GRAINPRO® GRAINSAFE™ BAG-1.0/G-HF

INSTRUCTION MANUAL

MA4020JVD1025-3

GRAINPRO
STORING THE FUTURE

"A GREEN, NOT ONLY FOR PROFIT COMPANY"

scan me

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1. INTRODUCTION

The GrainPro® GrainSafe Bag™-1.0/GHF (GS Bag-1.0/GHF) is a portable bagged storage for grain and seed, normally set-up on ground levels such as concrete pavement or pallet. Use of a platform is also an option. It safely stores any dry agricultural commodity at or below safe moisture content like maize, wheat, paddy, coffee, and others. It works as a hermetic storage system (airtight) using modified atmosphere technology. It is specially designed as a secondary packaging made from ultra-hermetic material and zipper. Respiration of insects, microflora and commodity depletes the available oxygen and replaces it with carbon dioxide. This conversion typically occurs within 10 days of storage which depends on level of insect infestation. Heavier infestation results in more rapid insect kill. The liner of GS Bag-1.0/GHF is UV-resistant, waterproof, less permeable and resistant to rodent penetration when properly installed.

1.1. FEATURES:

1.1.1. Quality of commodity is preserved without the use of chemicals.
1.1.2. It maintains its effectiveness under adverse weather conditions.
1.1.3. It is designed for outdoor with shades/cover or indoor.
1.1.4. It can be set-up on a platform with anti-rodent protection to prevent rodent attack.
1.1.5. It is designed to store commodities up to 1 metric ton capacity based on wheat.
1.1.6. A green technology certified as safe secondary packaging for organic produce such as grains or dried agricultural commodities.

1.2. PRODUCT GUARANTEE:

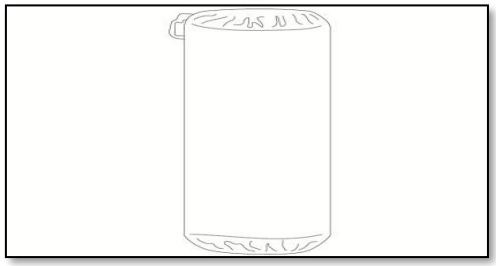
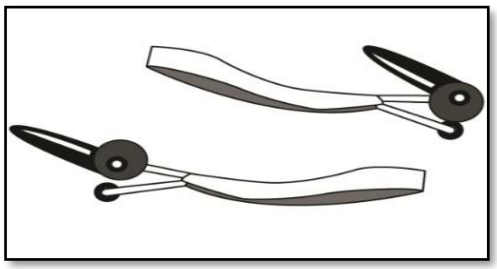
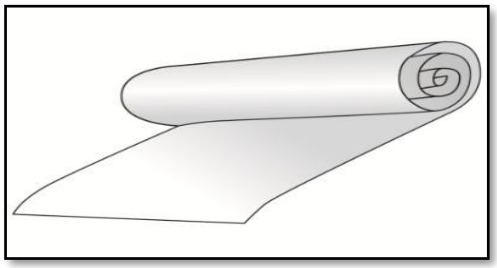
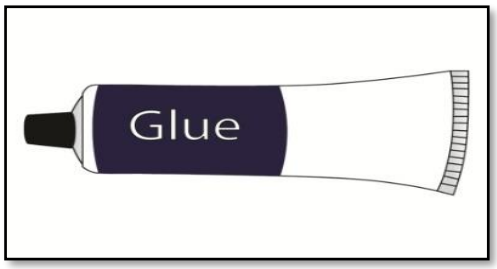
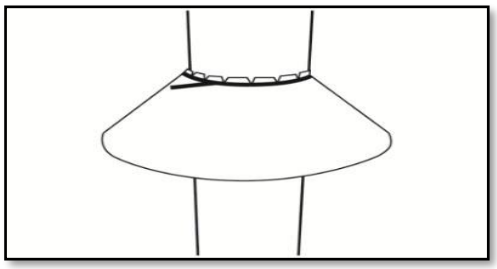
1.2.1. In accordance with the terms and conditions herewith, GrainPro, Inc. guarantees the quality of this product per its written warranty provided it is used according to the instructions in this manual.
1.2.2. Please read and understand the manual thoroughly before using the GS Bag-1.0/G-HF.

