

# CHEMCHAMP

## MANUAL



## MODEL A5-2

### SOLVENT & WATER RECOVERY SYSTEMS (EXPLOSION PROOF UNITS)

FOR PROPER AND SAFE USE OF THIS CHEMCHAMP EQUIPMENT, PLEASE FOLLOW THIS DOCUMENT AND LOCAL AUTHORITY.

KEEP THIS DOCUMENT FOR FUTURE REFERENCE.

## TECHNICAL DATA:

MODEL:	CHEMCHAMP A5-2
CLASSIFICATION:	CLASS 1, DIVISION 1, GROUPS C, D, E, F, G
ELECTRICAL PROTECTION:	INTRINSIC PROTECTION & EXPLOSION PROOF ENCLOSURES
FUSE PROTECTION:	8 AMP DELAYED ACTION
VOLTAGE:	240 VAC, SINGLE PHASE, 50 or 60 Hz
AMPERAGE:	7 AMP
POWER:	1.8 kW
CAPACITY:	5.28 US GALLONS (20 litres)
OPERATING TEMPERATURE:	53.6 to 379.4 FAHRENHEIT (12° CELSIUS TO 193° CELSIUS)
SAFETY THERMOSTATS:	ELEMENT: 384.8 Fahrenheit (ELEMENT: 196° CELSIUS)
MATERIAL (DISTILLATION CHAMBER):	STAINLESS STEEL
PATENT PENDING PROCESS:	1) VAPOR MANAGEMENT SYSTEM. 2) PROCESS CONTROL METHOD. 3) ANTI-PRESSURE SYSTEM. 4) DIRECT CONDENSATION METHOD.
DIMENSIONS:	LENGTH: 24.4 Inches (62 cm) HEIGHT: 32.3 Inches (82 cm) WIDTH: 16.1 Inches (41 cm)
WEIGHT:	227.7 Lbs. (without collection-drum and hoses) 251.8 Lbs. (with collection-drum and hoses)
DISTILLATION TIME:	4:30 - 14:30 HOURS (ACETONE TO WATER)
COOL DOWN TIME:	7-10 HOURS.

## **INTRODUCTION:**

In dealing with liquid hazardous waste companies have had to pay a costly rate for pick-up and repurchase of new chemicals for their process. This recycler reduces these costs. The means of accomplishing the above is through a process known as distillation. Each group of chemicals has a vapor temperature, which we utilize to separate from contaminants. This unit is an explosion proof, which can be used for flammable and non-flammable solvents ranging from acetone to water.

## **SAFETY FEATURES:**

The unit comes equipped with the following patent pending safety features:

- A) Automated temperature and time setting. The unit will automatically set its own time and temperature in accordance with the requirements of the particular solvent or solvents poured into its distillation chamber for recycling. The result being the operator only needs to pour the solvent in and press "START".
- B) Oil immersion element.
- C) Element control and safety probes.
- D) Oil maintenance timer and indicator. The unit will automatically indicate when oil requires to be changed. If oil is not changed within a safe time period, the unit will automatically shut down indicating the word "OIL" on its display panel until oil is changed. This ensures proper and safe operation of the unit for years to come.
- E) Intrinsically safe controls.
- F) Self-cooling enclosed collection drum.
- G) A superior vapor management system. The vapor management system limits VOC emissions during distillation, resulting in a safe healthy working environment with an ultimate recovery of solvent.
- H) "OFF" button for manual shut off at any time. If the unit is in cycle and the stop button is pressed the unit will shut off and automatically go into cool down mode with yellow light flashing and digital displaying temperature until the unit reaches 134.6° Fahrenheit (57° Celsius). The yellow light and display will turn off and green light will come on indicating unit is safe to open and re-start cycle.
- I) Automatic shut off when cycle is complete.
- J) Unit operates at zero pressure. Cover will release at 0,15 Bar (2 PSI).
- L) Temperature Probes check each other 256 times per second to ensure the other is working within 50 degrees Fahrenheit (10 degrees Celsius) of itself.
- M) Temperature Probes are linked to an Analog circuit as well as the microprocessor. In the event the processor malfunctions, the Analog circuit will turn the unit off at 384.8 degrees Fahrenheit (196 degrees Celsius) until the unit cools.
- N) Fuse Protection.

