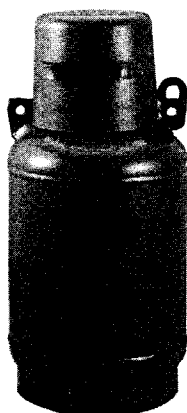




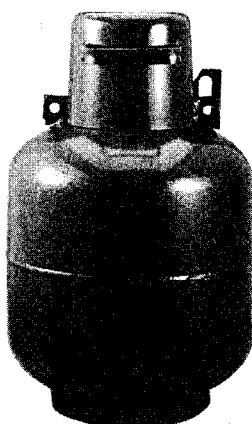
CAUTION! Due to the hazardous nature of many of the products packaged in the Kilo-Lab™ cylinders, all users must be fully qualified and experienced laboratory workers. Read this bulletin carefully and completely before starting any actual laboratory/production work.

Technical experts are available by telephone to answer your questions regarding the proper handling of products in Kilo-Lab™ cylinders. Contact Aldrich at 1-800-448-0471 for assistance.

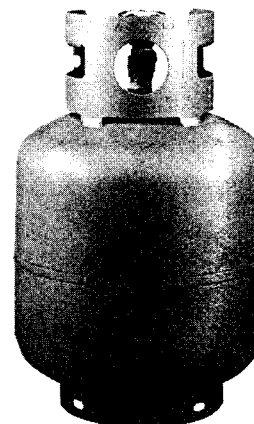
Kilo-Lab™ Cylinders



8 Liter carbon steel
Actual color is blue



18 Liter carbon steel
Actual color is blue



18 Liter stainless steel
Actual color is metallic

INTRODUCTION

The Kilo-Lab™ cylinder packaging system and transfer procedure provides a safe and convenient method for storing and dispensing laboratory and development scale quantities of high-hazard and air-sensitive liquids. The Kilo-Lab™ cylinder system and transfer procedure provides for minimal exposure of product to personnel and for no exposure of product to air.

A cylinder deposit is required upon purchase of product. The deposit amount will be refunded upon return of the cylinder in good condition within three to six months depending upon the cylinder type. Each cylinder is stamped with a unique serial number, and a detailed history is maintained for each one. The serial number will identify the source of the returned cylinder and initiate the deposit refund. Prior approval for the return of empty cylinders is not necessary.

Users must be aware of the very hazardous nature of many of the products packaged in Kilo-Lab™ cylinders. The Material Safety Data Sheet (MSDS) for the product must be read and understood. In general, exercise caution to prevent inhalation of vapors or direct contact with the skin. Operators should wear appropriate clothing with long sleeves, chemical-resistant

gloves, goggles and full faceshield. Fire retardant clothing is recommended when handling pyrophoric products. Additional personal protective equipment must be used as required.

In case of contact, immediately flush eyes and skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek medical attention promptly.

During all nitrogen-pressure transfers, the flowing liquid can generate a static charge. Therefore, the cylinder and receiver must be connected to a suitable ground.

TRANSFER PROCEDURE

CAUTION! Due to the hazardous nature of many of the products contained in Kilo-Lab™ cylinders, appropriate personal protective equipment must be worn throughout the entire procedure. Read all the steps before starting, including those for clean up. Do not work alone. Only technically qualified individuals should perform this procedure.

LIQUID TRANSFER PROCEDURE FOR KILO-LAB™ CYLINDERS

Kilo-Lab™ cylinders come equipped with either a CGA-510 or a CGA-350 outlet valve (Refer to Figures 2 and 3). The CGA-510 is brass with female threads and the CGA-350 is stainless steel with male threads. See Table 1 for Kilo-Lab™ cylinder specifications. Aldrich will select the cylinder and outlet valve appropriate for its contents.

Before proceeding look at the cylinder to determine which valve type has been selected. Then obtain the appropriate Transfer-Line and other parts based on the following considerations.

For connecting to the process line/vessel with needle and rubber septa:

- a) Transfer-Line with ferrule lock end, for connecting to the CGA-510 valve (Figure 4).
- b) Transfer-Line with ferrule lock end, for connecting to the CGA-350 valve (Figure 5).
- c) Transfer needle (Refer to Table 2)
- d) Rubber septa and septum-inlet adapters (Refer to Table 2).
- e) Needle Storage Tube (Refer to Table 2).

NOTE: The process line/vessel must be flushed with nitrogen and connected to a mineral oil bubbler prior to connection to the Liquid-Transfer-Line.