1.3. COMMENTS, COMPLAINTS, AND/OR CLARIFICATIONS:

1.3.1. Please contact customercare@grainpro.com.
1.3.2. We shall be glad to address any of your concerns.

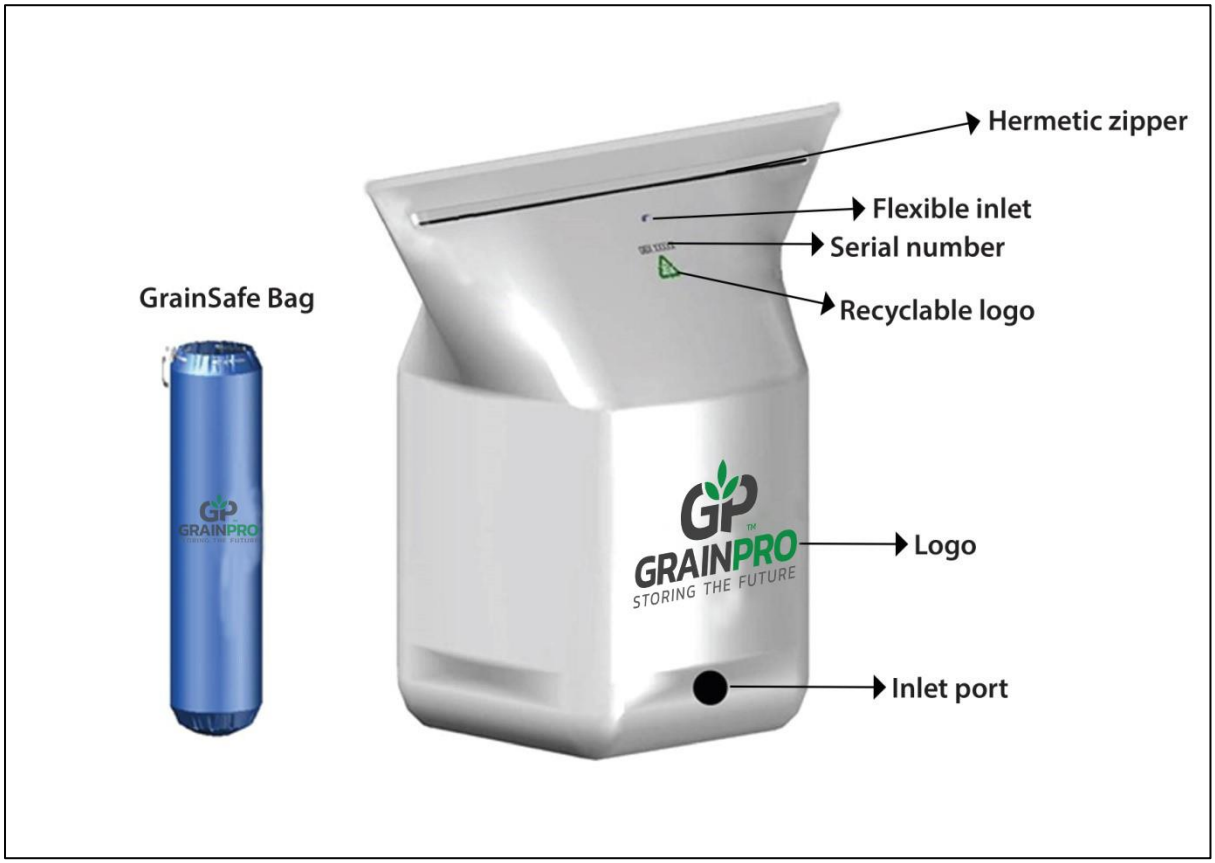
2. CHECKLIST

Please inspect your GrainPro GS Bag-1.0/G-HF to ensure that the package includes the following items:

PART NAME	DESCRIPTION	IMAGE
2.1. CARRY BAG	2.1.1. GrainSafe Bag. 2.1.2. Small parts. 2.1.3. Instruction manual.	
2.2. ZIPPER PULL	2.2.1. For zipper sealing. Two (2) pieces (left and right)	
2.3. PVC PATCHING MATERIAL	2.3.1. White-colored PVC roll for patching holes and other damages. (One) 1 piece (30cm x 1.5m)	
2.4. PETACKS BOND GLUE	2.4.1. For patching PVC materials. One (1) tube	
2.5. RODENT GUARD	2.5.1. For platform post to prevent rodent access when storing the empty GS Bag-1.0/GHF. Four (4) pieces per pack	

2.6.	INSTRUCTION MANUAL	2.6.1. Installation instructions. 2.6.2. Maintenance instructions. 2.6.3. Frequently asked questions and answers. 2.6.4. Warranty clause.	

3. COMPONENTS



4. SPECIFICATIONS

PARAMETERS	SPECIFICATION
Material	Flexible Polyvinyl Chloride (PVC)
Thickness PVC, mm (inch)	0.83 (0.33)
Color	White
Dimension (LWH), cm (inch)	120x120x190 (47.24x47.24x74.80)
Material weight, gsm	1,050
Capacity (Based on wheat), kg (lbs)	1,000 (2,204.62)
OTR, cc/m^2/day @0.1MPa	500 max
WVTR, g/m^2/day	8 to 9

Shelf life, years	10
Warranty, years	5
Packed weight, kg (lbs)	13 (28.66)
Packed dimensions, cm (inch)	100x40x10 (39.37x15.75x3.94)
Product weight, kg (lbs)	12.5 (27.56)
Packed volume, m^3 (ft^3)	0.04 (1.413)

5. INSTALLATION

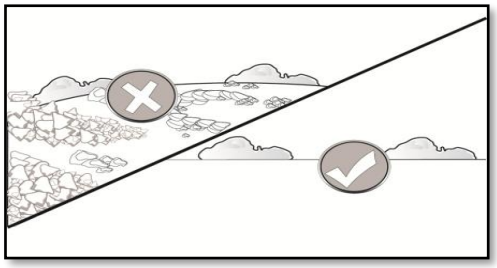
5.1 SITE SELECTION

5.1.1 In selecting a site, look for a concrete or asphalt platform.

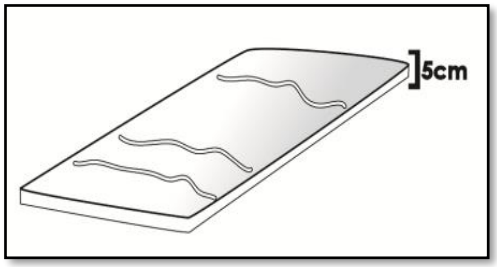
a. A smooth area away from standing or running water.

b. Prepare the site by clearing away all sharp objects (stones, broken glasses, nails, etc.) that may puncture the GS Bag-1.0/GHF.

c. An inspection path around the perimeter (at least 75cm).

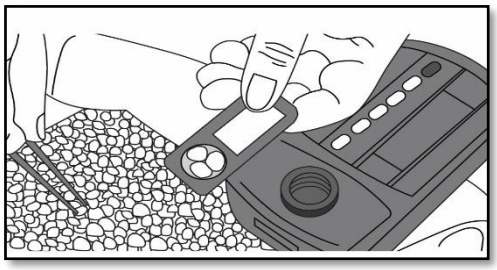


5.1.2 If ground will be used as flooring, put a layer (5cm) of fine sand (or any equivalent) on top of the soil as ground foundation to prevent rats and termites from damaging the bottom of GS Bag-1.0/GHF.

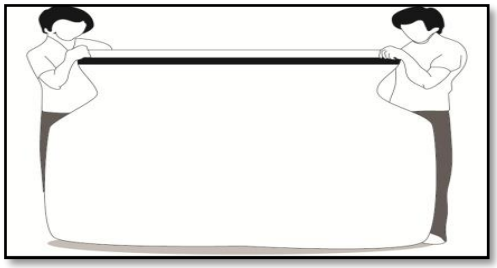


5.2. LOADING

5.2.1 Check the moisture content (MC) of the commodity to ensure commodity will be stored at safe MC.



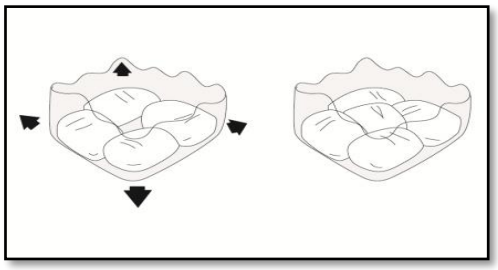
5.2.2 Unfold the bag and lay it out on the prepared site. Place the empty bag on the prepared area with the bottom stretched.