## **PLEASE NOTE THE FOLLOWING:**

1. This unit is designed to distill solvent with a boiling temperature less than 356 degrees Fahrenheit (180 degrees Celsius).
2. The distilled solvent must be collected in the drum provided with unit, caution should be taken that solvent not be accidentally spilled.
3. If distilling water, a special replacement drum is required. The drum provided is not fabricated to handle water.
4. NITROCELLULOSE must **never** be distilled in this unit, as this may cause conditions of danger.
5. Residues must be disposed of in accordance to local laws.
6. When cleaning residues from unit use only non-sparking tools.
7. Opening cover before allowed time will cause gasket swelling & dislocation.
8. Operators should wear anti-static clothing.
9. This unit should never be used to distill any chemical with an auto-ignition temperature below 437 degrees Fahrenheit (225 degrees Celsius). Before initiating the distillation process always consult the appropriate chemical data sheet.
10. Operating staff must be fully educated on the safe and correct use of unit and protection devices.
11. Gasket of the lid is to be replaced every 2 years.
12. This unit may come equipped with a non-hazardous industrial plug but if installed into a hazardous location, the proper connection must be implemented in accordance with the local authority.
13. In accordance to UL 2208, unit must be provided with an overflow protection container of a minimum of 5 gallons.

**FAILURE TO FOLLOW ANY OF THE ABOVE COULD CAUSE PERSONAL INJURY AND PROPERTY DAMAGE.**

## INSTALLATION OF UNIT:

1. **LOCATION:** Caution- To reduce the risk of fire or explosion, install, operate, and maintain this equipment in accordance with this instruction manual. This unit is for use in 104°F (40°C) environment with no forced ventilation. Under these conditions, the unit shall be spaced a minimum 3 feet (0.914m) from potential sources of ignition such as electrical receptacles, switches, pilot lights, fixtures, contacts, and other similar equipment that can produce sparks. If the equipment is used in higher ambient temperatures, an increase in spacing to sources of ignition shall be considered. This unit has only been investigated for use with solvent with a maximum ignition temperature of 437°F (225°C).

This unit is designed for use in Class 1, Division 1 locations and non-hazardous locations. Note: This unit may come equipped with a non-hazardous industrial plug but if installed into a hazardous location, the proper connection must be implemented in accordance with the local authority.

2. **OIL AIR RELEASE VALVE:** Remove back-panel and replace oil cap marked with an “X” with oil cap found in distillation chamber. The oil cap in distillation chamber has a hole in center of cap.
3. **FITTING CONDENSATION COLUMN** (*Note: Column may already be installed*): Screw it into position on the collection drum. Gently tighten by hand, do not use spanner.
4. **FITTING ROD TO FLOAT** (*Note: float may already be installed*): Remove lid to collection drum. Attach float to rod by screwing it on. Slide rod through the bottom center hole of the condensation column until exiting the top hole. Screw nut to the end of the rod above condense column. (See picture below).

