

**FOR PROFESSIONAL USE ONLY**



**HANDIFOAM®**

LOW PRESSURE POLYURETHANE FOAM

# **OPERATING INSTRUCTIONS**

FOR REFILLABLE SYSTEMS



## VENTILATION GUIDELINES \*\*

**Ventilating the area where the application of low pressure spray polyurethane foam SPF is being applied will help control worker exposure to airborne contaminants. Read Safety Data Sheets, labels, Product Stewardship Guidelines (A14009) and operating instructions before starting use.**

- Restrict entry for anyone not wearing personal protective equipment (PPE), or not involved in the application, all non-essential personnel should leave the spray area during application and not return to the job site for one hour after completion of spraying.
- Estimate the amount of air flow needed, may vary based on room shape and size. Consider that duct work and filters can reduce the rate of air flow performance.
- On jobsites where HVAC equipment is running, ensure that the units are off before application. Failure to turn off the equipment could spread contaminants throughout the home or building.
- Ventilation equipment should be used during and after application to prevent the build up of vapors. Determine placement of ventilation equipment. Exhaust vapors to the outside of the building and away from all people and pets. Ensure that the exhaust fan capacity is 10% greater than your supply fan. Use a larger capacity exhaust fan and a smaller fan to bring in the make-up air.
- Use a smoke pencil to confirm air movement across the work area and away from the applicator. Close open windows or doors (not used in exchanging or providing make-up air) to prevent vapors from entering other areas of the building.
- In attic and crawlspace application do not block entry/exit point with fans.
- Seal off the application area with caution tape. (Ensure that all open ducts and penetrations to other areas of the building are sealed.) It may be necessary to isolate the work area. Construct temporary enclosures to seal off the work area.
- Low pressure spray foam applicators and assistants are recommended to use products in a well ventilated area and to wear the proper personal protection equipment.
- Occupants can re-enter one hour after spraying is completed and the area has been ventilated. Extend ventilation time for lingering odors or pre-existing odors
- Follow up with the building occupant to determine if they are satisfied with the SPF/PIP performance.
- Refer to the Product Stewardship Guidelines for more details.

\*\* Based on the EPA's 2011 working draft-Ventilation Guidelines for SPF (Spray Polyurethane Foam), refer to [www.epa.gov/dfe](http://www.epa.gov/dfe) for additional information. Please visit the following websites: [www.spraypolyurethane.org](http://www.spraypolyurethane.org) or [www.sprayfoam.org](http://www.sprayfoam.org).

## PERSONAL PROTECTIVE EQUIPMENT (PPE) RECOMMENDATIONS

Wear protective glasses with side shields or goggles, nitrile gloves, and clothing that protects against dermal exposure. Recommend using in a well ventilated area with certified respiratory protection or a powered air purifying respirator (PAPR). For more information regarding a certified respiratory program please visit (<http://www.cdc.gov/niosh/>). Personal Protective Equipment can be obtained by purchasing the HandiFoam® Contractor Safety Kit (see [page 15](#) for more information). The Contractor Safety Kit includes: nitrile gloves, contractor safety glasses, and a NIOSH-approved negative pressure half mask respirator. Consult the product's SDS (available on [handifoam.com](http://handifoam.com)) for specific information. For professional use only. For more information, see the Product Stewardship Guidelines (A14009).



See additional websites for more information: [www.handifoam.com](http://www.handifoam.com), <http://polyurethane.americanchemistry.com> and [www.sprayfoam.org](http://www.sprayfoam.org).

## TEMPERATURE GUIDELINES

The chart below provides a guideline for Storage Temperature, Process (Core) Chemical Temperature, Outside Application Temperature and Surface Temperature. For specific Process (Core) Chemical Temperature (see the appropriate TDS).

Process (Core) Chemical Temperature	Storage Temperature	Outside Application Temperature	Surface Temperature
70–85°F (21–29°C)	Optimum 75–85°F (24–29°C) but not < 60°F or > 90°F (not <16°C or >32°C)	40–100°F (4–38°C)	40–100°F (4–38°C)

- Proper temperature plays a critical role in the performance of any two-component polyurethane foam system. Both the liquid chemical temperature and the ambient temperature (i.e. mold temperature) will affect system performance.
- Recommended chemical temperature is 70–85°F (21–29°C), see TDS for formula specific temperature recommendations. If the chemicals are not at the proper temperature, they may dispense in an improper ratio, thereby leading to poor quality foam. Please see Technical Data Sheets (TDS) for specific formulation temperature requirements.
- During colder months it may take several days to warm the chemicals to the optimum temperature, especially if the cylinders have recently been transported or stored in an unheated environment.
- During warm weather, keep cylinders in an air conditioned location. NEVER store cylinders above 90°F (32°C) or below 60°F (16°C). Cool cylinders with a misting fan or air conditioner.
- **NOTE:** It may take from several hours to several days (in the case of the larger systems) for the chemical temperature to reach the proper temperature. This is especially true if the product has been recently shipped or stored in colder temperatures.
- For best results, it is advantageous to heat the mold substrate temperature to 80–100°F (27–38°C), as this will improve both the adhesion of the foam and the flowability of the dispensed chemical. A colder substrate will act as a heat sink, taking away the heat that is generated from the exothermic reaction of the chemicals during cure. This may reduce expansion, flowability and performance.

## CONDITIONING CHEMICAL: WARMING UP OR COOLING DOWN

- During colder months it may take up to several days (depending on the size) to warm the chemicals to the recommended Process (Core) Chemical Temperature (see appropriate TDS). See Figure 1.
- During hotter months it may take several hours (depending on the size) to cool the chemicals to the recommended Process (Core) Chemical Temperature (see appropriate TDS).
- If the cylinders have recently been transported or stored in an unheated environment, a temperature controlled "box" or a heated blanket is recommended for applications in order to store the refill systems at a consistent, controlled temperature prior to and during use. An acceptable storage "box" is nothing more than a small room that is large enough to hold the system(s) being used or conditioned and is sufficiently insulated and heated to maintain a consistent temperature of 80°F (27°C).
- See [page 15](#) for a complete listing of heated blankets and accessories that ICP offers.

Figure 1

System Size	Hours	Days
8 gallons & under	24–48	1–2
17 - 27 gallons	48–72	2–3
60 gallons & up	72–100	3–5

## NITROGEN USAGE

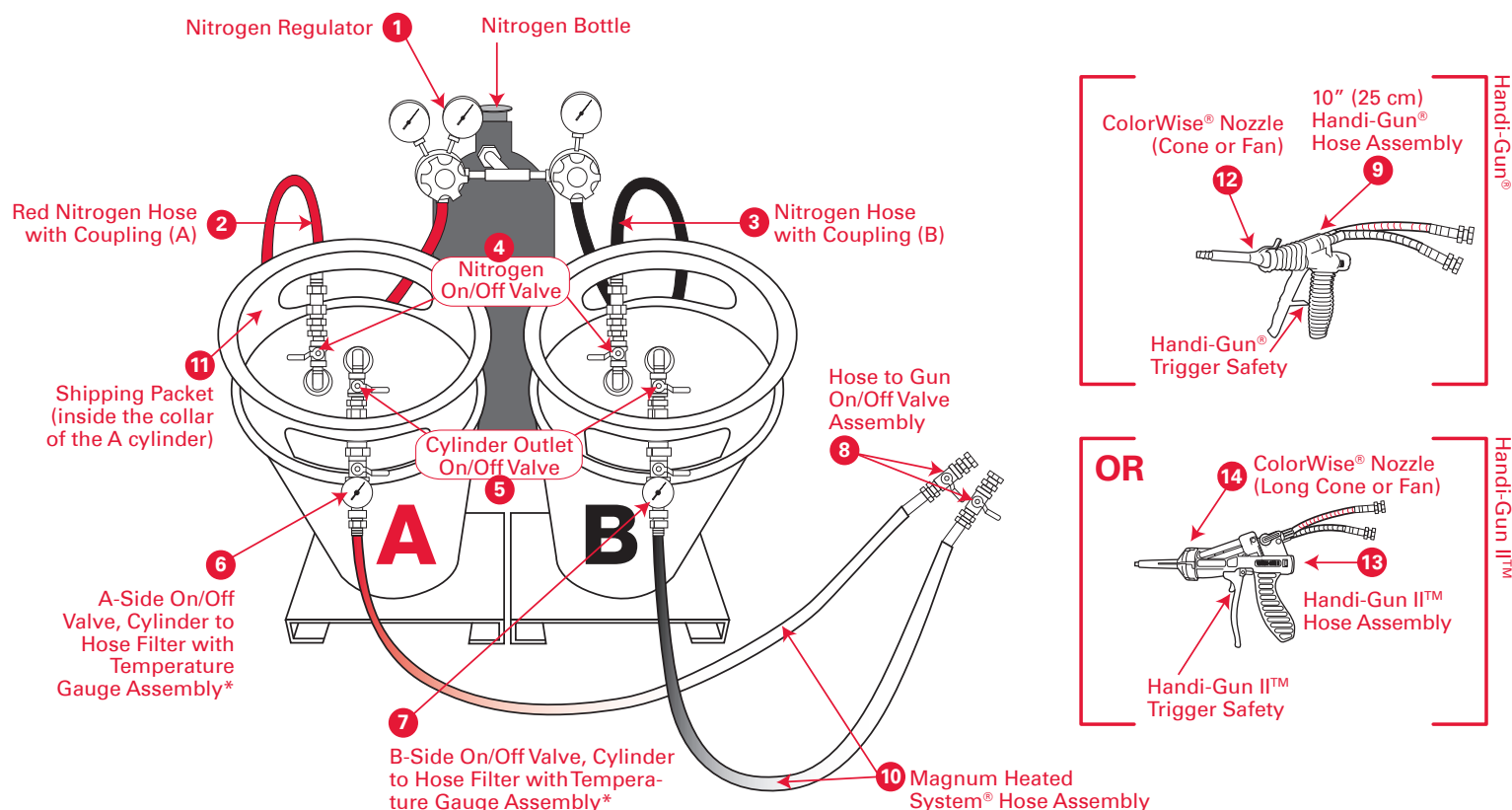
- Nitrogen bottles are required for pressurizing the refill systems.
- They may be obtained for a nominal fee from a local welding supply house.
- NEVER use compressed or supplied air.
- "T" nitrogen bottle (300 CF) is the required size for Systems 17 & up.
- "G" nitrogen bottle (40 CF) is the required size for System 8.
- Up to 3 nitrogen bottles may be needed per System 60 or 100.
- Only 1 nitrogen bottle will be needed per System 17/27 or System 8.
- DO NOT USE compressed air to pressurize the system.
- When nitrogen drops below 500 PSIG (3447.38 kPa) in the bottle, turn off the bottle and regulator and attach a full nitrogen bottle.