5.2.3 Loading procedure (requires at least two people):

a. One person fills the GS Bag-1.0/GHF.

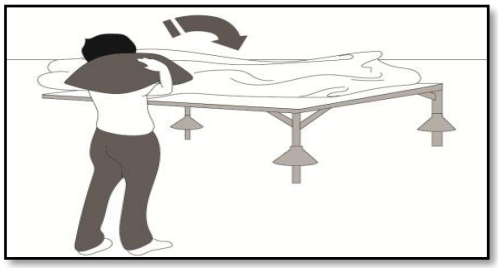
b. The second person keeps the bag open and maintain proper arrangement of sacks.



c. Load the bagged commodities through the open zipper while stretching the bag to prevent crumpling.

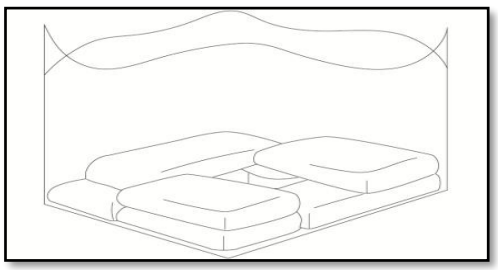
5.2.4 Platform positioning (if necessary):

a. Wood, bamboo, bricks or concrete can be used to construct the platform. Ensure that the platform is sturdy and stable enough to take the load of the GS Bag-1.0/GHF with the commodity. Added protection such as mat, old sacks or cardboard is also recommended

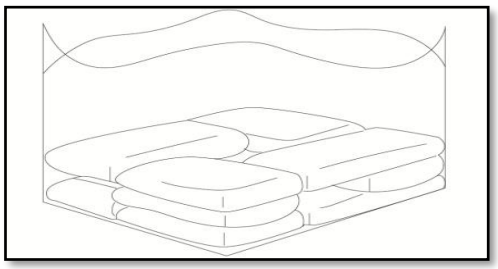


5.2.5. Providing cavity for CO_2 flushing:

a. Aligned to the inlet port, create a cavity/canal about along the second layers of stack.



b. This will help facilitate CO_2 flushing and avoid dry ice build-up.



5.2.6. Required capacity:

a. Keep the sacks stable by loading layers in a crisscross manner.

b. Continue piling until the desired GS Bag-1.0/G-HF height is reached.

5.3 ZIPPING

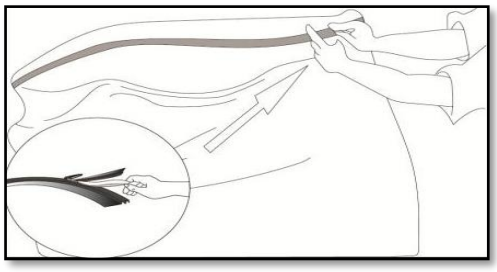
5.3.1 Preparing to zip:

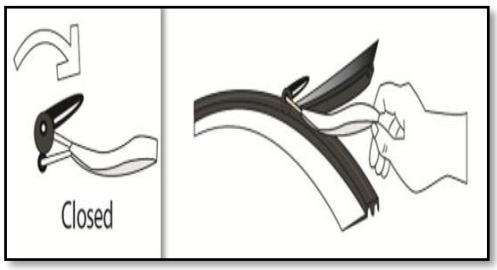
a. After the GS Bag-1.0/GHF has been filled to its recommended capacity, position the hermetic zipper flat on top of the stack.

b. Ensure that the zipper tracks are free from dirt so that the zipping can be done properly.

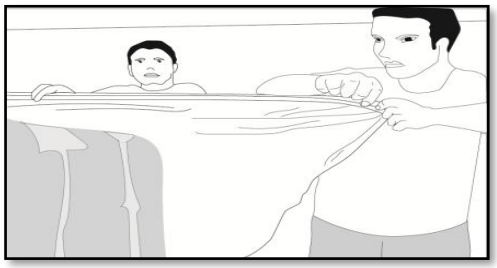
5.3.2 Using the zipper pull:

a. Starting from the end of the zipper, place the smaller black running wheel inside the liner facing upward to lock the bottom liner zipper track.
b. Place the larger wheel outside the liner facing upward to lock the top liner zipper track.
c. Rotate the zipper pull's plastic handle 180° toward its pulling loop, forcing the tongues and grooves of the two zipper tracks together.
d. Slide the zipper pull to the other entire length of the zipper track.



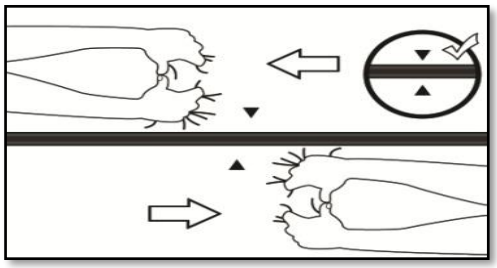


e. To make zipping easier, two persons are required. One will do the zipping and the other will hold the other end steadily making both sections of the zipper in a straight line to avoid zagging.



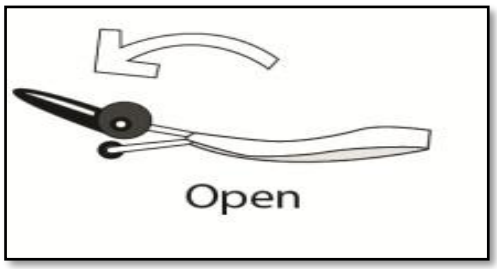
5.3.3 Completing the zipper process:

a. Align the marks ("triangles") printed on both track located above and below zipper.
b. If a pair does not match, slide back the zipper by pulling the top and bottom part in opposite directions until the marks meet.



