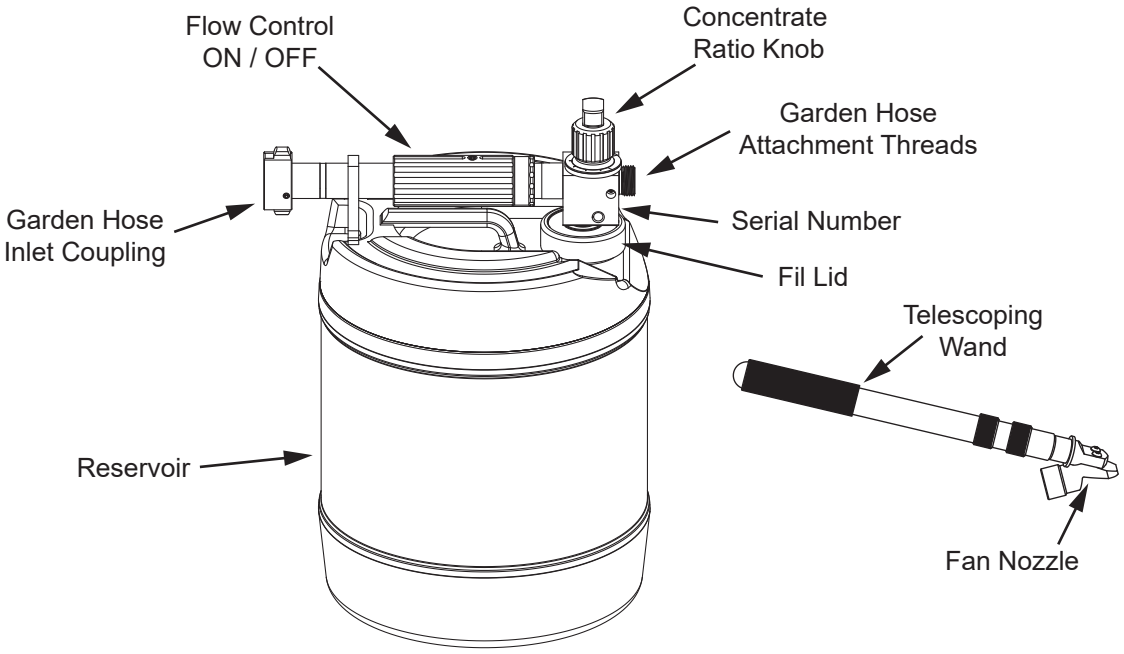


Figure 8.0

9 FLOW

The KLEAN/pak is rated to flow 2 GPM when supplied with 70 PSI (4.8 bar) inlet pressure. The KLEAN/pak can be used at any pressure from 30 PSI (2 bar) up to 300 PSI (20.6 bar). Flow increases as pressure increases, and decreases as pressure decreases at inlet pressures 70 PSI (4.8 bar). The amount of disinfectant produced depends on your inlet pressure.