## HOSE CARE INSTRUCTIONS

### Read all instructions manuals, tags, and labels before operating the hose.

- Safety should be engaged on the Handi-Gun® when not in use. Safety is automatically engaged on Handi-Gun II™ when trigger is released. During storage, a foam-hardened nozzle should be attached to either Handi-Gun or Handi-Gun II to extend life of dispensing unit.
- Use the hose only for its intended purpose.
- Do not alter or modify this equipment.
- Use only with products manufactured by ICP.
- Lubricate all fittings with petroleum jelly before attaching the hoses to the cylinders.
- Uncoil hose. If heated, always plug unit into a 120V, grounded receptacle no more than 1 hour before use.
- To avoid excessive heat buildup, NEVER operate the heated hose when it is coiled or sections of the hose overlap (will cause hot spots).
- Do not fold or kink the hose. Maintain a minimum bend radius of 6" (15.24 cm).
- Do not immerse in water. Hose is water resistant, not waterproof.
- Keep sharp objects away from hose.
- Route hose away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Check hose daily and replace worn or damaged parts immediately.
- Unplug the heated hose from the electrical source when not in use and at the end of each day.
- After first use, hose must always stay under pressure.
- Always leave chemical in the hose for storage. When the refill cylinders are empty, connect the hose to a new refill cylinder immediately and spray new chemical into the hose. This will help prevent moisture from entering the hose.
- All valves should be in the off position when not in use.
- Store hoses in a warm, dry area.
- Fresh chemical must be dispensed through the hose every 7–10 days to prevent loss of performance.

# SETUP: REFILL SYSTEMS 17 AND UP WITH A MAGNUM HEATED HOSE



\* Some accessories may require additional adapters.

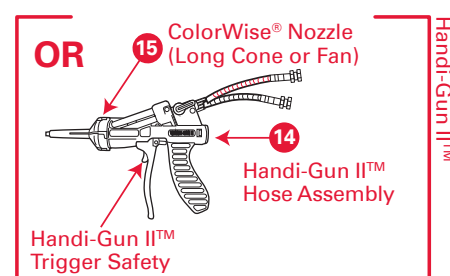
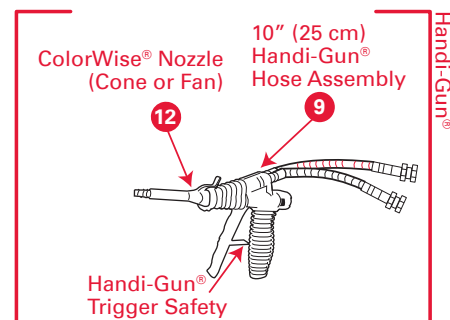
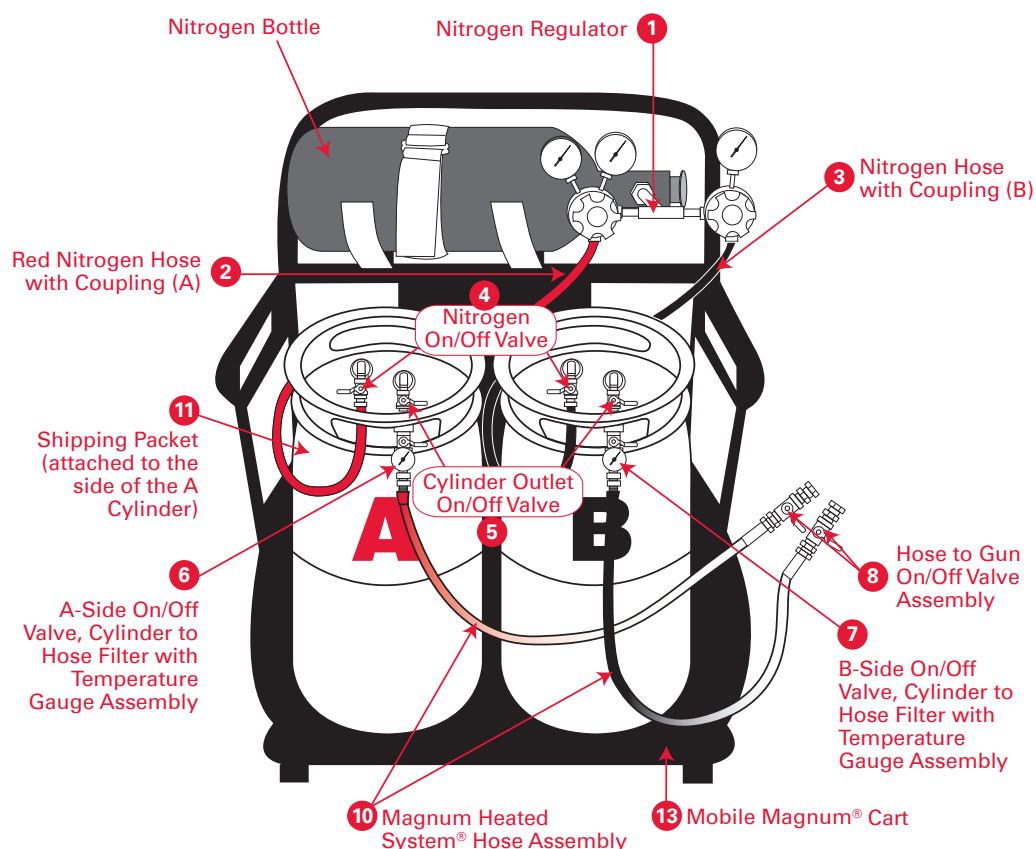
- Operating Instructions, Daily Spray Log & Bill of Lading are located in the Shipping Packet inside the A-side cylinder collar.
- The Magnum Heated System® Hose Care Instructions are attached to the Magnum Heated hose.

## Prior to proceeding with setup, please review all instruction manuals, hose tag instructions and labels.

1. Verify chemical temperature is between 70–85°F (21–29°C), see TDS for product specific process (core) chemical temperature recommendations.
2. Before/during the system start-up process update the Daily Spray Log (A18013).
3. Attach the Nitrogen Regulator (#1) to the nitrogen bottle. Tighten fitting with a wrench.
4. Attach the **A-Side Red** Nitrogen Hose with Coupling (#2) to the A-Side Cylinder Nitrogen Regulator (#1). Tighten fitting with a wrench.
5. Attach the Quick Disconnect on the **A-Side Red** Nitrogen Hose (#2) to the **A-Side Red** Nitrogen On/Off Valve (#4).
6. Attach the B-Side Nitrogen Hose with Coupling (#3) to the B-Side Cylinder Nitrogen Regulator (#1). Tighten fitting with a wrench.
7. Attach the Quick Disconnect on the B-Side Nitrogen Hose with Coupling (#3) to the Nitrogen On/Off Valve (#4).
8. Attach the Gun Hose Assembly (#9 or #13) **A-Side Red** Striped Hose to the **A-Side Red** Magnum Hose (#10). Tighten fitting with a wrench.
9. Attach the Gun Hose Assembly (#9 or #13) Black Striped Hose to the Magnum Hose (#10). Tighten fitting with a wrench.
10. Ensure the Handi-Gun® Trigger Safety is engaged. The Handi-Gun II™ (#13) Trigger Safety is automatically engaged when trigger is released.
11. Remove the Cap (A cylinder) and Plug (B cylinder) from the Cylinder Outlet On/Off Valve (#5).
12. Attach the A-Side On/Off Valve, Cylinder to Hose Filter with Temperature Gauge Assembly (#6) to the Cylinder Outlet On/Off Valve (#5) on the **A-Side Cylinder**. Tighten fitting with a wrench.
13. Attach the B-Side On/Off Valve, Cylinder to Hose Filter with Temperature Gauge Assembly (#7) to the Cylinder Outlet On/Off Valve (#5) B-cylinder. Tighten fitting with a wrench.
14. Open Ball Valves #5, #6, #7 and #8.
15. Plug the Heated Hose into a 120V grounded receptacle.