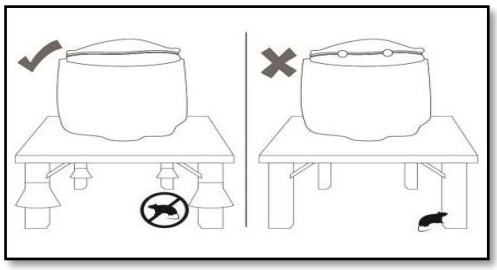
5.3.4 Removing the zipper pull:

a. When you have zipped the entire length of the zipper track, take the zipper pull off the track by rotating the plastic handle 180° away from the zipper pull loop.
b. Close the last few centimeters of the zipper track by manual pressing to latched the zipper's tongue and groove.



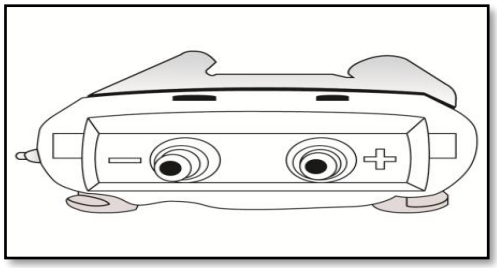
5.3.5 Ensuring a complete hermetic closure:

a. Make sure to close the zipper correctly to maintain gas-tightness.

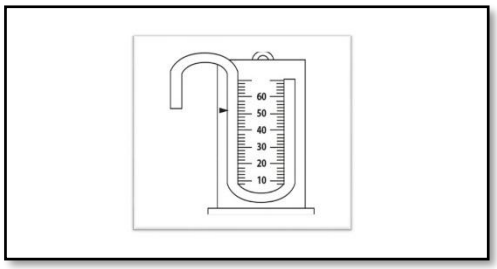


5.4. PRESSURE DECAY TEST (PDT)

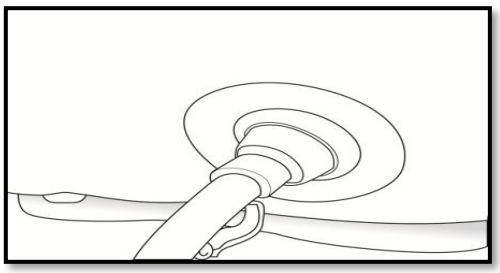
5.4.1. After completely zipping and closing, perform a Pressure {Vacuum} Decay Test (PDT) to ensure gas-tightness:
   a. Use digital manometer.



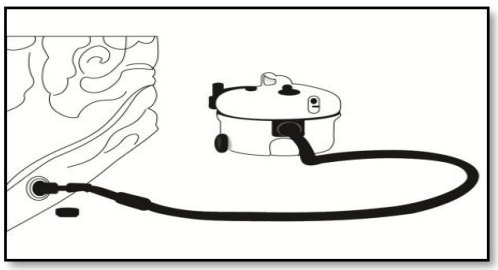
5.4.2. Either, a commercially available or improvised U-tube manometer can be used to monitor the pressure.



5.4.3. Connect the manometer hose into the flexible inlet of the GS Bag 1.0/GHF.



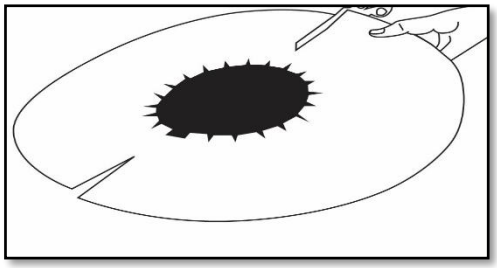
5.4.4. Use a vacuum pump [at least 2.3 cubic meters per minute with 600 Watts (0.80horsepower) centrifugal pump]:
   a. Connect the vacuum pump hose to the inlet port of the GS Bag 1.0/GHF.
   b. Create at least -250 Pascals (Pa) or -25 millimeters' water (mm H_2O) vacuum. Doing this can also help engage the zipper tracks properly as there may be imperfections during zipping.



   c. For it to be considered sufficiently airtight, the final pressure should not be greater than one-half (½) of the initial pressure (created by the vacuum pump) within five (5) minutes.
   d. If the PDT test failed, check for holes/tears and poorly sealed zippers then repeat the PDT procedures.

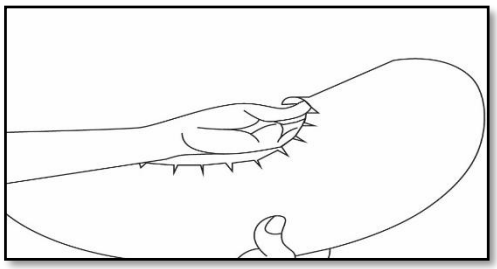
5.5. PLATFORM INSTALLATION OF RODENT GUARD (RG)

5.5.1. For protection against rodent attacks (one set contains 4 pieces):
   a. One set can be installed on any platform legs with leg perimeter (round or square) of 22 cm (9'') to 44 cm (17'').

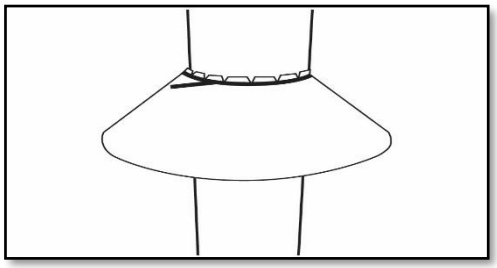


b. If the leg area is smaller, can be optionally cut in half to fit. Cut along the lines at the back of the rodent guard.

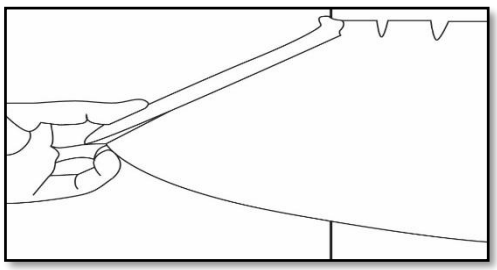
5.5.2. Fold the rodent guard's teeth upwards against the sides of the leg to keep it from slipping.