Consult Aldrich Technical Information Bulletin No. AL-134 (Handling Air-Sensitive Reagents) for a complete description of the use of septa and needles for handling air-sensitive reagents.

For hard connection to the process line/vessel:

- f) Transfer-Line with 1/4-in. FNPT end, for connecting to the CGA-510 valve (Figure 6).
- g) Transfer-Line with 1/4-in. FNPT end, for connecting to the CGA-350 valve (Figure 7).
- h) Adapters to connect 1/4-inch FNPT fitting at end of the transfer line to the process line/vessel (Refer to Table 3).

NOTE: Connection to the process line/vessel should be determined before beginning the transfer procedure. See STEP 14.

- The process line/vessel to which the transfer line is attached should have a valve in-line in the closed position. The process system must be previously flushed with nitrogen and vented appropriately.
- Should the liquid from the cylinder be introduced to the process system at a level below that in the process vessel, a back flow prevention device is recommended. Suck-back into the cylinder may result in a serious incident.

Parts needed regardless of valve type (Refer to Table 4).

- i) Nitrogen inlet adapter for connecting the nitrogen supply hose to the cylinder.
- j) Teflon® sealing tape. Use on all pipe threads.
- k) Grounding strap with alligator clips.
- l) SNOOP gas-leak detector.
- m) Mineral spirits to aid in clean up after transferring pyrophoric material.
- n) 3/8-inch hex wrench for removing the plug from the CGA-510 outlet valve.
- o) High purity grade nitrogen from two separate high purity pressure regulators and flexible tubing suitable for nitrogen supply.

Transfer lines can be modified for multiple uses. One can change the cylinder-outlet-adapter (Refer to Figures 8 and 9) on the nitrogen-flushing tee to match the corresponding outlet valve. Also, a hard connection system can be converted into a needle and septa system by adding a 1/4-inch MNPT to 1/8-inch ferrule lock fitting to the auxiliary ball valve (Refer to Table 2).

REFER TO FIGURE 10 ON PAGE 8 TO FOLLOW THIS PROCEDURE.

Step 1

Read caution statements on the product label. If 'REFRIGERATE' is stated, store under refrigeration for several hours before proceeding to reduce any excessive pressure in the cylinder.

Step 2

Place the cylinder in a secure and upright position in a safe and well-ventilated area. If the product is to be delivered by weight, secure the cylinder on a floor scale. Ground the cylinder using an appropriate grounding strap.

Step 3

Cylinder valves are either protected with a cover or a collar. Remove the cover if necessary to access the valves.

Step 4

Remove the tamper-evident seal from valve handle B. Make sure the liquid outlet valve A is closed by turning handle B clockwise.

Step 5

Make sure the nitrogen-inlet/vent valve D is closed by turning handle E clockwise.

Step 6

Carefully remove cap F from the nitrogen-inlet/vent valve D. Be sure to save this cap for later replacement.

Step 7

Connect nitrogen-inlet adapter G to a nitrogen source using flexible tubing. Secure the tubing in place. Pressure-regulate the nitrogen at 10 psig.

NOTE: High purity grade nitrogen from a high purity regulator is recommended.

Step 8

Adjust the nitrogen source to give a slow stream exiting from nitrogen-inlet adapter G and connect it to the nitrogen-inlet/vent valve D. Tighten with a wrench and check the connections using SNOOP gas-leak detector to ensure no leaks.

Step 9

Close nitrogen-flushing valve K by turning handle L clockwise until it is perpendicular to hose fitting M.

Step 10

Connect a second nitrogen source using flexible tubing to the hose fitting M on valve K. Secure the tubing in place. Pressure-regulate the nitrogen to 3-4 psig.

Step 11

Open auxiliary valve N (if closed) by turning handle O counter-clockwise until it is parallel to the valve body.

NOTE: Auxiliary valve N is provided as a back up method of stopping the material flow in an emergency, and for closing the line at the end of the procedure. Otherwise use the methods given in this procedure to control the flow rate.

Step 12

Open nitrogen-flushing valve K and adjust the nitrogen source to give a steady stream of nitrogen exiting from the open ends of the transfer line. Allow the transfer line to flush while proceeding.

Step 13

Slowly and carefully remove the cap, or plug, C from the liquid outlet valve A. The CGA-510 valve has a plug for female left-handed threads and the CGA-350 valve has a cap for male left-handed threads. Turn either clockwise to remove.