**NOTE:** Use of petroleum jelly (provided in nozzle packs) on all fittings will help prevent moisture contamination on any exposed surfaces.

# SETUP: MOBILE MAGNUM SYSTEM 8 WITH A MAGNUM HEATED HOSE



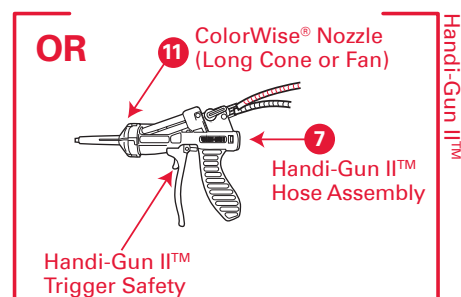
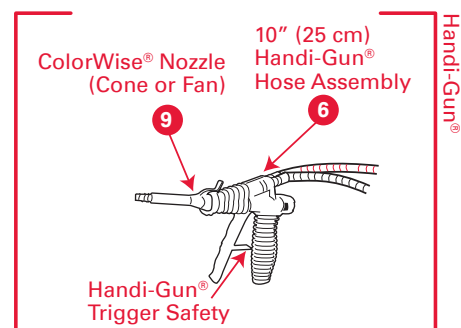
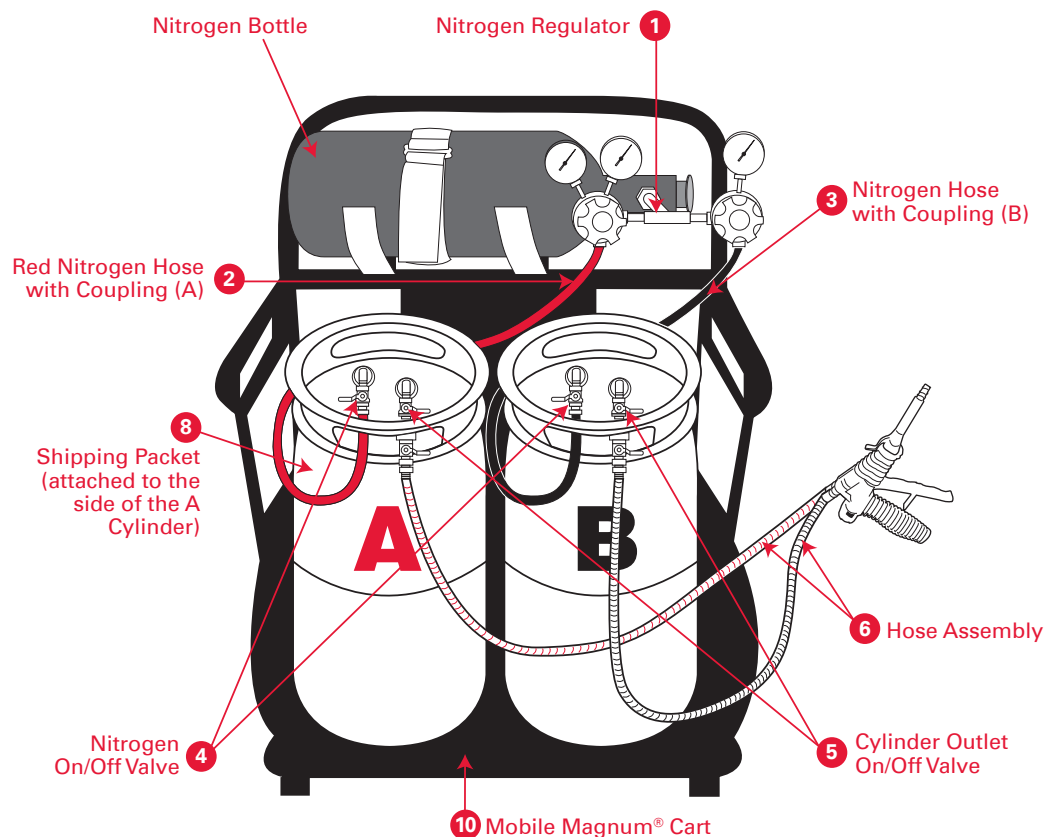
- Operating Instructions, Daily Spray Log & Bill of Lading are located in the Shipping Packet inside the A-side cylinder collar.
- The Magnum Heated System® Hose Care Instructions are attached to the Magnum Heated hose.

## Prior to proceeding with setup, please review all instruction manuals, hose tag instructions and labels.

1. Verify chemical temperature is between 70–85°F (21–29°C), see TDS for product specific process (core) chemical temperature recommendations.
2. Before/during the system start-up process update the Daily Spray Log (A18013).
3. Attach the Nitrogen Regulator (#1) to the nitrogen bottle. Tighten fitting with a wrench.
4. Attach the A-Side Red Nitrogen Hose with Coupling (#2) to the A-Side Cylinder Nitrogen Regulator (#1). Tighten fitting with a wrench.
5. Attach the Quick Disconnect on the A-Side Red Nitrogen Hose (#2) to the Nitrogen On/Off Valve (#4).
6. Attach the B-Side Nitrogen Hose with Coupling (#3) to the B-Side Cylinder Nitrogen Regulator (#1). Tighten fitting with a wrench.
7. Attach the Quick Disconnect on the B-Side Nitrogen Hose with Coupling (#3) to the Nitrogen On/Off Valve (#4).
8. Attach the Gun Hose Assembly (#9 or #14) A-Side Red striped hose to the A-Side Red Magnum Hose (#10). Tighten fitting with a wrench.
9. Attach the Gun Hose Assembly (#9 or #14) B-Side striped hose to the Magnum Hose (#10). Tighten fitting with a wrench.
10. Ensure the Handi-Gun® Trigger Safety is engaged. The Handi-Gun II™ (#14) Trigger Safety is automatically engaged when trigger is released.
11. Remove the Cap (A cylinder) and Plug (B cylinder) from the Cylinder Outlet On/Off Valve (#5).
12. Attach the A-Side On/Off Valve, Cylinder to Hose Filter with Temperature Gauge Assembly (#6) to the Cylinder Outlet On/Off Valve (#5) on the A-Side Cylinder. Tighten fitting with a wrench.
13. Attach the B-Side On/Off Valve, Cylinder to Hose Filter with Temperature Gauge Assembly (#7) to the Cylinder Outlet On/Off Valve (#5) B-Side Cylinder. Tighten fitting with a wrench.
14. Open Ball Valves #5, #6, #7 and #8.
15. Plug the Heated Hose into a 120V grounded receptacle.

**NOTE:** Use of petroleum jelly (provided in nozzle packs) on all fittings will help prevent moisture contamination on any exposed surfaces.

# SETUP: MOBILE MAGNUM SYSTEM 8 WITH A 100' HANDI-GUN HOSE ASSEMBLY



• Operating Instructions, Daily Spray Log & Bill of Lading are located in the Shipping Packet inside the A-side cylinder collar.

## Prior to proceeding with setup, please review all instruction manuals, hose tag instructions and labels.

1. Verify chemical temperature is between 70–85°F (21–29°C), see TDS for product specific temperature recommendations.
2. Before/during the system start-up process update the Daily Spray Log (A18013).
3. Attach the Nitrogen Regulator (#1) to the nitrogen bottle.
4. Attach the **A-Side Red** Nitrogen Hose with Coupling (#2) to the Nitrogen Regulator (#1), Tighten fitting with a wrench.
5. Attach the Quick Disconnect on the **A-Side Red** Nitrogen Hose (#2) to the Nitrogen On/Off Valve (#4).
6. Attach the (B) Black Nitrogen Hose with Coupling (#3) to the Nitrogen Regulator (#1). Tighten fitting with a wrench.
7. Attach the Quick Disconnect on the Black Nitrogen Hose with Coupling (#3) to the Nitrogen On/Off Valve (#4).
8. Remove the cap (A cylinder) and plug (B cylinder) from the Cylinder Outlet On/Off Valve (#5).
9. Attach the Gun Hose Assembly (#6 or #7) **A-Side Red** striped hose to the A-Side Cylinder Outlet On/Off Valve (#5). Tighten fitting with a wrench.
10. Attach the Gun Hose Assembly (#6 or #7) black striped hose to the B-Side Cylinder Outlet On/Off Valve (#5). Tighten fitting with a wrench.
11. Ensure the Handi-Gun® Trigger Safety is engaged. The Handi-Gun II™ (#7) Trigger Safety is automatically engaged when trigger is released.
12. Open Ball Valves #5 on each cylinder.