5.5.3. Make sure to overlap the sides at least one inch.

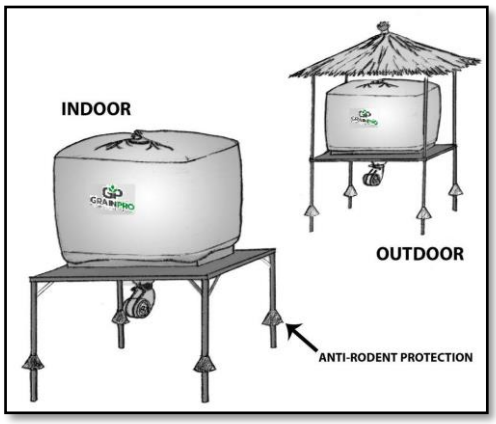


5.5.4. Lock the overlap using staple wire, cable wire, or any fastener.



5.6. OUTDOOR INSTALLATION

5.6.1. The GS Bag-1.0/G-HF must be protected from the direct heat of the sun by installing shade/cover such as a roof cone from any available insulating material (straw, reflective material, matting) that are commonly used to protect traditional local storage facilities.



5.7. PROCEDURE FOR PURGING CARBON DIOXIDE (CO_2)

5.7.1. Calculation:

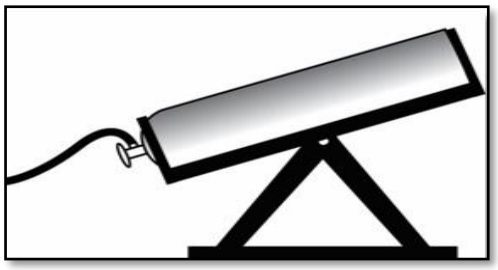
a. Total Volume – Volume Occupied by the Commodity.
b. For every 2.0kg CO_2, 1 cubic meter of gas is being liberated.
c. Additional 15% will be added to the total capacity.
d. Formula: (1-Bulk Density) x Volume x 2 x 1.15.

COMMODITY	BULK DENSITY MT/m^3	GS Bag-1.0/G-HF 2.2	COMMODITY	BULK DENSITY MT/m^3	GS Bag-1.0/G-HF 2.2
Barley	0.62	2	Oats	0.43	3
Cashew nuts	0.50	3	Paddy	0.60	2
Chia seeds	0.68	2	Paddy, rice bran	0.55	2
Chickpeas	0.74	1	Peanuts, shelled	0.64	2
Cocoa beans	0.56	2	Rice, milled	0.80	1
Coffee beans	0.59	2	Rye	0.72	1
Cotton seed	0.40	3	Sesame	0.59	2
Cowpea	0.75	1	Sorghum	0.72	1
Maize	0.72	1	Soybean	0.75	1
Millet	0.63	2	Sunflower	0.41	3
Mung bean	0.75	1	Wheat	0.77	1

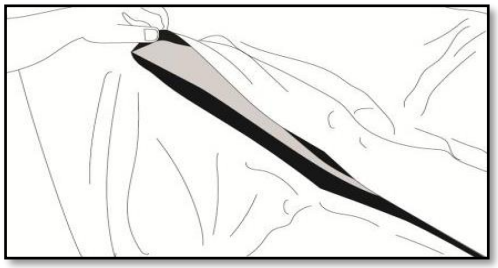
5.7.2. CO_2 application:

a. Make sure that enough CO_2 is available on site. The weight of the CO_2 in the cylinder is supplied by the industrial companies (i.e. 22kg standard capacity) which may be used to calculate the number of cylinders required. CO_2 cylinders are available with or without siphon (dip tube).

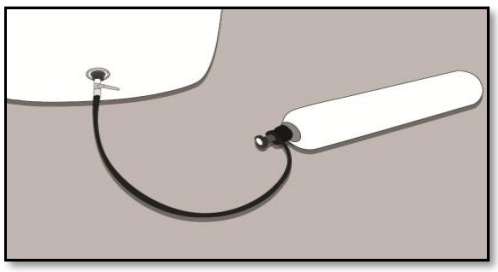
b. For rapid flushing, the cylinder should be inverted using mechanical inverter. However, the cylinders with siphon should be in upright position during flushing.



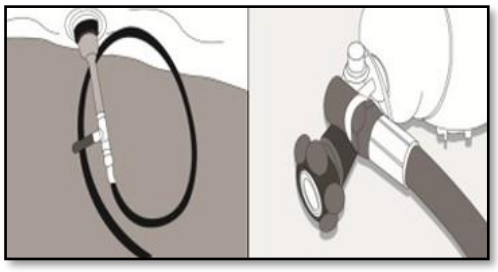
c. Partially open the zipper of GS Bag 1.0/GHF to relieve excess pressure and to release air from inside.



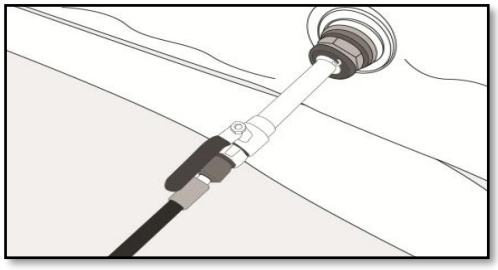
d. A Snap-on standard high-pressure hose (not supplied/separate item) should be connected between the cylinder and the gas inlet valve. This hose should be guaranteed to withstand a pressure of 88 atmospheres (1,300 psi, or 92 kg/cm^2). Ensure that all connections are made properly and gaskets are in place where they are required. The high-pressure hose should have a length of about 2-meter to facilitate easy connection to the inlet valve.



e. Open the gas inlet valve of the GS Bag-1.0/G-HF and then open the cylinder tap. The cylinder tap should only be turned to a point where you can hear the liquid passes through the hose into the bag. The liquid CO_2 flushes into the bag and evaporates inside through the expansion pipe and will push the air upward starting from the bottom core, following the piston effect, until the air is totally replaced.



5.7.3. Ice formation along the pressurized hose and the pipe connector during CO_2 flushing:



a. During this procedure, some ice may form around the gas inlet and high-pressure hose.

b. If this happens do not touch the PVC liner because it becomes brittle, less flexible and may crack!

c. Flushing (emptying of the cylinder) depends on the amount of CO_2 to be applied. Emptying one 22kg cylinder should only take about 20 to 30 minutes. If the pressure hose or the inlet valve gets blocked with ice, this is an indication that the CO_2 is being released too quickly. If this happens the cylinder should be closed until the ice melts, and then the cylinder tap should be re-opened and adjusted to reduce the flow.