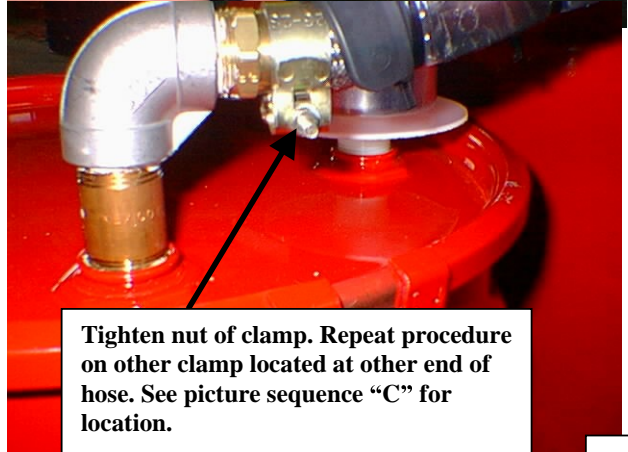
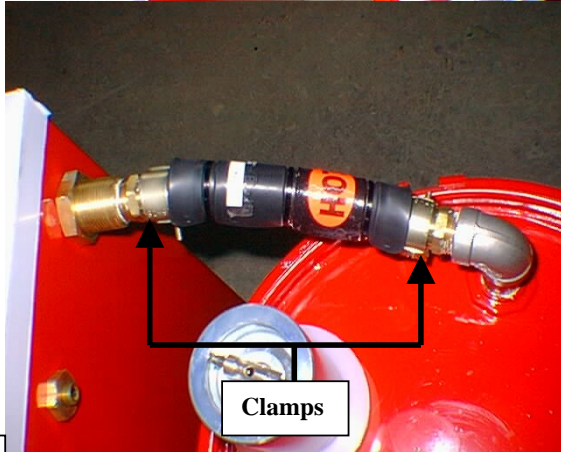
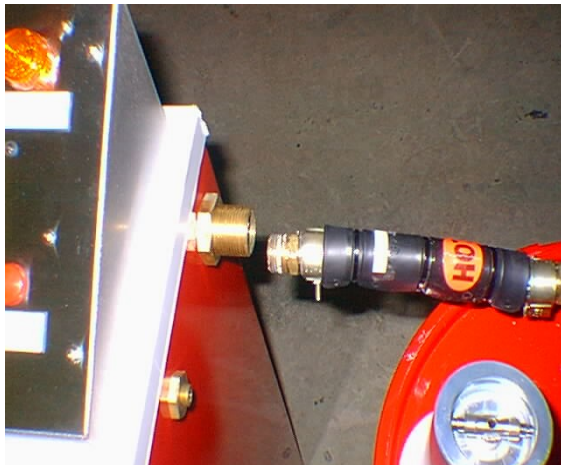


- 5. TOPPING UP COLLECTION DRUM:** Top up with the type of solvent the recycler is intended to be used for. Please note that if solvent is water, a specialized drum is required. Top up with solvent until the level reaches the tap on the side of the drum (Approx. 10.6 US Gallons). Fit lid back, making sure that the 2” bung is at 6 o’clock, and vapor pipe is at 12 o’clock.
- 6. ATTACHING COLLECTION DRUM:** The collection vessel provided with unit is the only vessel to be used for collection of distilled solvent. This vessel holds a maximum of 17.44 US Gallons (66 Litres). Connect the vessel on the right side of the machine (facing machine). See picture below for proper installation of hose assembly from the cabinet to the collection vessel. Once installation of hose assembly is complete, tighten both clamps as demonstrated in picture. (Clamps are located at both ends of hose assembly were they meet the brass fittings, see Picture below).

A

Tighten by turning clockwise using a wrench.  
**VERY IMPORTANT NOTE:** Make sure Bulkhead does not turn.

B



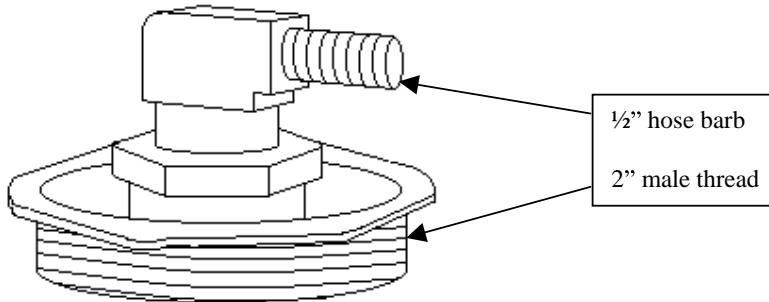
C

D

- 7. GETTING READY:** Connect power. Press “START” button and green light will come on. The green light signifies the unit is ready to work and is safe to open.

## **INSTALLATION OF OVERFLOW ASSEMBLY:**

The over flow assembly is a safety feature intended to prevent solvent from overflowing in the event of the recycler being overfilled or of the C.C. drum not being properly drained. In accordance with UL 2208, this unit must be provided with a minimum overflow capacity of 5 gallons. This unit supplies a ½” hose barb fitting with a 2” male thread. Hose and overflow container are to be provided by the customer.