**NOTE:** Use of petroleum jelly (provided in nozzle packs) on all fittings will help prevent moisture contamination on any exposed surfaces.



## STEP 1: PRESSURIZING THE SYSTEM

The optimum pressures are located on the Refill Cylinder CG Sticker on all of the cylinders. If questions remain, contact HandiFoam Customer Care at [customercare@icpgroup.com](mailto:customercare@icpgroup.com) or by calling 330-753-4585 or 1-800-321-5585 for proper pressures before spraying.

- Pressures may vary from A to B cylinders and from system to system.
  - Proper cylinder pressures are critical to success.
  - Pressures should be monitored closely at the initial setup as well as at the start of each day.
- Turn the regulator knobs on the nitrogen regulator (#1) counter-clockwise until they are free-spinning.
  - Connect the **A-Side Red** Nitrogen Hose with Coupling (#2) to the **A-Side cylinder**.
  - Connect the Nitrogen Hose with Coupling (#3) to the B-Side cylinder.
  - Slowly open the nitrogen bottle until it is fully open.
  - Turn either the A or B-regulator knob clockwise until the required pressure for the specific cylinder is displayed on the regulator gauge.
  - Open the Nitrogen On/Off Valve (#4) on the cylinder and fill with nitrogen until it reaches the required pressure (can no longer hear pressure going into cylinder).
  - Repeat previous 2 steps for the B-cylinder.
  - Maintain a minimum of 500 PSIG in the nitrogen bottle at all times.


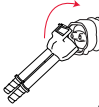
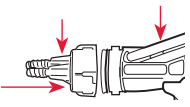
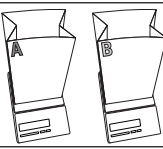
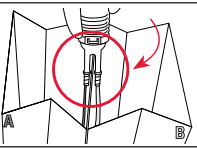
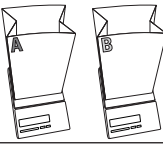

## STEP 2: VERIFYING CYLINDER PRESSURE

The nitrogen pressure regulator (#1) that is attached to the nitrogen bottle DOES NOT read the pressure inside the refill chemical cylinder, only the regulated pressure coming from the nitrogen bottle.

- Connect the pressure test gauge on the Nitrogen On/Off Valve (#4) on the A-Side cylinder. (Make sure the pressure test gauge AND the nitrogen on/off valves are closed).
- Slowly open the ball valve for the Nitrogen On/Off Valve (#4).
- The pressure in the cylinder will register on the test gauge.
- Close the nitrogen on/off valve and remove the test gauge from the cylinder and repeat the process on the B-Side cylinder.
- The test gauge should be used at the beginning of each day and after any spraying breaks to determine and verify the starting pressure in each refill cylinder.

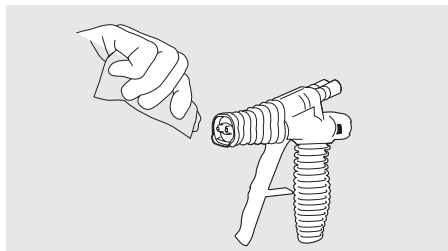
**NOTE:** See Pressurizing The System for instructions on how to add nitrogen to each cylinder. NEVER use compressed or supplied air.

## STEP 3: RATIO TEST

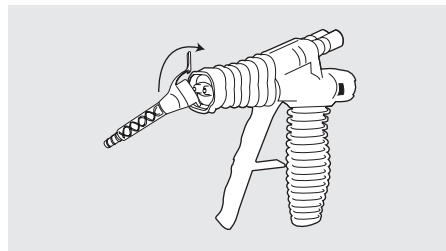
STEP 1	Wear protective glasses with side shields or goggles, nitrile gloves, and clothing that protects against dermal exposure. Recommended for use in a well ventilated area with certified respiratory protection or a powered air purifying respirator (PAPR). See Product Stewardship Guidelines for more information (A14009).				
STEP 2	Prior to the A/B ratio test, open the cylinder valve stems and ball valves and purge the air from the A and B side hoses, without a nozzle on the gun, until chemical is delivered.				
STEP 3	After applying petroleum jelly to the face of the gun, attach the ratio nozzle* to the gun hose assembly.	<b>Handi-Gun®</b> Attach top latch by pushing towards back of unit, until an audible "snap" is heard. 	<b>Handi-Gun II™</b> Ensure the output ports of nozzle align properly with top channel of gun. Apply straight pressure to entire nozzle and twist nozzle base to fully attach to gun face. 		
NOTE	*If a ratio nozzle is not available, position the paper bags so the point where the bags meet is flush with the center of the face of the gun. Ensure that both A and B streams are spraying into separate bags.				
STEP 4	Weigh the empty A-side bag first and record weight on bag. Repeat step for empty B-side bag.		STEP 5	Position paper bags so that each side of the nozzle is in a separate bag.  Pull full trigger and spray chemical through the ratio nozzle into the separate bags for approximately 5–10 seconds.	
STEP 6	Weigh the A-side bag first, then subtract the empty A-side bag weight. Record final calculated A-side weight. Repeat step for B-side chemical bag.		STEP 7	Immediately after weighing bags, pour bag containing chemical A into the B bag to create a low-grade foam. Dispose of cured foam and nozzle in accordance with local regulations.	
STEP 8	<div>Divide the final weight of the A bag by the final weight of the B bag to calculate ratio. Desired ratio range are listed below (exclusions listed to the right). If ratio achieved is not in the proper range, follow bulleted instructions below to adjust pressures accordingly.</div> <div>Equation used for most HandiFoam® products (exclusions to the right):</div> <div><math display="block">\frac{A}{B} = 1.10 \quad \begin{array}{c} \uparrow 1.20 \\ \text{+/- } 0.1 \\ \downarrow 1.00 \end{array}</math><ul style="list-style-type: none"><li>• <b>Higher than a ratio of 1.20:</b> Add pressure in increments of 10 psig to the B side.</li><li>• <b>Lower than a ratio of 1.00:</b> Add pressure in increments of 10 psig to the A side.</li></ul></div> <div><b>EXCLUSIONS:</b></div> <div>Equation for HandiFoam® Commercial Vehicle:</div> <div><math display="block">\frac{A}{B} = 1.03 \quad \begin{array}{c} \uparrow 1.13 \\ \text{+/- } 0.1 \\ \downarrow 0.93 \end{array}</math><ul style="list-style-type: none"><li>• <b>Higher than a ratio of 1.13:</b> Add pressure in increments of 10 psig to the B side.</li><li>• <b>Lower than a ratio of 0.93:</b> Add pressure in increments of 10 psig to the A side.</li></ul></div> <div>Equation for HandiFoam® Slow Rise:</div> <div><math display="block">\frac{A}{B} = 1.08 \quad \begin{array}{c} \uparrow 1.18 \\ \text{+/- } 0.1 \\ \downarrow 0.98 \end{array}</math><ul style="list-style-type: none"><li>• <b>Higher than a ratio of 1.18:</b> Add pressure in increments of 10 psig to the B side.</li><li>• <b>Lower than a ratio of 0.98:</b> Add pressure in increments of 10 psig to the A side.</li></ul></div> <div>*Not applicable for Window Lineal foam.</div>				
NOTE	<b>ONCE THE PRESSURES HAVE BEEN ADJUSTED ACCORDINGLY, ATTACH A NEW RATIO NOZZLE TO THE HANDI-GUN® AND PROCEED WITH A SECOND RATIO TEST TO BE SURE OF PROPER RATIO WHEN SPRAYING.</b>  For optimum results, chemical is not recommended to be sprayed or applied outside of the correct chemical ratio listed above or specified chemical temperature range available on the product specific TDS. Ratio test results will be required for technical service calls to ICP. Record all ratio test results on the Daily Spray Log (A18013).				



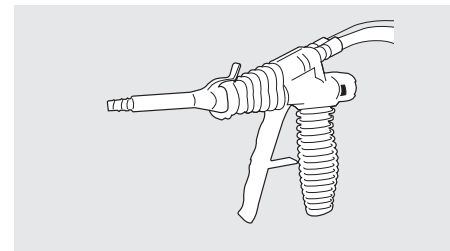
## STEP 4: ATTACHING THE COLORWISE® TEMPERATURE WARNING NOZZLE



1. Before attaching nozzle, use petroleum jelly on face of gun.



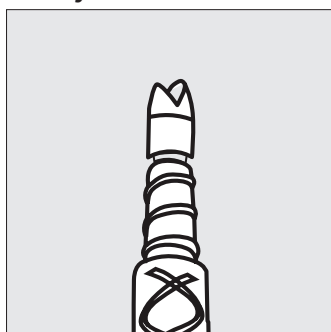
2. Insert bottom tab of nozzle into bottom slot of dispensing unit.
3. Attach top latch by pushing towards back of unit, until an audible "snap" is heard.