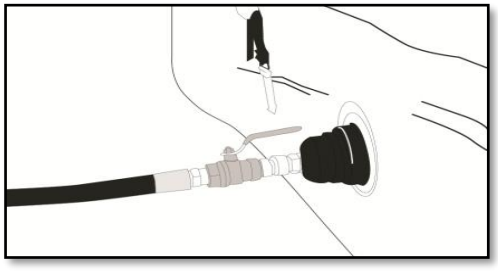
d. An additional indication that the gas is being released too quickly is when the bag begins to balloon because pressure begins to build-up inside. If this happens, the gas flow should be decreased at the cylinder tap until the rate of air being expelled through the partly opened zipper is approximately equal to the rate of CO_2 entering the bag.

e. If necessary, for small scale applications or non-inverted cylinder, weighing scales may be used to control the weight of the gas delivered. In this case the gas is released slowly, through a pressure gauge adjusted to control the flow-rate.

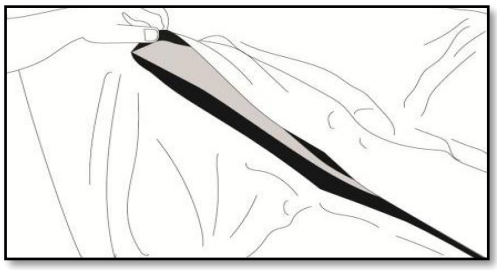
5.7.4. Since CO_2 is heavier than air, the air in the GS Bag 1.0/G-HF will be displaced upwards and will be lifted out of the container through the partly opened zipper. Complete displacement is not possible as there is always some mixing of air and CO_2. However, if the final CO_2 concentration reaches 80% then the O_2 concentration in the remaining air is at 4%. Mixing of CO_2 with the remaining air as well as absorption of CO_2 by the commodity, will take 12-24 hours depending on temperature. The initial concentration of O_2 is taken after 24 hours.

5.7.5. After the required weight of CO_2 has been applied,

a. Immediately close the CO_2 cylinder tap and the inlet port of the bag.



b. Close the partly opened zipper (used as exhaust of air) by reloading the zipper pull or manually pressing (against the bags) both zipper tracks.



5.7.6. For control insect infestation, a treatment with CO_2 above 50% (10.5% O_2) for 10 days, or CO_2 above 35% (13.5% O_2) for 15 days is sufficient to provide complete control, after which the GS Bag 1.0/G-HF may be opened. In addition, temperature accelerates treatment. Effective insect control may be achieved in as little as three days at 25°C and less at higher temperatures. Although CO_2 is not toxic, it is an asphyxiant hence it is advised to unzip the liner and wait until most of the CO_2 has been dispersed.

5.8. MONITORING THE OXYGEN LEVEL

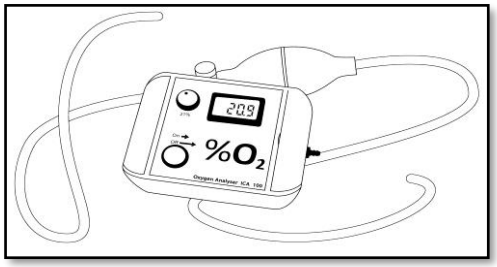
5.8.1. Recommended pest reduction timeline:

a. Leave the GS Bag 1.0/G-HF closed for 10 days with at least 50% CO_2 (10.5% O_2) or 14 days with at least 35% CO_2 (13.5% O_2) to eliminate all stages of insects and achieve best result.

b. When storing commodities, leave the GS Bag 1.0/G-HF sealed until it is unloaded completely.

5.8.2. Use of an oxygen analyzer:

a. During the first 15 days of installation, oxygen level should be checked daily using the oxygen analyzer.



b. Succeeding monitoring should be done twice a week. Measurements should be recorded on a record sheet.

5.8.3. When carrying-out a CO_2 treatment, the approximate CO_2 concentrations can be determined by measuring O_2 concentrations using below conversion table:

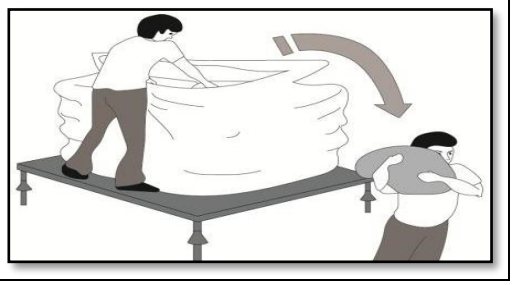
O_2	CO_2	O_2	CO_2	O_2	CO_2	O_2	CO_2	O_2	CO_2	O_2	CO_2	O_2	CO_2
0.0	100	3.0	85.7	6.0	71.3	9.0	56.9	12.0	42.6	15.0	28.3	18.0	13.9
0.2	99.0	3.2	84.7	6.2	70.3	9.2	56.0	12.2	41.6	15.2	27.3	18.2	12.9
0.4	98.1	3.4	83.7	6.4	69.4	9.4	55.0	12.4	40.7	15.4	26.3	18.4	12.0
0.6	97.1	3.6	82.8	6.6	68.4	9.6	54.1	12.6	39.7	15.6	25.4	18.6	11.0
0.8	96.2	3.8	81.8	6.8	67.5	9.8	53.1	12.8	38.8	15.8	24.4	18.8	10.1
1.0	95.2	4.0	80.9	7.0	66.5	10.0	52.2	13.0	37.8	16.0	23.4	19.0	9.1
1.2	94.3	4.2	79.9	7.2	65.6	10.2	51.2	13.2	36.8	16.2	22.5	19.2	8.1

1.4	93.3	4.4	79.0	7.4	64.6	10.4	50.2	13.4	35.9	16.4	21.5	19.4	7.2
1.6	92.3	4.6	78.0	7.6	63.6	10.6	49.3	13.6	34.9	16.6	20.6	19.6	6.2
1.8	91.4	4.8	77.0	7.8	62.7	10.8	48.3	13.8	34.0	16.8	19.6	19.8	5.3
2.0	90.4	5.0	76.1	8.0	61.7	11.0	47.4	14.0	33.0	17.0	18.7	20.0	4.3
2.2	89.5	5.2	75.1	8.2	60.8	11.2	46.4	14.2	32.1	17.2	17.7	20.2	3.4
2.4	88.5	5.4	74.2	8.4	59.8	11.4	45.5	14.4	31.1	17.4	16.8	20.4	2.4
2.6	87.6	5.6	73.2	8.6	58.9	11.6	44.5	14.6	30.1	17.6	15.8	20.6	1.4
2.8	86.6	5.8	72.3	8.8	57.9	11.8	43.5	14.8	29.2	17.8	14.8	20.8	0.5

5.8.4. Check for leakage, and do repairs. If the cause is not found, consult GrainPro's Technical Support Department immediately at customercare@grainpro.com.