CAUTION! Occasionally there may be liquid or solid under the cap, and some fuming may occur with more reactive reagents. Remove any solid from the valve opening by washing with a stream of odorless mineral spirits from a wash bottle and use a wire brush to clean the inside threads, if necessary. Avoid thread damage. Wear appropriate protective equipment.

Step 14

IF THE CONNECTION TO THE PROCESS LINE/VESSEL IS TO BE WITH A NEEDLE AND RUBBER SEPTA, FOLLOW STEPS 15 THROUGH 31. IF THE CONNECTION TO THE PROCESS LINE/VESSEL IS TO BE HARD, FOLLOW STEPS 32 THROUGH 47.

Step 15 (For needle connection)

Connect a needle Q to the ferrule lock P at the end of the transfer line by removing the nut, sliding it up the needle shaft and tightening it finger tight. Then tighten the nut with a wrench an additional 1-1/4 turns. Hold body with a second wrench to prevent it from turning.

NOTE: It is helpful to mark the nut to facilitate counting the number of turns.

Step 16

Place a rubber septum R on one end of a needle storage tube S and wire it in place. Support the tube vertically in a fume hood or other protected location with the septum on the upper end.

Step 17

Insert the needle Q into the septum R of the needle storage tube S and allow the transfer line, needle and storage tube to

AL-149 Kilo-Lab™ Cylinder Packaging System and Transfer Procedure

flush for several more minutes.

Step 18

Cap the open end of the storage tube with another septum and wire in place.

Step 19

With nitrogen still flushing from adapter H, connect it to the liquid outlet valve A and tighten with a wrench (NOTE: left-hand threads turn counter-clockwise to install).

NOTE: Connect so that the nitrogen-flushing valve K is pointing up. Avoid kinking the transfer line, which may damage it and result in potential leaks.

Step 20

Increase the pressure to the nitrogen-inlet adapter M on the transfer line to 10 psig.

Step 21

Check all connections in the entire system with SNOOP to ensure no leaks.

Step 22

Reduce the pressure to fitting M on the transfer line back to 3-4 psig.

Step 23

Close nitrogen-flushing valve K.

Step 24

Remove needle Q from the needle storage tube S and insert it into the septum on the septum-inlet adapter, which is on a clean, dry, nitrogen-flushed process vessel. Push the needle into the system until the end is beyond any fitting between the process vessel and adapter.

NOTE: The process vessel should have been flushed previously with nitrogen and connected to a mineral oil bubbler.

Step 25

Cautiously open outlet valve A by turning handle B counter-clockwise and watch the end of the needle and the level of mineral oil in the exit bubbler from the apparatus. If liquid flow is not observed from the needle, or if the oil level rises (suck-back) in the center tube of the mineral oil bubbler, immediately turn off valve A and proceed to Step 26. If flow is noted, go to Step 27.

Step 26

Open inlet valve D by turning handle E counter-clockwise. This will pressurize the vapor space in the cylinder to 10 psig. Repeat Step 25.

Step 27

When the desired amount of liquid has been transferred, close outlet valve A and auxiliary valve N; then close nitrogen-inlet valve D (if open). During the transfer, inlet valve D can be opened and closed as needed to maintain a reasonable flow of product from the needle.

Step 28

The needle can now be removed from the septum on the process vessel and inserted into a septum on another process vessel or it can be placed in the needle storage tube for short-term storage (less than a few hours). For longer storage, or when the cylinder is empty, material should be flushed from the transfer line as described in Steps 29 and 30.

NOTE: If a pyrophoric liquid is being transferred, flush the line with nitrogen as described in Steps 29 and 30 before removing the needle even when transferring to another process vessel or the needle storage tube. If this is not done, liquid may drip from the needle when it is removed which can sometimes result in a fire.

Step 29

With the needle still in the process vessel or inserted in a septum on a suitable receiver, open auxiliary valve N and nitrogen-flushing valve K to flush residual material from the transfer line. Flush the line for 5-10 minutes while lifting the transfer line to prevent liquid from remaining in low areas.

Step 30

Close nitrogen-flushing valve K followed by auxiliary valve N. Remove the needle from the process vessel/receiver, and place it into the needle storage tube (or another process vessel if transfer is to continue).

Step 31

Continue to CLEAN-UP, Step 47

Step 32 (For hard connection)

While the transfer line is being flushed, connect outlet adapter H to the liquid outlet valve A and tighten with a wrench (NOTE: left handed threads turn counter-clockwise to install).

NOTE: Connect so that nitrogen-flushing valve is pointing up. Avoid kinking the transfer line, which may damage it and result in potential leaks.