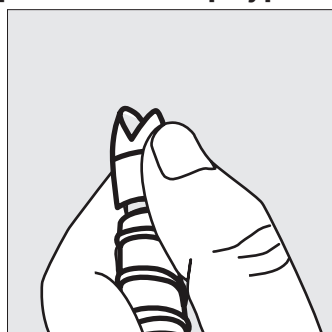
4. Unit is ready to use.
5. After attaching nozzle, spray into "test shot" receptacle.
6. To remove used nozzle, push top latch up and forward to unsnap.

## NOTE: USING THE COLORWISE® TEMPERATURE WARNING SNAP-TIP NOZZLE

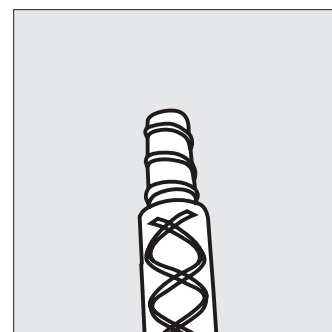
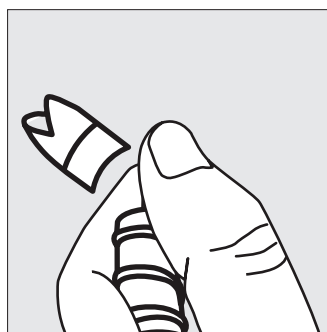
Easily transition from a fan spray pattern to a cone spray pattern with the same nozzle.\*



1. Nozzles provided allow for a fan spray pattern.



2. Easily snap-off the fan tip to change spray pattern!

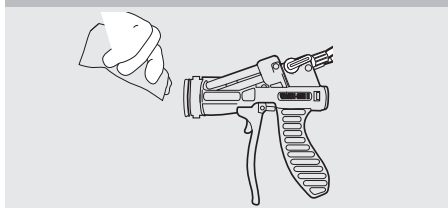


3. Snap-tip nozzle now allows for a cone spray pattern.

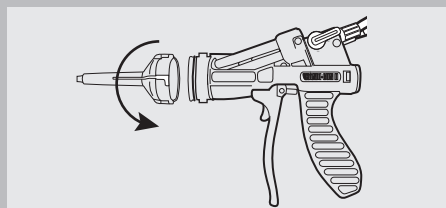
\*Once nozzle tip has been snapped to change to the cone spray pattern, if a fan spray pattern is needed, a new nozzle must be used.

## SPECIAL INSTRUCTIONS FOR HANDI-GUN II®

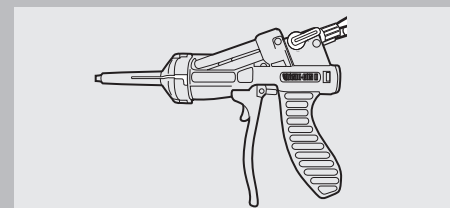
### ATTACHING THE COLORWISE® TEMPERATURE WARNING NOZZLE - HANDI-GUN II®



1. Before attaching nozzle, use petroleum jelly on face of gun.



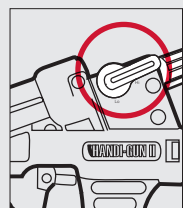
2. Attach nozzle by twisting to the right into the lock position.



3. Unit is ready to use.
4. After attaching nozzle, spray into "test shot" receptacle.
5. To remove used nozzle, unlock by twisting nozzle to the left.

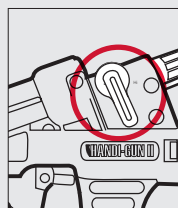
## USING THE HANDI-GUN II® HI/LO MODULE

### Hi Module:



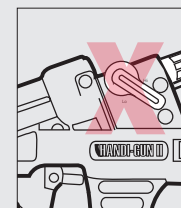
- Similar output and manner as the Handi-Gun® Dispensing Unit.
- Output is approximately 8 lbs. per minute\*.
- Can be metered via trigger to achieve an even lower output if desired.

### Lo Module:



- Output is reduced to approximately 3 lbs per minute\*.
- Can be metered via trigger to achieve an even lower output if desired.

### Note:

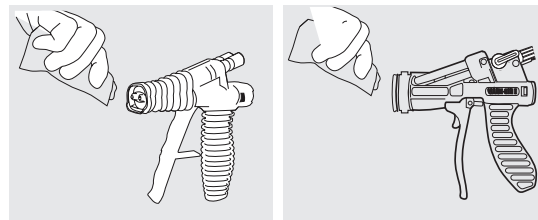


- Switch must be in the Hi or Lo position in order to operate properly.

\*Actual output may vary based on trigger pull, cylinder pressures, hose length and chemical formulation.

## STEP 5: NOZZLE CARE

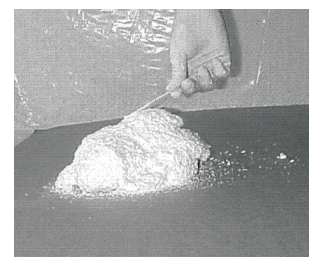
- Once the trigger is released, it must be reactivated within 30 seconds or a new nozzle must be installed. Failure to do this could result in chemical leakage, spills, splashes or clogs which can ruin the dispensing unit and/or hoses.
- Change nozzles frequently! Foam will cure inside the nozzle in the same amount of time that foam becomes tack-free in the air.
- Always make sure the Handi-Gun® or Handi-Gun II™ face is covered with petroleum jelly (provided in nozzle pack) before attaching a new nozzle. This makes removal of nozzles easier, protects the face of the gun hose assembly from cured foam or contamination that could block one of the chemical ports.
- If foam has not cured, HandiFoam Multipurpose Cleaner or acetone can be sprayed into the nozzle, making the nozzles reusable.
- Cleaning the nozzles more than twice is not recommended.



## STEP 6: TACK-FREE TEST

Tack-free time refers to the time elapsed between when the product is dispensed and when the foam expands and cures initially, so that it is no longer tacky to the touch. Tack-free time is an important property that can be used frequently before and during a job to obtain an indication that the product is being dispensed to the proper A/B ratio.

1. Spray test shot.
2. Start timer as soon as you stop spraying.
3. Take a stick and gently touch the top of the foam. Each time you touch the foam; do so at a different point on the stick.
4. Watch for the foam to stop adhering to the stick.
5. As soon as the foam is no longer tacky, stop the timer.
6. Check the timer for the tack-free time.
7. Refer to the Technical Data Sheet (TDS) to find the proper tack-free time for the system being used.
8. For best results, perform a ratio test (see step 3).
9. With the nozzle removed, check that both chemicals flow with equivalent force.
10. Partial or complete blockage of one chemical port will result in off-ratio foam.



## STEP 7: SPRAYING FOAM

1. Wear protective glasses with sideshields or goggles, nitrile gloves, and clothing that protects against dermal exposure. Use only in a well ventilated area with certified respiratory protection or a powered air purifying respirator (PAPR). See SDS (available at [www.handifoam.com](http://www.handifoam.com)).
2. For best results, use when material is between 70–85°F (21–29°C), see TDS for formula specific temperature recommendations. Condition cylinders at ambient conditions to bring chemical that is too warm or too cold to optimal chemical temperature for several days (see figure 1 on [page 3](#)). Clean grease, oil, dirt and water off surfaces to be foamed.
3. Release the trigger safety. When pulling the trigger for the first time, it is recommended to trigger the gun only 1/2 to 3/4 open until the desired output and spray pattern is achieved.
4. Conduct ratio shots (see step 3) before initial daily spray and every two hours during the job. Maintain accurate records utilizing Daily Spray Log worksheet – key to troubleshooting and tech service.
5. Attach nozzle to the dispensing unit; use of enclosed petroleum jelly on the face of the dispensing unit before attaching nozzle will help prevent contamination by cured foam or chemical and help keep the sealing ports clean. (Detailed instructions for attaching nozzle shown in step 4.)
6. Perform tack-free test (see step 6).
7. When spraying the dispensing unit for the first time and with each new system, dispense foam by squeezing the trigger **only 1/2 to 3/4 open until desired output is achieved**. This controllable metering is a major advantage of the dispensing unit, allowing the user complete control of the flow rate that best suits the application.
8. Once the trigger is released it **MUST BE REACTIVATED WITHIN 30 SECONDS** or a new nozzle must be installed. Failure to do this could result in chemical leakage, spills or splashes which can ruin the dispensing unit and/or hoses.

**IMPORTANT:** After releasing trigger, activate the trigger safety to prevent accidental discharge.

## IMPORTANT APPLICATION NOTES

1. See product Technical Data Sheets for product-specific yields. Refill system yields are measured in board feet. A board foot is a square foot with 1" thickness (12" x 12" x 1"). Actual yields will vary depending on factors such as ambient conditions, application technique, foam density, etc.
2. Suitability of this product for any particular purpose, such as achieving desired structural properties, performance specifications or application requirements must be determined by the end user, prior to use. Verification that product is properly applied and installed is also the responsibility of the end user.
3. It is strongly recommended that in all applications the foam be protected by approved facings or coatings.
4. Take care when applying excessive layers at one time because of exothermic heat generation. For thickness greater than 10-12" (25-30 cm) apply foam in multiple layers, allowing heat to dissipate between applications.