5.9. DISMANTLING

5.9.1. The commodity will only be unloaded at the end of storage.



6. PREVENTING CONDENSATION

6.1. WHY DOES CONDENSATION OCCUR?

6.1.1. Condensation is caused by temperature changes i.e. hot weather by day and cool at night or sudden rains in a hot sunny day. When air collides with a cool surface at dew point temperature the vapor in the air condenses on the surface. Air movement inside the GS Bag-1.0/GHF follow the natural forces i.e. in convection currents hot air rise and cool air sinks (except for the phenomenon called inversion). Hence, when warm air inside the GS Bag-1.0/GHF rises and hits the cool GS Bag-1.0/GHF top cover at dew point temperature, condensation occurs.

6.1.2. Therefore, avoiding trapped warm air inside the GS Bag-1.0/GHF can prevent condensation at the top layer. This is the role of the roof cone (shade/cover). It prevents heating of air inside the GS Bag-1.0/GHF by repelling solar radiation.

6.2. MOISTURE CONTENT (MC) REQUIREMENT FOR SAFE STORAGE

6.2.1. Commodities should be dried before storage to at least 12% MC for sorghum, 9-10% millet, 12-14% for paddy and maize, and 13% for wheat.

6.2.2. When the commodity is properly dried, there is virtually no "available water" that the microorganisms can use for growth and development.

6.2.3. This condition can be maintained by avoiding ambient air (with variable moisture content) to be in contact with the dried product using the hermetic storage technology.

7. MAINTENANCE AND CARE

7.1. REGULAR EXAMINATION

7.1.1. Check the zipper track for any small opening/s and push the opened track section by hand.

7.1.2. Check GS Bag-1.0/GHF for punctures or cuts (do not forget to check near the bottom, particularly for rodent damage). If there are any, repair them with the patch kit as described below.

7.1.3. Avoid low overhanging structure or tree branch that would allow rodents to jump on the less-protected top of the GS BAG-1.0/GHF.

7.1.4. During rainy season, the upper surface of the GS BAG-1.0/GHF. should be regularly inspected for water accumulation and damages that would permit water to sip into the GS BAG-1.0/GHF. The content is not adequately protected if the GS BAG-1.0/GHF is not completely sealed.

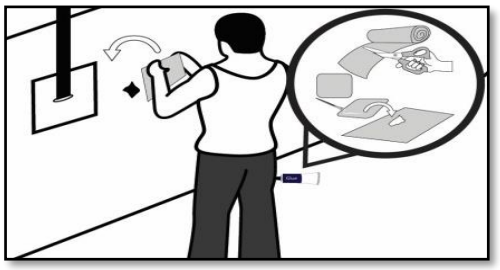
7.1.5. Carbon dioxide level does not increase:

a. Check for possible opening of zippers, and holes/punctures/cuts.
b. Seal/repair it immediately.
c. Monitor the carbon dioxide level with the use of analyzer through the gas sampling port.

7.2. REPAIRING PUNCTURES AND OTHER DAMAGES

7.2.1. Use the patching material and adhesive found in the repair kit:

a. Clean the area to be patched with a damp cloth or organic solvent.
b. Apply glue (150-200g) on both surface with a brush or equivalent.
c. Let it dry for 5-10 minutes and stick and apply sufficient pressure.



7.2.2. Protective maintenance:

a. Check the patched PVC occasionally and replace or re-patch if necessary.

7.4. RECOMMENDED WEEKLY MONITORING

7.4.1. Check whether hermetic zipper has not opened anywhere along the length. If it has, press the tracks together by hand.

7.4.2. Inspect liner and make sure there are no punctures or tears (or rodent damages). If there are any, repair them immediately.

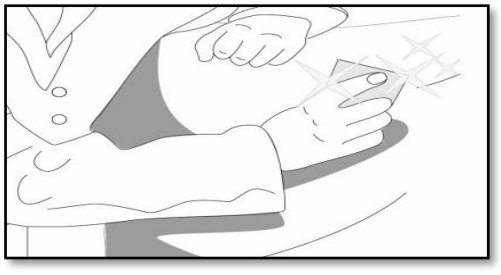
7.4.3. Check top of GS BAG-1.0/GHF to ensure that there is no standing water (especially during the rainy season). Water if present should be removed by hand or tools that do not risk puncturing the liner.

7.4.4. Ensure that there is no low overhanging structure or tree branch, which would allow rodents to jump on top of the GS BAG-1.0/GHF.

7.5. CLEANING

7.5.1. If necessary, use soap and water.

7.5.2. Dry under the sun.



7.7. SAFEKEEPING

7.7.1. The empty GS Bag-1.0/GHF should be stored away from heat or direct sunlight and away from rodent.

7.7.2. Do not place heavy object on top of the stored GS Bag-1.0/GHF to prevent damage or deformity.

7.3. PROHIBITED ITEM NOT ALLOWED TO SHIP

7.3.1. Glue (for patching PVC materials) is not allowed to be shipped in air cargo. This item is removed from the package.

7.3.2. The client is advised to purchase local equivalent.

7.7. RECYCLING

GrainPro GS Bag 1.0/GHF is made of PVC.