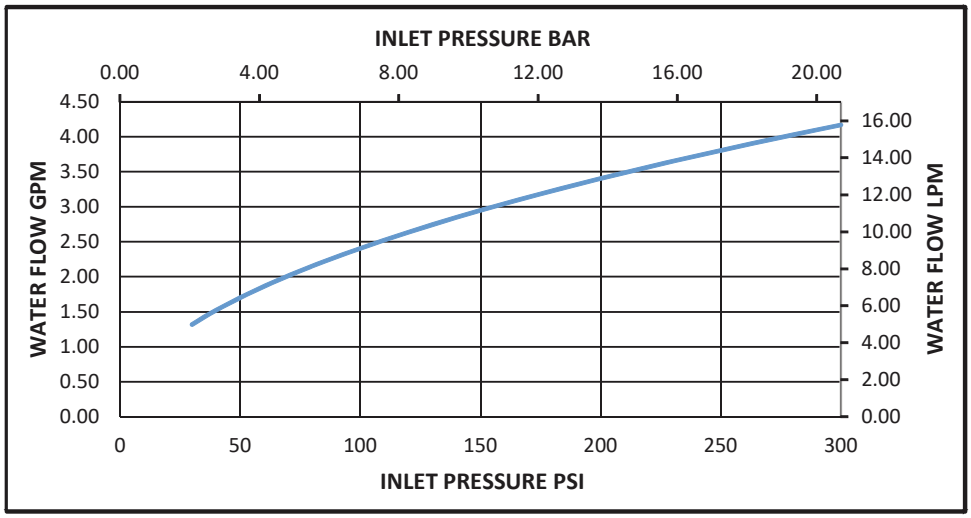


Chart 4.1

Droplet size becomes smaller as pressure increases. Smaller droplets have a greater tendency to stay airborne which can result in unintentional airborne dispersion of disinfectants in harmful ways. Windy conditions also contribute to unintentional airborne dispersion.

10 CONCENTRATE RATIO

The KLEAN/pak concentrate ratio knob is adjustable from zero to 9 oz/gallon by lining up the knob marking to the red indicator post. Water velocity in the throat of a venturi creates vacuum which sucks fluid from the reservoir into the water stream. The markings are calibrated using suction of water from the reservoir at an inlet pressure of 70 PSI to the metering head (Water = 1.00 centipoise viscosity, 20 deg C, 1.00 gram/CC). Ounces per Gallon rating are volumetric, not by weight.

Actual concentrations vary when concentrate has a viscosity, temperature, or density, different from calibration conditions. Higher (thicker) viscosity results in weaker solutions. Higher temperatures result in increasing concentration. Higher densities result in weaker solutions. Consult the SDS and TDS sheets from the disinfectant manufacturer.

Actual Concentrations vary when inlet pressure to the waterway differs from rated pressure.

- Increasing the water inlet pressure above 70 PSI (4.8 bar) causes more water to mix with a set disinfectant inflow, resulting in LOWER concentration than the label markings.
- Decreasing the water inlet pressure below 70 PSI (4.8 bar) causes less water to mix with a set disinfectant inflow, resulting in HIGHER concentration than the label markings.