## STEP 8: CHANGING CYLINDERS

Using the Pressure Test Gauge, open the valve to reduce the pressure in the cylinder to 75 to 100 psi before attaching a new set of cylinders.

1. Completely close all valves on both the A-cylinder and B-cylinder:
  - Magnum Heated Hose: close valves #8, #7, #6, #5 and #4
  - 100' Gun Hose Assembly (non-heated): close valves #5 and #4.
2. Turn the regulator knobs on the Nitrogen Regulator (#1) counter-clockwise until they are free-spinning.
3. Remove the A-Side Red Nitrogen Hose with Coupling (#2) from the Nitrogen On/Off Valve (#4).
4. Remove the B-Side Nitrogen Hose with Coupling (#3) from the Nitrogen On/Off Valve (#4).
5. Place a paper towel under both Cylinder Outlet On/Off Valves (#5) and remove the A-Side On/Off Valve, Cylinder to Hose Filter With Temperature Gauge Assembly (#6) and the B-Side On/Off Valve, Cylinder to Hose Filter With Temperature Gauge Assembly (#7). Be prepared as some chemical will dispense from the cylinder-to-hose filter assembly (spray with HandiFoam Cleaner as needed). The paper towel will help catch this chemical and reduce some of the mess.
6. Refer to steps 1 – 7 above for proper setup and startup procedures.
7. See "Returning Cylinders" on how to prepare the cylinders for being returned to ICP.

**NOTE:** Always change out both A and B-cylinders, even if one cylinder has not completely emptied.

## TROUBLESHOOTING GUIDE

**Equivalent flow of both A-component and B-component is required with all two-component polyurethane systems in order to obtain proper performance, curing and optimum yields. For any technical service, contact ICP with a completed Daily Spray Log (A18013), Magnum Heated Hose serial number (if applicable), cylinder serial numbers, product name and description.**

### PROBLEMS

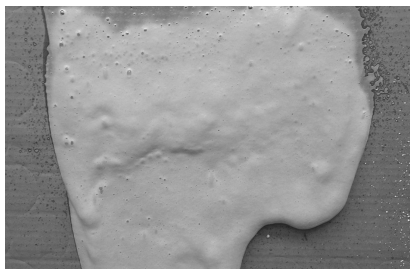
- **Dark crunchy foam** – This is a sign that the foam has become A-rich. The system is off-ratio causing more of the A-chemical to be sprayed than the B-chemical.
- **Foam shrinkage within 24 hours** – This is a sign that the foam may have been sprayed off-ratio and is B-rich. Other reasons for shrinkage include substrates that are too hot, cold or wet.
- **White spongy foam** – This is a sign that the foam has become B-rich. The system is off-ratio causing more of the B-chemical to be sprayed than the A-chemical.
- **Sputtering from nozzle** – This is a sign of empty cylinders, clogged nozzle, lack of nitrogen or a blockage in the system.
- **Lack of expansion in sprayed foam** – This problem could be associated with improper process (core) chemical temperatures, clogged nozzles or spraying technique.

### SOLUTIONS

- **STOP SPRAYING.**
- Remove nozzle and spray chemical into a plastic garbage bag. Check to see that both chemicals are being dispensed from the Handi-Gun® or Handi-Gun II™ in approximately equal streams. Perform a ratio test (see step 3).
- Make sure all valves from the cylinder to the Handi-Gun are open.
- Check the process (core) chemical temperature using the in-line temperature gauge.
- Check cylinder pressures. If the nitrogen bottle is empty, then the pressures are not constantly maintained throughout spraying and can cause off-ratio foam.
- Replace nozzle. If the nozzle has become clogged, the foam may become off-ratio.
- Make sure cylinders are not empty and all valves are open. Rock cylinders back and forth to determine that they contain chemical.
- When spraying foam, allow a minimum of 15 minutes before applying more foam over freshly sprayed foam. Spray in layers of 1–2" (2.5–5.1 cm) thick with each application. Trying to apply more than 2" (5.1 cm) in a single spray will pack the foam and may result in lower expansion and chemical yields.

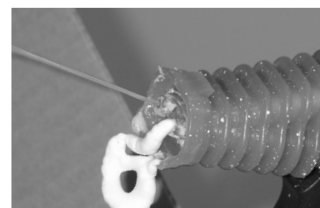
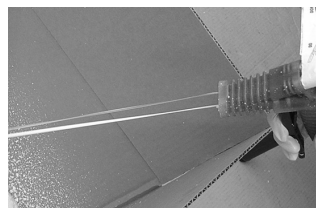
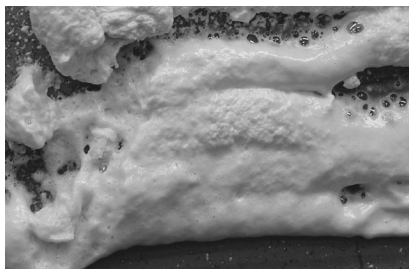
### "A-RICH" FOAM:

Crunchy, friable, slow or non curing.  
Darker brown in color.



### "B-RICH" FOAM:

Softer, white colored foam, with shrinkage.



With the nozzle removed, check that both chemicals flow with equivalent force.

Partial or complete blockage of one chemical port will result in off-ratio foam.

\*Handi-Gun® being shown for reference only.

## STEP 9: DAILY SHUTDOWN FOR ALL REFILLABLE SYSTEMS

- LEAVE CHEMICAL IN HOSE! DO NOT SPRAY AFTER SHUTTING OFF CHEMICAL SUPPLY.
- Engage the Handi-Gun® Trigger Safety. The Handi-Gun IITM Trigger Safety is automatically engaged when trigger is released.
- Clean face of Handi-Gun or Handi-Gun II; apply petroleum jelly to gun face. A used nozzle must be placed onto the Handi-Gun and Handi-Gun II in order to keep the outlet ports clean and free from any dust, dirt or chemical that can affect the proper sealing of the nozzle.
- Close all the On/Off valves from the gun hose assembly to the cylinders:
  - Magnum Heated Hose: close valves #8, #7, #6, #5 and #4
  - 100' Gun Hose Assembly (non-heated): close valves #5 and #4.
- Turn off the main valve (clockwise) on the nitrogen bottle.
- Turn both regulator knobs counter-clockwise until they spin freely. Do not overturn the knobs or they may come loose from the regulator.
- Unplug Magnum hose from power supply (If applicable).
- If the nitrogen cylinder is to be transported then the nitrogen regulator (#1) MUST be removed from the nitrogen cylinder and the cap for the nitrogen bottle replaced.

**IMPORTANT:** Polyurethane hoses and guns are not intended to be stored for long periods of time while charged with chemical; therefore fresh chemical must be dispensed through the hoses every 7-10 days to prevent loss of performance.

## CYLINDER STORAGE AND REUSE

- Proper chemical temperature is CRITICAL to the performance of any low pressure polyurethane foam system.
- A temperature controlled hot box or heat blanket is recommended for applications in order to store the refill system at a consistent, controlled temperature prior to and during use. An acceptable storage hot box is nothing more than a small room that is large enough to hold the system(s) being used or conditioned and is sufficiently insulated and heated to maintain a consistent temperature of 80°F (27°C).
- Condition cylinders at ambient conditions to bring chemical that is too warm or too cold to optimal chemical temperature for several days (see figure 1 on page 3).
- NEVER store cylinders above 90°F (32°C) or below 60°F (16°C).
- Anytime you reuse, before attaching pressure test gauge: Hook up nitrogen lines and add a small amount of nitrogen to cylinders. This will avoid any accidental spill of chemical caught in the nitrogen inlet.

## RETURNING CYLINDERS

- THESE CYLINDERS ARE RETURNABLE.
- The refillable cylinders must be shipped back to ICP to be cleaned, refilled, and redistributed. Return instructions are included in or on the A-side cylinder collar.
- Return Bill of Lading is located in the Shipping Packet (#11, #8) inside A-side cylinder collar for Systems 17 & up or on the side of the A-side cylinder on System 8's.
- For Systems 17 and 27, keep cardboard sleeves on the cylinders for cylinder return and DO NOT palletize cylinders.
- For System 8, keep cardboard shipper boxes on the cylinders for cylinder return and return with pallet.
- Keep cylinders upright at all times.
- In preparing the bill of lading, please complete the following information: date, shipper's name and address, number of cylinders, total weight (below), shipper's signature and cylinder serial numbers.
- Replace the PLUG and CAP on the proper cylinder outlet (#5). NOTE: You can find an additional cap and plug located in the Shipping Packet (#11, #8).
- Using the Pressure Test Gauge (see image on the right), open the valve to reduce the pressure in the cylinder to 75 to 100 psi.
- Call ICP's Customer Care at 1-330-753-4585, 1-800-321-5585 or [customercare@icpgroup.com](mailto:customercare@icpgroup.com) for preferred return carrier and contact information.