Drawing of hose barb fitting

### **If unit is being installed with the docking station and gunwasher:**

The parts required for this installation are as follows: a hose barb fitting, a length of ½” hose, a ½” hose clamp.

1. Unscrew the 2” plug in the lid of the C.C. drum.
2. Screw the hose barb assembly into lid of C.C. drum.
3. Attach one end of hose to hose barb using a hose clamp.
4. Insert other end of hose into docking station.
5. Ensure that all connections are tight.

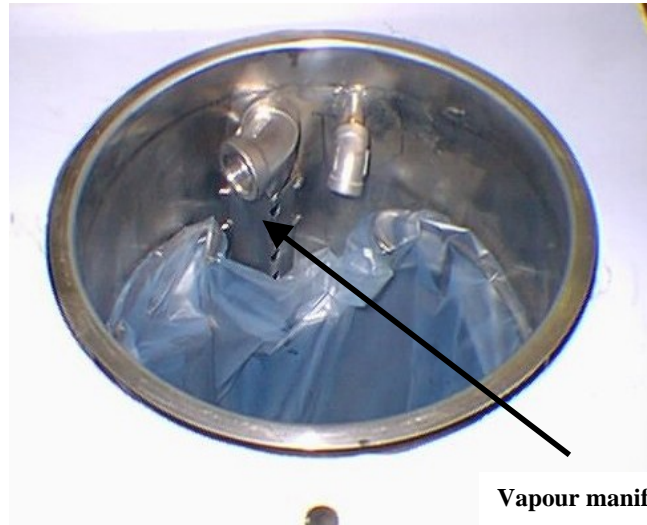
### **If unit is being installed in “Stand Alone” application:**

The parts required for this installation are as follows: a hose barb fitting, a length of ½” hose, a ½” hose clamp, an empty 5 gallon collection can.

1. Unscrew the 2” plug in the lid of the C.C. drum.
2. Screw the hose barb assembly into lid of C.C. drum.
3. Attach one end of hose to hose barb using a hose clamp.
4. Insert other end of hose into empty 5 gallon collection can.
5. Ensure that all connections are tight.

## **INSTALLATION OF BAGS:**

1. Open cover.
2. Remove bag holder.
3. Open bag and place inside bag holder.
4. Fold top of bag over the top ring of bag holder.
5. Squeezing top ring, fit bag holder and bag into unit making sure bag is held open once installed.
6. Make sure bag is under the vapor manifold, and waste intake valve making sure they are not blocked or covered.



7. Pour solvent waste into receptacle bag. Maximum level is 3.1 Inches (8 cm) below bottom of vapor manifold. The unit is designed for a maximum volume of 5.28 US Gallons (20 litres).

Over filling will result in overflow into vapor manifold resulting in dirty recycled solvent. Over filling will also cause paint getting in behind the bag. This will make it difficult to remove the bag, as the paint will act as glue making the bag stick to the bottom. If sticking happens press "START" and let unit warm up for 5 minutes. Press "OFF" and gently pull bag out.

**We recommend the use of CHEMCHAMP BAGS; other types of bags may deteriorate during cycle and create a hard residue at the bottom of distillation chamber that will be difficult to remove.**

## **OPERATION OF UNIT:**



## **SOLVENT MODE**

6. Connect power.
7. Press "START" button and green light will come on. The green light signifies the unit is ready to begin a new batch and is safe to open.
8. Remove lock
9. Open cover.
10. Remove bag holder.
11. Place new bag inside holder.
12. Fold overlap of bag over the top of the holder.
13. Place bag and holder inside distillation chamber.
14. Pour a maximum of 5.28 US Gallons (20 litres) of waste solvent into bag, making sure not to pour any liquid into outlet manifold or overflow. The maximum level is 3.1 Inches (8 cm) below the bottom of elbow (elbow being the outlet manifold).
15. Close cover and secure.
16. Re-insert lock into handle and close lock.
17. Ensure collection drum is properly connected and full to the tap.
18. Open tap making sure collection drum is empty to the level of the tap.
19. Press "START", yellow light and digital display will come on. The display shows the temperature of the thermic oil.
20. Green light will stay on with yellow light until temperature of the thermic oil reaches 140 degrees Fahrenheit (60 degrees Celsius). At this point the green light will turn off. Unit will automatically set temperature and time in accordance to the solvent or solvents to be recycled.
21. Once distillation is complete the unit will automatically shut off and the yellow light will begin flashing indicating the unit is "OFF" and is cooling down. The yellow light will flash until the unit has cooled to 134.6 degrees Fahrenheit (57° Celsius). At this point the yellow light and the digital display will turn "OFF". The green light will come on indicating the unit is safe to open and is ready to do the next cycle.
22. Open cover and remove bag residue. Place residue bag into proper collection drum.