Step 33

Allow the transfer line to flush with nitrogen for 15 minutes.

AL-149 Kilo-Lab™ Cylinder Packaging System and Transfer Procedure

Step 34

Check to ensure that the valve in-line to the process line/vessel is closed.

Step 35

With nitrogen still flushing through the transfer line, connect it to your process line/vessel.

Step 36

Check to ensure that auxiliary valve N is open (handle O is parallel to valve body).

Step 37

Increase the pressure to fitting K on the transfer line to 10 psig.

Step 38

Check all connections in the entire transfer line with SNOOP to ensure no leaks.

Step 39

Reduce the pressure to fitting K on the transfer line back to 3-4 psig.

Step 40

Close nitrogen-flushing valve K. The transfer line is now ready for the liquid transfer.

Step 41

Verify that the process system has been prepared for the transfer and then open the valve in-line to the process line/vessel.

Step 42

Cautiously open liquid outlet valve A by turning the handle B counter-clockwise. Liquid should begin to flow from the cylinder through the transfer line and into the process system. Flow can be detected by visual inspection through a sight glass on the process system or by weight loss from the cylinder if on a floor scale. If flow is not detected or if the

flow is slow, continue to *Step 43*. Otherwise, go to *Step 44*.

CAUTION! Wear appropriate personal protective equipment throughout the entire transfer procedure.

Step 43

Open nitrogen inlet/vent valve D by turning handle E counter-clockwise. This will pressurize the vapor space in the cylinder with nitrogen to 10 psig. During the transfer, inlet valve D can be opened and closed as needed to maintain a reasonable flow of product.

Step 44

Continue the transfer as appropriate. If the flow rate becomes slower than desired, go to *Step 43*. When the desired amount of liquid has been transferred, close liquid-outlet valve A by turning handle B clockwise and then close the nitrogen-inlet valve D (if open) by turning handle E clockwise.

Step 45

Open flushing valve K to flush residual liquid from the transfer line and into the process system. Flush the line for 5-10 minutes while lifting the transfer line to prevent any liquid from remaining in low areas of the line.

Step 46

Close flushing valve K and then close auxiliary valve N. Then close the valve in-line to the process system.

Step 47

Continue to CLEAN-UP, *Step 48*.

Step 48

Verify that nitrogen-inlet valve D is closed and then remove nitrogen-inlet adapter G. Replace cap F and tighten with a wrench.

NOTE: Wrap the threads on the nitrogen-inlet valve with Teflon® tape before replacing cap F.

CLEAN-UP

CAUTION! Due to the hazardous nature of many products contained in Kilo-Lab™ cylinders, appropriate personal protective equipment must be worn throughout the entire transfer procedure, including clean up.

Step 49

Verify that nitrogen-flushing valve K and auxiliary valve N are closed and then remove the nitrogen line attached to nitrogen-inlet adapter M.

Step 50

Verify that liquid outlet valve A is closed. If the connection to the process line/vessel was with a needle, remove the needle storage tube, still holding the needle, from its support. If the connection was hard, disconnect the end of the transfer line from the process line/vessel. Immediately cap both the open end of the transfer line and the open

connection to the process line/vessel. (Refer to Table 3 for transfer line caps)

CAUTION! If the reagent is highly reactive with air, some fuming may result. It is necessary to cap the open ends immediately to prevent a fire. Be sure to take the appropriate precautionary measures when cleaning the process line/vessel system. Wear personal protective equipment. Fire retardant clothing is recommended when handling pyrophoric materials.

Step 51

If the reagent in the cylinder is pyrophoric or water-reactive, carefully remove the cylinder with attached transfer apparatus to a safe location, preferably outside, away from all flammable or combustible materials.

Step 52

Cautiously remove the liquid-outlet adapter H from outlet valve A. Turn clockwise.

CAUTION! A small amount of liquid may remain behind in the valve opening. If the reagent is highly reactive with air, a small fire of short duration or fuming may result.

Step 53

If the reagent is pyrophoric or water-reactive, place the transfer line in an empty metal tub and carry to a safe distance from the cylinder, preferably outside, away from other flammables/combustibles. If the reagent is not pyrophoric or water-reactive, move the transfer line to a well-ventilated area.

NOTE: The transfer line should be cleaned as soon as possible after it is removed from the cylinder. If this is not done, partially hydrolyzed material will often plug the ends of the line while the inner material remains active. This can cause problems when the transfer line is eventually cleaned.