7.7.1. The products can be delivered to the nearest recycling facilities in the area.

7.7.2. Plastic #3 – PVC (Vinyl) can be recycled into paneling, flooring, speed bumps, decks or roadway gutters.

8. FREQUENTLY ASKED QUESTIONS AND ANSWERS

8.5. DO I NEED TO PUMP THE AIR OUT OF THE GS BAG-1.0/G-HF OR MODIFY THE AIR INSIDE THE GS BAG-1.0/G-HF, FOR EXAMPLE WITH CARBON DIOXIDE?

- No, you do not need to pump out or change the atmosphere in any way. The insects own natural metabolic functions use up all the available oxygen and replace it with carbon dioxide. Atmospheres modified with carbon dioxide or vacuum can enhance the quality of stored product, and reduce the insect kill time, but are not required to eliminate insect infestations.

8.6. IF THE STORED COMMODITY IS ALREADY INSECT INFESTED, DO I NEED TO FUMIGATE IT OR OTHERWISE KILL THE INFESTATION BEFORE STORING IT?

- No, you do not need to fumigate or kill the infesting pests before storing the food. The insects will die naturally in a matter of days. The greater the infestation the faster the kill.

8.7. IS THERE ANYTHING YOU DO NOT RECOMMEND THE GS BAG-1.0/G-HF FOR?

- Yes, the GS Bag-1.0/G-HF is not recommended for storing fresh fruits, vegetables, or medicines.

8.8. CAN YOU ADD OR TAKE OUT ITEMS ONCE THE GS BAG-1.0/G-HF IS FILLED AND CLOSED?

- Yes, you may add and subtract items. If the added items are infested, the insects will naturally modify the internal atmosphere again and die off.

8.9. DO I NEED TO FILL THE GS BAG-1.0/G-HF ENTIRELY FOR IT TO WORK?

- GS Bag-1.0 is designed to work effectively at any given load. Load your GS Bag-1.0/GHF to its optimum dimensions to ensure full protection from insect infestations.

8.10. SHOULD THE GS BAG-1.0/G-HF BE ONLY ERECTED INDOORS?

- No. GS Bag-1.0/G-HF is designed for outdoor use also under all types of climatic conditions

8.11. WILL A PUNCTURE NEGATE THE BENEFITS OF HERMETICITY OF THE GRAINPRO GS BAG-1.0/G-HF?

- No. Although a hole/tear will allow oxygen to sip into the GS Bag-1.0/G-HF and will cultivate live insects around the puncture/hole. Tight stacking of the stored commodity tends to prevent spreading of infestation inside the GS Bag-1.0/G-HF. We recommend immediate repair of all punctures or tears.

8.12. HOW DRY MUST GRAIN BE TO STORE IT SAFELY IN THE GS BAG-1.0/G-HF?

- The GS Bag-1.0/G-HF works best with grains at or below critical moisture content.

8.13. CAN RODENTS CHEW RIGHT THROUGH THE PVC MATERIAL WHEN THE GS BAG-1.0/G-HF IS ERECT?

- Yes, but only if the sides are not taut enough. Rodents can only gnaw on the smooth, slippery surface of a GS Bag-1.0/G-HF if the sides are not properly stretched or rodents drops down from any object hanged over the GS Bag-1.0/G-HF such as low–hanging branch of a tree. In areas with high rodent activity, we recommend that a GS Bag-1.0/G-HF be protected using anti-rodent barriers.

8.14. CAN AGRICULTURAL COMMODITIES OTHER THAN GRAIN BE STORED IN A GS BAG-1.0/G-HF?

- Yes, most dry agricultural commodities such as seeds, pulses, beans, coffee, cocoa, some dried fruits, and even dried chilies can be safely stored. When in doubt, ask GrainPro.

9. WARRANTY CLAUSE

GrainPro® hereby warrants that products sold by it to Buyer shall be free of defects in workmanship and materials, for a period as follows, starting from the date of shipment (B/L): Five years for the GrainSafe™ Bag-1.0/Gas-Hermetic Fumigation (GS Bag-1.0/G-HF) liner and zipper. One year for all other parts.

The warranty liability is limited to replacement of defective products during the warranty period at GrainPro's plant in accordance with the provisions specifically and expressly set forth herein.

The Buyer will pay for Products which need to be replaced under warranty, a percentage of the full list price according to the ratio between the period, which has passed until replacement, and the full warranty period.

The Buyer shall bear shipping costs for shipment of defective Products to GrainPro, and GrainPro shall bear shipping costs of returning good Products to Buyer.

The Warranty does not cover the cost of any services, work, or materials required for the replacement of defective Products with good Products at the site of installation.

GrainPro shall have no obligation under the warranty to replace defective Products or parts thereof if the defect is a result of any of the following: normal wear and tear; damages occurring after delivery, accidents, acts of God, or catastrophes, fault or negligence, or improper storage installation, maintenance of the Products.

Replacement costs and shipping charges for Products found not to be under warranty as specified above would be paid in full by the Buyer before new/refurbished Products are shipped to.

Notwithstanding the above, if the Products include main parts or sub-assemblies purchased by GrainPro from other vendors ("Additional Equipment"), then the period and terms of warranty for Additional Equipment are limited to the period and terms offered by the vendors of such equipment.

The Buyer agrees that the warranty liabilities of GrainPro shall be and are limited to the express foregoing terms: THE EXPRESS WARRANTIES AND OBLIGATIONS SET FORTH ABOVE, ARE AND SHALL BE IN LIEU OF ALL OTHER WARRANTIES AND OBLIGATIONS OF GRAINPRO, EXPRESSED OR IMPLIED. EXCEPT TO THE EXTENT HEREIN PROVIDED, GRAINPRO DOES NOT MAKE AND SHALL NOT BE DEEMED TO MAKE ANY WARRANTY WHATSOEVER TO THE, TO ANY END USER OR TO ANY OTHER PERSON OR PARTY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR USE OR PURPOSE. GRAINPRO SHALL NOT BE LIABLE FOR ANY LOSS OF USE, SALES OR PROFIT OR FOR ANY INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES CAUSED BY OR SUFFERED AS A RESULT OF THE SALE OR USE OF THE PRODUCTS.

For further information and clarifications, visit our website at www.grainpro.com; email our Customer Support team: customercare@grainpro.com or call: +63 47 252 7884.