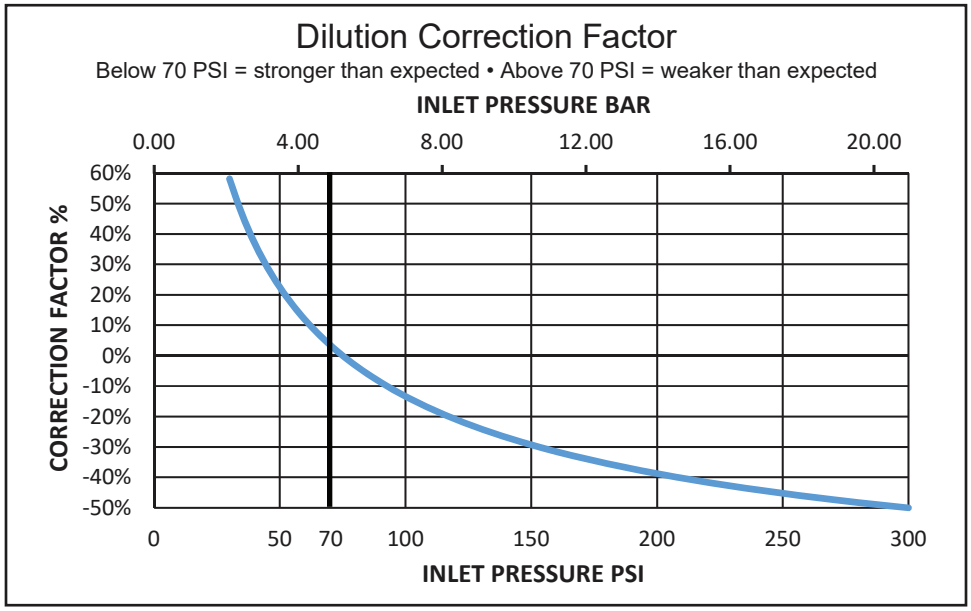


Chart 4.2

EXAMPLE: if the inlet pressure is only 50 psi (3.8 bar), then the solution will be about 20% stronger than expected, so decrease the knob position by about 20%. If you intend to deliver a bleach solution at 4 oz/gallon, then the knob position would be compensated about 20% lower which is a knob setting of 3.2 oz/gallon. With a 50 psi (3.8 bar) inlet pressure, a dilution rate of 4 oz/gallon would be obtained by setting the knob to 3.2.

The user must verify that the concentrate's performance is suitable for use in their application. Always follow the disinfectant manufacturer's recommendations.

Test strips are available for the common types of disinfectants. Concentration of disinfectant sprayed from the nozzle can be checked by collecting a sample and using a test strip. Adjust knob setting as required.

11 PERFORMANCE

Operating the KLEAN/pak with 70 psi (4.8 bar) inlet pressure with five gallons (20 l) of concentrate produces 2 GPM of disinfectant per minute. (8 lpm).

Concentration Oz/ Gallon	Total disinfectant produced Gallons	Run time between refill; minutes	Run time between refill; hours
1	640	320	5.3
2	320	160	2.7
3	213	107	1.8
4	160	80	1.3
5	128	64	1.1
6	107	53	0.9
7	91	46	0.8
8	80	40	0.7
9	71	36	0.6

NOTICE

When the reservoir is empty air will be sucked up into the venturi causing a sputtering sound from the nozzle. Disinfection is ineffective when concentrate supply is interrupted. Interruption can be avoided by refilling the reservoir before the reservoir becomes empty.

12 SHUT DOWN AND CLEANOUT

SHUT DOWN

Turn the concentrate ratio knob to the RINSE position. Use plain water to rinse off the KLEAN/pak and any undesirable disinfectant deposits nearby.

Leave the concentrate ratio knob in RINSE when finished to minimize concentrate evaporation.

Secure the hoses, reservoir, wand and fan nozzle.

DEBRIS

Debris entering the waterway or the reservoir may interfere with operations.

The KLEAN/pak includes a debris screen on the waterway inlet. If the screen becomes clogged with debris the device will flow less than intended. Remove debris by shutting off the water supply and cleaning the screen.

Debris in the concentrate passageways can result in weak disinfectants. If concentrate is weak;

1) Shutdown the water supply to the KLEAN/pak

2) Remove screw #1, spring #2, and concentrate ratio knob #3

3) Unscrew the lid and remove the metering head & pickup hose from the reservoir.

4) Inspect reservoir for particulate contamination and clean as required

5) Clean out concentrate passageways

6) Rinse off pickup hose, screw #1, spring #2, and concentrate ratio knob #3

7) Reassemble & resume operation.

For years of service, periodically inspect your KLEAN/pak. Make sure the hose and fan nozzle are in place. Look for debris in the bottom of the reservoir and flush if necessary.

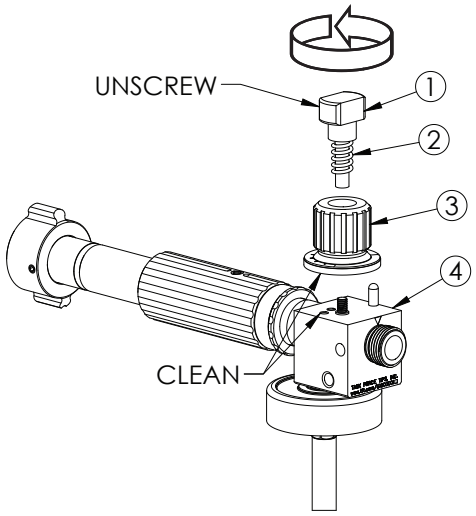


Figure 12

13 STORAGE

If the KLEAN/pak is to be stored with disinfectant concentrate in it, set the concentrate ratio knob to RINSE to minimize concentrate evaporation. The pail MUST be stored in the upright position to avoid leakage through vent passageways in the lid. KLEAN/pak transported in vehicles must be secured to prevent tipping.