Step 54

If the reagent is pyrophoric or water-reactive, keep the transfer line outside. Remove the needle storage tube or cap from the end of the transfer line, open nitrogen-flushing-valve K and auxiliary valve N. Continue to *Step 55*. If the reagent is not pyrophoric or water-reactive, clean the transfer line following normal procedures for process equipment. Work in a well-ventilated area using appropriate personal protective equipment.

Step 55

While still outdoors, rinse the transfer line with a stream of odorless mineral spirits into an empty, dry metal bucket. Open and close the valves several times during rinsing.

CAUTION! If the product is pyrophoric, this sometimes results in fire.

Step 56

After the rinse with odorless mineral spirits, flush the transfer line with water, dilute acid (if needed to dissolve solids formed on hydrolysis), water and finally methanol or acetone. Open and close the valves several times during rinsing.

CAUTION! If the product is pyrophoric, this sometimes results in fire.

NOTE: Be sure water contacts all surfaces of the transfer line to ensure complete hydrolysis of reactive material. Operate all valves on the transfer line while running water through the valves to ensure complete hydrolysis within the valve housing. After cautiously rinsing the transfer line with water, it is recommended to completely submerge the equipment in water.

Step 57

The transfer line can be brought inside for a final clean up following normal procedures for process equipment.

Step 58

Verify that all rinses in the bucket(s) have been completely hydrolyzed before following the appropriate disposal procedures.

Step 59

Return to the cylinder, and if no fire is present, rinse the inside of the valve opening with a stream of odorless mineral spirits from a wash bottle. Clean the threads if necessary using a small wire brush to remove any solid.

NOTE: Do not open or remove valves while cleaning. Do not clean the inside of the cylinder.

Step 60

If necessary, clean the threads on the cap, or plug C, and replace on outlet valve A. Turn counter-clockwise. Tighten with a wrench.

Step 61

Verify that all valves on the cylinder are closed and that all caps or plugs are in place and tightened. Remove any chemical residue from the top and sides of the cylinder. Close the protective cover and secure it in place (blue colored cylinders only).

NOTE: Do not over tighten caps or plugs. Do not attempt to clean the inside of the cylinder. The cylinder is returned with product residue.

Step 62

The cylinder can now be returned to storage or shipped back to Aldrich. See the storage and/or cylinder return section(s) in this bulletin for details.

STORAGE

Cylinders should be stored upright under about 5 psig nitrogen pressure in a well-ventilated area out of direct sunlight. Refrigerate if so stated on the product label.

All valves should be closed and capped or plugged. Blue colored cylinders should have protective covers closed and secured. Aldrich product and hazard labels should not be removed. Please do not mark directly on or place additional labels on the cylinders; use tags instead to add user information such as 'Empty' or 'In Use'.

CYLINDER RETURN

To return cylinders to Aldrich, the cylinder must be empty (except for residual product) with all valves in the closed position and all valves capped or plugged. A waste disposal charge may be assessed for returned product. Remove any residual chemical from the outside of the cylinder. If the cylinder was delivered with a cover (blue colored carbon steel version), replace it securely. Empty cylinders contain product residue that is fully regulated as hazardous material and must be shipped in accordance with all applicable shipping regulations.

Return empty cylinders to:

Aldrich Chemical Co.