Empty Refill Cylinder Weight		
System Size	App. lbs/cylinder	App. kg/cylinder
8 gallons & under	23	10
17 - 27 gallons	120	54
60 gallons & up	360	163



## DISPOSAL OF GUN HOSE ASSEMBLY

1. Close the A-side and B-side Cylinder Outlet On/Off Valves (#5).
2. Close both of the on/off valves on the Handi-Gun® (#9, #6) or Handi-Gun IITM (#13, #14, #6) Hose Assembly .
3. Trigger the gun into an empty box or garbage bag being cautious because chemical is still under pressure.
4. After chemical stops dispensing from the gun, open the on/off valves on the Handi-Gun (#8) or Handi-Gun II (#8) Hose Assembly and allow any remaining chemical to dispense into the box or bag as well.
5. Agitate the liquid chemical until a low grade foam develops.
6. Remove the Handi-Gun (#9, #6) or Handi-Gun II (#13, #14, #6) Hose Assembly from the Cylinder Outlet On/Off Valves (#5).
7. Dispose of box or bag along with the Handi-Gun (#9, #6) or Handi-Gun II (#13, #14, #6) Hose Assembly.

# SPECIAL INSTRUCTIONS FOR HIGH FLOW TECHNOLOGY® PRODUCTS



**For products powered by High Flow Technology, review the information below for special instructions that must be taken to ensure proper chemical flow.**

HandiFoam® pour-in-place foams are designed for unique applications where a slower curing foam is desired. This may involve additional product usage considerations, such as mold filling and shot time requirements. These are general recommendations and guidelines to assist in the use of the product, but do not describe the procedures to be used in any specific application. Qualification of these products in any specific application must be approved, verified and controlled by the end-user.



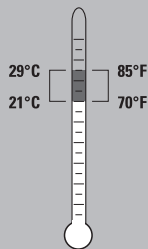
Wear protective glasses with sideshields or goggles, nitrile gloves, and clothing that protects against dermal exposure. Recommend using in a well ventilated area with certified respiratory protection or a powered air purifying respirator (PAPR). See SDS (available at [www.handifoam.com](http://www.handifoam.com)).

## CYLINDER SHAKING

Each High Flow Technology product must be shaken for AT LEAST 2 MINUTES at the beginning of each day of use to provide the proper mixture of chemicals.

## TEMPERATURE

Products must be conditioned between 70–85°F (21–29°C) for a minimum of 1-2 days prior to spraying. See TDS for formula specific temperature recommendations.



## DAILY SPRAY LOG

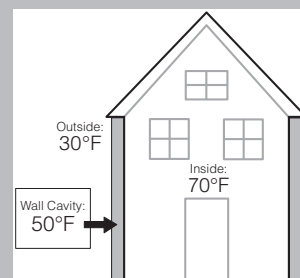
- Conduct ratio shots before initial daily spray and every two hours during the job.
- Maintain accurate records utilizing the Daily Spray Log worksheet, which is a requirement for troubleshooting and technical service.

## SPECIAL CONSIDERATIONS

- Small cavities or complex spaces may require more fill holes to complete the job.
- Determine what is in the wall cavity using a borescope or infrared camera.
- Do a test cavity to determine how many trigger seconds each cavity requires to be filled.
- Fill each cavity for 50% of the calculated trigger seconds and let the foam rise and expand. Then, fill for the remaining seconds. Top off if needed.

## WALL CAVITY TEMPERATURE

- The wall cavity temperature should be above 40°F (5°C) to install foam.
- Estimated wall cavity temperature is the average of the outside and interior temperature.
- Temperatures below 40°F (5°C) could affect bonding to the cavity walls.



## APPLICATION SHOT TIME

- **The term “shot time” refers to the length of time necessary to dispense the desired amount of foam into the cavity or mold fixture.**
- The shot time can be roughly estimated by first knowing the volume of the cavity (cavity size), and the desired in-place density of the foam.
- The following calculation shows how this information can be used to determine the approximate shot time in seconds.

**WEIGHT NEEDED = DESIRED DENSITY X CAVITY VOLUME**

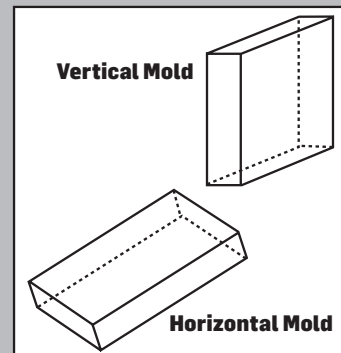
- The actual shot time will also depend on other factors such as chemical temperature, application temperature, amount of chemical remaining in the system, etc., and can best be determined by trial application.
- In all cases, it is recommended to use weight of dispensed foam rather than the output estimation charts as these are only guidelines and are less reliable than the use of a scale to measure actual weight dispensed.

# MOLD PRESSURE CONSIDERATIONS

- **Mold Pressure is difficult to predict; however, there will be mold pressure** exerted by any foam in nearly all applications. **Therefore, all molds need to be clamped or braced** in some way. The amount of clamping required is dependent on the application and the desired in-place density (the higher the density, the higher the pressure).
- In general, **the more foam that is put into the mold, the higher the mold pressure**, and subsequently, the stronger the fixturing that is required. Remember, all systems will develop mold pressure.
- Four major considerations which will affect mold pressure and how efficiently a mold is filled are application shot time, orientation and bracing, mold size and mold venting.

# MOLD SIZE, ORIENTATION AND MOLD VENTING

- Mold orientation refers to the position of the mold and the direction that the foam will be poured into and rise within the mold.
- There are two basic positions used to describe mold orientation; the first is horizontal pour, and the other is vertical pour. Vertical pour describes a panel that is longer in its height, or vertical direction, than its thickness (i.e. think of a door standing on edge where the foam would have to flow to the top to fill completely). A horizontal pour is oriented where the longest dimension are in the horizontal direction (i.e. the same door laying on a table with the thickness in the vertical direction).
- Most mold types, other than panels, will follow similar principles as this simple example. As a general rule, the foam does not have to rise against gravity as much when the mold is oriented horizontally. That makes this the preferred mold position in many applications because the foam will rise a shorter distance, the cell structure will then tend to be stronger, resulting in foam cells that are less elongated in the direction of rise.
- Cavity size and mold orientation are among the most important considerations to know when determining the specific requirements for applying foam in a “pour-in-place” application. Your best results, of course, are dependent on this and other factors mentioned, and can best be determined by trial application.
- Proper mold venting can reduce mold pressure and help keep densities lower by allowing the gases and excess foam to vent. Always provide sufficient air escape holes to allow the rising foam to push out any trapped gases as the mold is filled. As a general rule, venting should be provided in any location where expanding foam may form an air pocket.





# MOBILE MAGNUM SYSTEM HEAT WRAP

There is a risk of overheating if the wrap is overlapped, the thermostat is covered by parts of the wrap or if the thermostat is not exposed to the internal heating area for any reason. Follow these operating instructions to ensure proper and safe usage of this heat wrap.

## CONTENTS

- Vinyl covers with Velcro® closures
- Thermostat to regulate temperature
- Insulated hood
- Internal heating panels
- GFCI plug

## WRAP INSTALLATION TO CYLINDERS ON CART

- When using your Mobile Magnum Heated Wrap while the cylinders are on the cart, be sure to secure the wrap with the Velcro around the cart with the thermostat exposed to the internal heating area and cylinders.
- Plug in the GFCI plug so that the light illuminates and install the insulated hood so that it overlaps with the heat wrap.
- CAUTION: DO NOT overlap the heated wrap onto the thermostat.
  - This can lead to potential risk of over heating and does not allow the thermostat to regulate correctly.

**CORRECT**  
Thermostat exposed to heating area.



**INCORRECT**  
Thermostat will be covered by wrap, not exposed to cylinders.

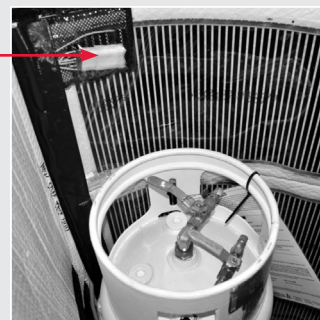


**Heat wrap shown for reference:**  
**Mobile Magnum™ Fitted Heat Wrap (F65221)**

## WRAP INSTALLATION TO CYLINDERS WITHOUT CART

- The Mobile Magnum Heated Wrap is able to store up to two (2) System 8 sets for conditioning chemicals.
- When using your Mobile Magnum Heated Wrap while the cylinders are off the cart, be sure to secure the wrap with the Velcro around the cylinders with the thermostat exposed to the internal heating area and not covered by the wrap.
- Plug in the GFCI plug so that the green light illuminates and install the insulated hood so that it overlaps with the heat wrap.
- There is a risk of overheating if the wrap is overlapped, the thermostat is covered by parts of the wrap or if the thermostat is not exposed to the internal heating area for any reason.
- Follow these operating instructions to ensure proper and safe usage of this heat wrap.