Refer to disinfectant manufacturer's TDS for recommended storage temperature. Equipment subject to freezing conditions must be fully drained to avoid freeze damage.

Figure 13

14 WARRANTY

Task Force Tips LLC, 3701 Innovation Way, Valparaiso, Indiana 46383-9327 USA (“TFT”) warrants to the original purchaser of its KLEAN/pak, and to anyone to whom it is transferred, that the equipment shall be free from defects in material and workmanship during the one (1) year period from the date of purchase.

TFT’s obligation under this warranty is specifically limited to replacing or repairing the equipment (or its parts) which are shown by TFT’s examination to be in a defective condition attributable to TFT. To qualify for this limited warranty, the claimant must return the equipment to TFT, at 3701 Innovation Way, Valparaiso, Indiana 46383-9327 USA, within a reasonable time after discovery of the defect. TFT will examine the equipment. If TFT determines that there is a defect attributable to it, it will correct the problem within a reasonable time. If the equipment is covered by this limited warranty, TFT will assume the expenses of repair.

If any defect attributable to TFT under this limited warranty cannot be reasonably cured by repair or replacement, TFT may elect to refund the purchase price of the equipment, less reasonable depreciation, in complete discharge of its obligations under this limited warranty. If TFT makes this election, claimant shall return the equipment to TFT free and clear of any liens and encumbrances.

This is a limited warranty. The original purchaser of the equipment, any person to whom it is transferred, and any person who is an intended or unintended beneficiary of the equipment, shall not be entitled to recover from TFT any consequential or incidental damages for injury to person and/or property resulting from any defective equipment manufactured or assembled by TFT. It is agreed and understood that the price stated for the equipment is in part consideration for limiting TFT’s liability. Some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above may not apply to you.

TFT shall have no obligation under this limited warranty if the equipment is, or has been, misused or neglected (including failure to provide reasonable maintenance) or if there have been accidents to the equipment or if it has been repaired or altered by someone else.

THIS IS A LIMITED EXPRESS WARRANTY ONLY. TFT EXPRESSLY DISCLAIMS WITH RESPECT TO THE EQUIPMENT ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. THERE IS NO WARRANTY OF ANY NATURE MADE BY TFT BEYOND THAT STATED IN THE DOCUMENT.

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

15 TROUBLE-SHOOTING

SYMPTOM	POSSIBLE CAUSE	REMEDY
KLEAN/pak will not make disinfectant	Sputtering sound from nozzle indicates you're out of concentrate.	Refill reservoir
	Concentrate Ratio Knob is in RINSE	Select desired concentration
	Concentrate Ratio Knob is plugged	Remove screw on Concentrate Ratio Knob, inspect and clean holes in top of control block and passages in bottom of Concentrate Ratio Knob
	Wrong outlet hose, nozzle, or added shutoff causes back pressure	Setup discharge connections per section 5
	Reservoir is nearly empty	Refill reservoir
Solution is Intermittent	KLEAN/pak tilted	Keep Twist Grip Horizontal
	Air vents are plugged	Remove metering head by unscrewing the lid. Rinse the cap with plain water until it spins freely.
Poor Quality	Debris in nozzle	Inspect nozzle, look for plugged holes
	Debris under concentrate ratio knob	Unscrew concentrate ratio knob, inspect and clean
	Solution velocity too high	Reduce supply pressure at the source
	Concentration too high or too low	Review correction factor and inlet pressure (sections 9 & 10)
	Debris in hose inlet	Remove inlet hose and clean out screen

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