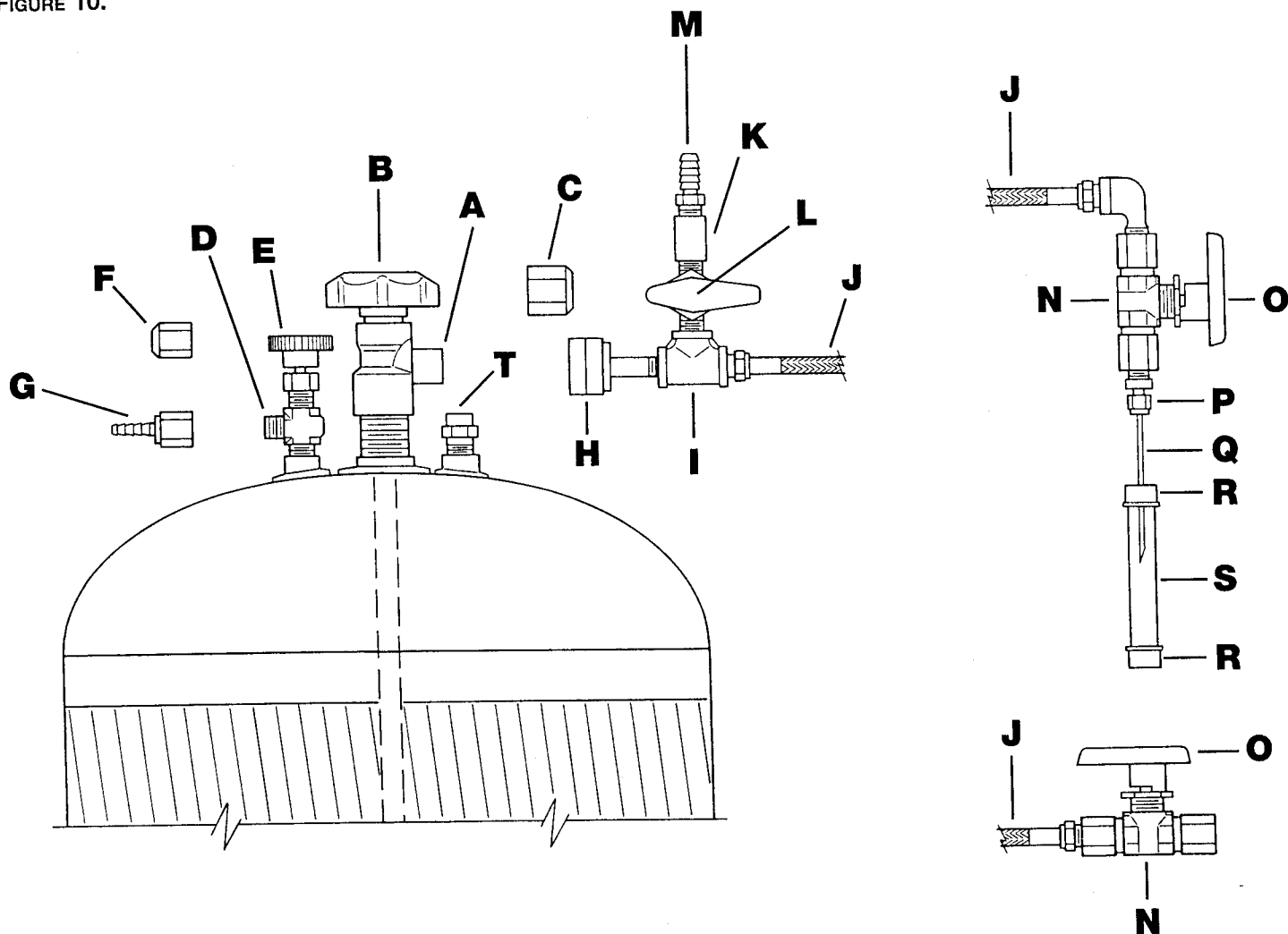
5485 County Road V

Sheboygan Falls, WI. 53085-2814

Cylinders must be returned in good condition within the specified period to receive a full credit of the deposit amount. Please contact our Customer Service department at 1-800-231-8327 with any questions regarding the return of Kilo-Lab™ cylinders.

AL-149 Kilo-Lab™ Cylinder Packaging System and Transfer Procedure

FIGURE 10.



| Legend | |
|--|--|
| A: Outlet valve, CGA-510 or CGA-350 | K: Nitrogen-flushing valve |
| B: Outlet valve handle | L: Nitrogen-flushing valve handle |
| C: Outlet valve plug (CGA-510) or cap (CGA-350) | M: Nitrogen-inlet adapter |
| D: Nitrogen-inlet valve | N: Auxiliary ball valve |
| E: Nitrogen-inlet valve handle | O: Auxiliary ball valve handle |
| F: Nitrogen-inlet valve cap | P: 1/8-inch ferrule lock fitting |
| G: Nitrogen-inlet adapter | Q: Transfer needle |
| H: Outlet adapter | R: Rubber septa |
| I: Nitrogen-flushing tee | S: Needle storage tube |
| J: Teflon hose with stainless steel overbraid, 1/4-inch I.D., ca. 4 foot length | T: Pressure relief valve |