Thermostat must be exposed to heating area.

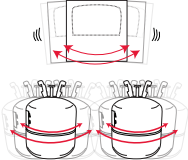








**CAUTION: DO NOT overlap the heated wrap onto the thermostat.**





# READ FIRST!

IDEAL CHEMICAL TEMPERATURE	SUBSTRATE APPLICATION TEMPERATURE	SHAKING REQUIREMENTS
<b>80°F</b> (27°C)	<b>40–100°F</b> (4–38°C)	<b>1–2 MINUTES</b> 
SDS, TDS AND OPERATING INSTRUCTIONS	SPECIAL RECOMMENDATIONS	PERSONAL PROTECTIVE EQUIPMENT
<p>Scan here to be directed to the SDS, TDS and Operating Instructions page available on the website.</p>  <p>www.handifoam.com</p>	<ul style="list-style-type: none"> <li>• Use only in a well ventilated area.</li> <li>• To ensure trouble free operations, change nozzle after 30 seconds of non-use.</li> <li>• Please read through the TDS, SDS and Operating Instructions prior to use.</li> </ul>	<div> <div>  <p>Safety Glasses</p> </div> <div>  <p>Covers Skin</p> </div> <div>  <p>Nitrile Gloves</p> </div> <div>  <p>Respirator and/or Vapor Respirator OV/Pre-filter</p> </div> <div>  <p>Avoid Breathing Vapors Provide Good Ventilation</p> </div> </div>

For additional information refer to [www.handifoam.com](http://www.handifoam.com) • 330-753-4585

## CHEMICAL SPILLS

- If liquid spills from the A-component cylinder, provide ventilation and isolate the area. Wearing protective equipment, soak up the spill with an oil absorbent material such as vermiculite or sawdust. Place the material in an open container. Do not seal the container. Allow the loosely covered container to stand for several days before disposing in accordance with all applicable federal, state and local regulations consistent with good industrial practice.
- Decontaminate the waste and spill area with a solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in 90-95% water (5-10% sodium bicarbonate or baking soda may be substituted for bleach). Use 10 parts of solution for each part of spill and allow the decontaminating solution to react for several hours.
- If liquid spills from the B-component cylinder, soak up the spill with oil absorbent material and dispose of in accordance with all applicable federal, state and local regulations. Wash the spill area thoroughly with soap and water.
- Consult Safety Data Sheet (SDS), for accidental release measures and disposal considerations. In case of transportation emergency 24 hour day, contact **CHEMTREC 1 800.424.9300**.

## IN CASE OF FIRE

- Responder must wear full emergency equipment including self-contained breathing apparatus.
- Use dry chemical, carbon dioxide, foam or large amounts of water spray (do not use direct spray) to control fire.
- Use water spray to cool exposed containers and reduce risk of rupture.

## CYLINDER WARRANTY

**TO MAINTAIN WARRANTY, DO NOT MAKE ANY CHANGES OR ADJUSTMENTS TO THE CYLINDER OR CYLINDER COMPONENTS, INCLUDING PLUMBING.**

ICP Building Solutions Group warrants that the cylinder is fit to dispense ICP's foam products that are loaded into the cylinder by ICP Building Solutions Group. OTHER THAN THAT WARRANTY, ICP MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES AND ICP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. The sole remedy for any breach of warranty is replacement of the cylinder. ICP Building Solutions Group IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. The terms, conditions and warranties applicable to ICP Building Solutions Group dispensed from the cylinder are covered in other ICP Building Solutions Group documentation relating to that purchase. Buyer must not make any changes to the cylinder or the cylinder components, including plumbing. Any such change may produce dangerous results and cause damage or injury, including a loss of product stored in the cylinder. ICP Building Solutions Group is not responsible for damages or injuries resulting from any such changes. Those damages or injuries are Buyer's responsibility, and ICP Building Solutions Group may charge Buyer for the costs of any resulting cylinder damage or repairs. ICP Building Solutions Group also reserves the right to restrict future sales if the Buyer does not address safety concerns such as modified or missing plumbing, pressure relief valve activated or excessive cylinder pressure.

## HEATED HOSE (MAGNUM) WARRANTY

ICP Building Solutions Group makes no warranty regarding the hose. However, the hose Manufacturer warrants that the hose will be free from defects in materials and workmanship for a period of one year from the date of purchase. Manufacturer will repair or replace, as Manufacturer may elect, the hose or any component part found, upon inspection by Manufacturer, to be defective in material or workmanship during that period. This is the sole warranty remedy available to Buyer. This warranty applies only when the hose is installed, operated and maintained in accordance with training, operating instructions and user guidelines. Buyer must report any warranted defect to ICP Building Solutions Group in writing within 10 days of discovery, permit ICP Building Solutions Group and Manufacturer to inspect the defective part and, if requested by ICP Building Solutions Group or Manufacturer, ship the defective part at Buyer's cost, to Manufacturer or ICP Building Solutions Group. This warranty does not cover, and Manufacturer shall not be liable for, general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of component parts. Buyer's exclusive remedy as to any breach of warranty, negligence or other claim shall be limited to the repair or replacement of the equipment. Failure to strictly adhere to any recommended procedures will terminate the warranty. NEITHER ICP Building Solutions Group NOR MANUFACTURER WILL BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES RELATING DIRECTLY OR INDIRECTLY TO THE HOSE OR ITS USE. THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

## LIMITED WARRANTY

The Manufacturer warrants only that the product shall meet its specifications: this warranty is in lieu of all other written or unwritten, expressed or implied warranties and The Manufacturer expressly disclaims any warranty of merchantability, or fitness for a particular purpose. The buyer assumes all risks whatsoever as to the use of the material. Buyer's exclusive remedy as to any breach of warranty, negligence or other claim shall be limited to the replacement of the material. Failure to strictly adhere to any recommended procedures shall release the Manufacturer of all liability with respect to the materials of the use thereof. User of this product must determine suitability for any particular purpose, including, but not limited to, structural requirements, performance specifications and application requirements prior to installation and after product has been properly applied.

## DISCLAIMER

HandiFoam® products are composed of a diisocyanate, blowing agent, amine catalyst and polyol. Consult the product's SDS (available at [www.handifoam.com](http://www.handifoam.com)) for specific information. The urethane foam produced from these ingredients will support combustion and may present a fire hazard if exposed to a fire or excessive heat about 240°F (116°C). Wear protective glasses with side shields or goggles, nitrile gloves, and clothing that protects against dermal exposure. Recommend using in a well ventilated area with certified respiratory protection or a powered air purifying respirator (PAPR). See SDS (available at [www.handifoam.com](http://www.handifoam.com)) for specific information. For more information regarding a certified respiratory program please visit <http://www.cdc.gov/niosh/>. To view or receive a copy of ICP Building Solutions Group's respirator program, please contact ICP Building Solutions Group Customer Care at 1-800-321-5585. Personal Protective Equipment can be purchased through ICP Building Solutions Group distribution by purchasing the HandiFoam® Contractor Safety Kit (F65251). The Contractor Safety Kit includes: nitrile gloves, contractor safety glasses, and a NIOSH approved negative pressure half mask respirator. **FOR PROFESSIONAL USE ONLY.**

## WARNINGS

Consult the product's SDS (scan the QR code above or visit [www.handifoam.com](http://www.handifoam.com)) for specific information.

**WARNING:** Non-flammable compressed gas. Keep away from heat. Smoking and open flames, including hot work, should be prohibited in the vicinity of a foaming operation. Avoid contact with skin and eyes. May cause sensitization by inhalation and/or direct skin contact. Avoid prolonged or repeated breathing of vapor. **KEEP OUT OF REACH OF CHILDREN.**

**FIRST AID:** In any first aid case, **CONSULT A PHYSICIAN.** **EYES:** Flush with water for at least 15 minutes. **SKIN:** Remove contaminated clothing. Wash skin with plenty of soap and water. Cured foam must be removed manually. **INHALATION:** If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. **INGESTION:** Give large quantities of water. Do NOT induce vomiting. Contact a physician immediately in any first aid situation. Consult the product's SDS (available at [www.handifoam.com](http://www.handifoam.com)) for specific information.

## IMPORTANT

Always read all operating, application and safety instructions before using any products from ICP Building Solutions Group. Use in conformance with all local, state and federal regulations and safety requirements. Failure to strictly adhere to any recommended procedures and reasonable safety precautions shall release ICP Building Solutions Group of all liability with respect to the materials or the use thereof. For additional information and location of your nearest distributor, call ICP Building Solutions Group 330-753-4585.

**NOTE:** Physical properties shown are typical and are to serve only as a guide for engineering design. Results are obtained from specimens under ideal conditions and may vary upon use, temperature and ambient conditions. Right to change physical properties as a result of technical progress is reserved. This information supersedes all previously published data. Yields shown are optimum and will vary slightly depending on ambient conditions and particular application. Read all product directions and safety information before use. This product is organic, and therefore, is combustible. Consult local building codes for specific requirements regarding the use of cellular plastics or urethane foam in construction.