\* Please note that by using bags in the distillation chamber, you eliminate the cleaning process.

\*\* Please use necessary safety precautions when following these steps.

\*\*\* Very Important: Eye wear, boots, gloves and masks should be worn at all times.

\*\*\*\*CAUTION: Unit surfaces will be hot when in use.

\*\*\*\*\*Cover should not be open unless green light is on.

\*\*\*\*\*Bag should be changed between each cycle.

## **WATER MODE**

Operation of unit in water mode is the same as above.

In order to switch unit into water mode the steps are as follows:

1. Disconnect power.
2. Reconnect power
3. Press "START" button for 10 seconds. The unit will display LLLL.
4. Press "START" button 10 times. The green and blue lights will come on. You are now in water mode.

The unit will remain in water mode until power is disconnected.

*NOTE: A specialized drum is required for water mode distillation..*

## **OIL MAINTENANCE:**

The unit will automatically indicate it requires an oil change by flashing the word "OIL" on its display panel.

1. Disconnect power.
2. Remove back panel.
3. Remove Oil intake cap. **Caution:** Make sure when emptying oil that the unit is completely cold
4. Place collection pan under Oil OUT TAKE valve.
5. Remove Oil OUT TAKE cap & drain.
6. Re-insert OUT TAKE cap.
7. Refill oil with ChemChamp Heating Oil through Oil intake. (2 ¾ US Gallons or 10.41 Liters) & Re-cap Oil Intake valve.
8. Reconnect power.
9. Press the "START" button for 20 seconds. All lights will come on and the screen will display "Clr" and then "8888", indicating self-diagnostic and reset of unit is complete.
10. Disconnect power.
11. Reconnect power and you are ready to set the unit for solvent or water mode.

## **COLLECTION VESSEL:**

The collection vessel provided with unit is the only vessel to be used for collection of distilled solvent. This vessel holds a maximum of 17.44 US Gallons (66 litres). A specialized drum is required for water mode distillation.

## **TROUBLE SHOOTING:**

<b><u>Problem</u></b>	<b><u>Reason</u></b>	<b><u>Solution</u></b>
Bag hard to pull out.	- Dirty Inner Bucket.	- Turn machine on until it reaches 131 degrees Fahrenheit (55 degrees Celsius), remove bag and clean.
Machine will not come on.	- Surge in power.	- Replace fuse or fuses in explosion proof box.
Dirty Distillate. Rust colored solvent.	- Dirty manifold. - Dirty collection drum. - Rusty drum.	- Clean manifold. - Replace or clean drum. - Replace collection drum.
Gasket swelling and dislocating.	- Lid was opened before unit finished its cool down mode.	- Replace gasket immediately with spare provided. - Order new gasket so that you have two gaskets on hand.
Control panel error message.	- System failure.	- Make sure the ambient temperature is greater than 10 degrees Celsius. - Take note of error message number i.e.) Er01. - See error code section on following page. - Contact ChemChamp immediately.

## **ERROR MESSAGES**

### **CODE**

### **ERROR**

Er01

Probe 1 fault (Invalid temperature values). Room temperature is less than 50

## Fahrenheit

- Er02 Probe 2 value too different from probe 1.
- Er03 Probe 1 value too different from probe 2.
- Er04 Over temperature fault (Hardware overtemp trip).
- Er05 Over temperature fault (From A/D read).