AL-149 Kilo-Lab™ Cylinder Packaging System and Transfer Procedure

| Table 1 | SPECIFICATIONS FOR KILO-LAB™ CYLINDERS | | | | |
|---|--|-----------------|--------------|-----------------|---------------------|
| | CARBON STEEL | | | | STAINLESS STEEL |
| | 8 LITER | | 18 LITER | | 18 LITER |
| Material of construction | Carbon steel | | Carbon steel | | 316 stainless steel |
| DOT specification | 4BW240 | | 4BA240 | | E11394-225 |
| Maximum pressure (psig) | 240 | | 240 | | 225 |
| Cylinder test pressure (psig) | 480 | | 480 | | 450 |
| Shipping pressure, approx. (psig) | 5 | | 5 | | 5 |
| Suggested max. use pressure (psig) | 50 | | 50 | | 50 |
| Relief valve set point (psig) | 200 | | 200 | | 150 |
| Tare weight, with valves, approx. (Kg.) | 8 | | 10 | | 10 |
| Total capacity (L.) | 12 | | 21 | | 21 |
| Working capacity (L.) | 10 | | 18 | | 18 |
| Shipping cube (in.) | 9x9x19 | | 12x12x19 | | 12x12x19 |
| Diameter of top collar (in.) | 5-7/8 | | 5-7/8 | | 7-1/4 |
| Diameter of bottom foot ring (in.) | 8 | | 8 | | 8 |
| Diameter of container body (in.) | 8-7/8 | | 12 | | 12 |
| Recommended operating temperature | ambient | | ambient | | ambient |
| Maximum operating temperature (°C) | 150 | | 150 | | 150 |
| Dip Tube ID (in.) | 1/4 | | 1/4 | | 1/4 |
| Dip Tube length (in.) | 13-1/2 | | 13-1/2 | | 13-1/2 |
| Valve Fittings | Brass | Stainless Steel | Brass | Stainless Steel | Stainless Steel |
| Liquid outlet valve | CGA-510 | CGA-350 | CGA-510 | CGA-350 | CGA-350 |
| Nitrogen inlet valve | 1/4" NPT | 1/4" NPT | 1/4" NPT | 1/4" NPT | 1/4" NPT |

| Table 2 | PARTS FOR NEEDLE AND RUBBER SEPTA CONNECTION |
|----------------------------------|--|
| ALDRICH CATALOG NO. | DESCRIPTION |
| Z11,776-5 (LEGEND, Q) | TRANSFER NEEDLE, 11-GA. SS, 4 INCHES LONG, <i>(for connection to 1/8-inch ferrule lock)</i> |
| Z11,780-3 (LEGEND, Q) | TRANSFER NEEDLE, 11-GA. SS, 12 INCHES LONG <i>(for connection to 1/8-inch ferrule lock)</i> |
| USER SUPPLIED (LEGEND, S) | NEEDLE STORAGE TUBE, POLYETHYLENE TUBING, 5/8-INCH O.D., 1/2-INCH I.D., 5-6 INCHES LONG |
| Z10,075-7 (LEGEND, R) | SEPTUM FOR NEEDLE STORAGE TUBE |
| Z15,031-2 | SEPTUM-INLET ADAPTER, S.T. 24/40 JOINTS WITH SIDE ARM, 14 MM I.D. SEPTUM INLET |
| Z15,032-0 | SEPTUM-INLET ADAPTER, S.T. 24/40 JOINTS, 14 MM I.D. SEPTUM INLET |
| Z10,145-1 | SEPTA, WHITE RUBBER, FOR S.T. 24/40 JOINTS <i>(use with Septum-inlet adapter)</i> |
| Z12,439-7 | SEPTA, RED RUBBER, FOR S.T. 24/40 JOINTS <i>(use with Septum-inlet adapter)</i> |
| Z42,148-0 | PLUG FOR OPEN END OF 1/8-INCH FERRULE LOCK, SS <i>(for capping end of transfer line)</i> |
| Z42,151-0 | 1/4-INCH MNPT TO 1/8-INCH FERRULE LOCK <i>(for converting hard connection transfer-line to needle connection/rubber septa line)</i> |

Note: The term "ferrule lock" refers to the compression side of a tube fitting.

| Table 3 | PARTS FOR HARD CONNECTION |
|---------------------|---|
| ALDRICH CATALOG NO. | DESCRIPTION |
| Z25,146-1 | MALE CONNECTOR, 1/4-INCH MNPT TO 1/4-INCH FERRULE LOCK, SS |
| Z25,148-8 | MALE CONNECTOR, 1/4-INCH MNPT TO 1/4-INCH TUBE STUB, SS |
| Z42,147-2 | MALE HEX NIPPLE, 1/4-INCH MNPT, SS |
| Z42,149-9 | HEX HEAD PLUG, 1/4-INCH MNPT <i>(for capping end of transfer line having 1/4-inch FNPT opening)</i> |
| Z42,150-2 | PIPE CAP, 1/4-INCH FNPT, SS <i>(for capping end of transfer line having 1/4-inch MNPT opening)</i> |

| Table 4 | PARTS NEEDED REGARDLESS OF CONNECTION |
|------------------------------|--|
| ALDRICH CATALOG NO. | DESCRIPTION |
| Z25,131-3 (LEGEND, G) | NITROGEN INLET ADAPTER, 1/4-INCH FNPT TO HOSE BARB FOR 1/4-INCH I.D. TUBING |
| Z14,881-4 | TEFLON SEALING TAPE, 1/4-INCH WIDE X 520 INCH ROLL |
| Z15,030-4 | GROUNDING STRAP, LENGTH 6 FT., WITH COPPER ALLIGATOR CLIPS |
| Z27,391-0 | SNOOP, GAS-LEAK DETECTOR, 8 OZ. BOTTLE |
| 26,256-0 | MINERAL SPIRITS, ODORLESS |
| Z14,882-2 | HEX WRENCH, 3/8-INCH, L-SHAPE <i>(for removing plug from CGA-510 outlet valve)</i> |
| USER SUPPLIED | NITROGEN REGULATOR, HIGH PURITY TYPE AND HIGH PURITY NITROGEN |

Parts can be ordered through the Customer and Order Services Department at 800-325-3010. Reference the Aldrich catalog number when placing the order.

AL-149 Kilo-Lab™ Cylinder Packaging System and Transfer Procedure

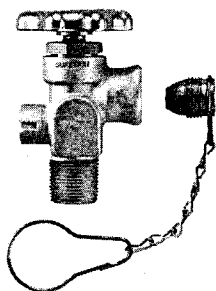


FIGURE 2. CGA 510 Outlet valve and plug (Legend A)

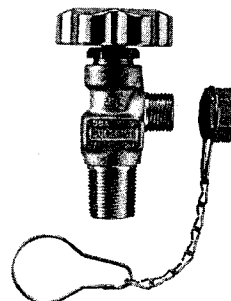


FIGURE 3. CGA 350 Outlet valve and cap (Legend A)

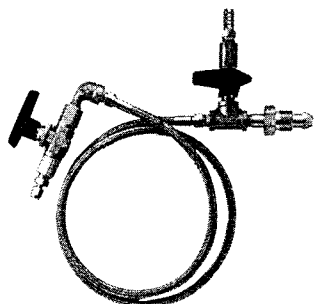


FIGURE 4. Transfer line, CGA 510 to 1/8-inch ferrule lock, with ball valve, ca. 4ft. length, Catalog no. Z42,142-1 (Legend H through P)

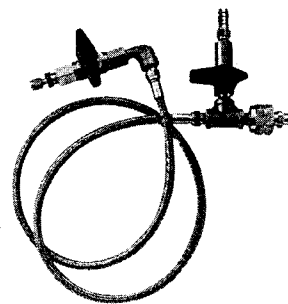


FIGURE 5. Transfer line, CGA 350 to 1/8-inch ferrule lock, with ball valve, ca. 4ft. length, Catalog no. Z42,145-6 (Legend H through P)

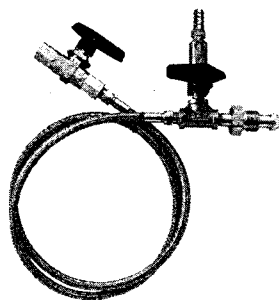


FIGURE 6. Transfer line, CGA 510 to 1/4-inch FNPT, with ball valve, ca. 4ft length, Catalog no. Z42,144-8 (Legend H through N)

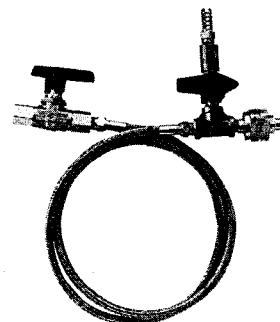


FIGURE 7. Transfer line, CGA 350 to 1/4-inch FNPT, with ball valve, ca. 4ft length, Catalog no. Z42,146-4 (Legend H through N)



FIGURE 8. Cylinder-outlet adapter for CGA 510 valve, Catalog no. Z14,891-1 (Legend H)



FIGURE 9. Cylinder-outlet adapter for CGA 350 valve, Catalog no. Z25,121-6 (Legend H)

Parts can be ordered through the Customer and Order Services Department at 800-325-3010.
Reference the Aldrich catalog number when placing the order.

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