

## **3 Storage**

### **3.1 Long Term Storage (Field Storage\* or Storage Over 30 Days)**

#### **3.1.1 Effects of Long Term Storage**

Any metallic equipment can be subject to water condensation as a result of fluctuating ambient temperatures during storage. This condensation can cause severe rusting or contribute to premature failure.

#### **3.1.2 Need for Proper Protection**

Equipment that is to be stored for a long period of time (or installed but not started up and operated) should be given proper protection so that it will be in good condition when ready for use. Equipment shipped by Komline-Sanderson is wrapped in clear polyethylene. This will protect the equipment for at least 30 days.

If field conditions are such that storage can be anticipated for more than 30 days, the contractor or owner should provide protection beyond that supplied by Komline-Sanderson. Recommended measures are outlined on pages Sections 3-4 to 3-5.

If special arrangements were made between K-S and its customer for protection over longer periods of time or against abnormal environmental conditions, the equipment will have been packaged accordingly. Any necessary supplementary instructions will be attached at the end of this section.

#### **3.1.3 Basis of Recommendations**

The suggestions that follow are provided for guidance in securing satisfactory and trouble-free operation after long term storage, and are not to be regarded as an extension of standard warranty coverage. They are on a generalized basis by product or component, and the portions applying to each component or product should be used.

Regardless of how well protected the equipment may be, periodic inspection at intervals of one month or less should be made to determine whether or not the protection provided has been adequate. If corrosion or deterioration of coatings, protective closures, etc. should be apparent, corrective steps should be taken immediately to improve the protection.

\*Field Storage: Storage other than in a heated building.

## 3.2 Standard Pre-Shipment Preparation

The entire machine has been wrapped with heavy plastic film, which should be left in place until the machine has been mounted in its permanent location indoors. If the covering is left in place as long as possible, continuing protection will be provided during installation of other equipment, area painting, etc. Once the machine is within the building and in its permanent location, slots or holes may be made in the film to gain access for connection of piping and electrical conduit.

In addition to overall machine wrapping, each motor has been separately wrapped with plastic sheeting. This should be left in place to the greatest degree possible until the machine is ready for operation. All motors, gearboxes, and grease fittings have been lubricated according to their manufacturers' specifications.

Electrical control panels, hydraulic power units, and other auxiliary filter press components, if supplied by K-S, are also wrapped with a heavy plastic covering.

## 3.3 Maintenance During Storage by the Contractor or Owner

### 3.3.1 Location

#### 3.3.1.1 Indoors

Equipment should preferably be stored inside a building, which will have a reasonably constant temperature between 50°F and 120°F (10°C and 50°C). The building should be clean and dry with good air circulation, and the temperature should not vary widely or rapidly.

#### 3.3.1.2 Outdoors

If no building is available and outside storage is the only alternative, the equipment should be properly supported and adequately protected with a covering which will give protection similar to that provided by a building.

1. Equipment should be stored elevated eighteen (18) inches above the ground, or higher if necessary, to keep equipment above high water levels. Use properly sized timber beams and planks for supports.
2. Komline-Sanderson uses a heavy blue polyethylene film to protect equipment during shipment. Its principle purpose is protection against road dirt, rain, snow, and general exposure to the elements. Plastic film will deteriorate and crack if subjected to prolonged sunlight exposure. Equipment that may be exposed to sunlight for more than 60 days should also be covered with tarpaulins to preserve the integrity of the packaging until the machine is ready to be moved indoors.

3. Immediately after the equipment is placed on the timber supports, and before it is covered with tarpaulins, it should be inspected and any damage to rust protective coatings, paint, or wrappings repaired.
4. Waterproof fabric, fabric reinforced plastic, or rubber tarpaulins should be used to enclose the equipment down to the timber supports. The tarpaulins should be securely fastened with ropes to prevent ballooning or blowing off. The ropes should be fastened to allow easy untying for inspection and possible maintenance work.

### **3.3.2 Equipment Support**

Equipment should be level in all directions and with sufficient support to eliminate distortion or sag of frames or bases.

### **3.3.3 Surface Protection**

Refer to customer specifications for job specific surface protection.

#### **3.3.3.1 Painted Surfaces**

All equipment that is prime coat painted should be finish coat painted as soon as it is practical to do so. Every three months, or more often if necessary, the condition of the painted surfaces should be checked. Deteriorated areas should be spot primed or finish painted, as required, using appropriate surface preparation (e.g., sanding off rusted areas or loose paint) and a compatible primer or finish coat should be used.

#### **3.3.3.2 Rubber or Rubber-Coated Surfaces**

Rubber components and rubber coated surfaces should be protected from sunlight and welding fumes by being kept covered and in a well-ventilated area away from extensive welding activity (light, fumes, spatter, etc.).

#### **3.3.3.3 Unpainted or Machined Metal Surfaces:**

These are coated with grease or Texaco Compound L. They should be inspected frequently (at least monthly) and additional equivalent coatings applied if necessary. Before start-up, the Compound L should be removed by solvent washing with kerosene or its equivalent. After solvent washing the surface should be allowed to dry and then greased lightly.

### **3.3.4 Electrical Equipment and Control Panels**

It is important that all electrical equipment, control panels in particular, be well protected from moisture, rain, dirt, etc. Such equipment should be stored in a warm dry place as soon as received to guard against electrical shorts or similar problems at start-up.

## 3.4 Supplementary Instructions

### 3.4.1 Plate Storage

Care should be taken when storing the filter plates supplied. The filter plates are manufactured from polypropylene, which if exposed to severe weather conditions for extended periods of time will affect the quality of the product and trueness of the shape.

#### STEPS TO PROPERLY STORE K-S AVERY FILTER PRESS PLATES

1. Store the filter press plates vertically. This will ensure that the trueness of the plate will remain within acceptable levels.
2. Store the plates in an environment where severe weather conditions will not affect the materials of construction.
3. Store the plates out of harms way. Place the plates in an area where they will not be dropped, hit, or punctured.
4. Plates should not be stored in direct sunlight. Filter plates will degrade due to exposure from ultraviolet radiation.
5. Store the plates in areas where the temperature does not exceed the maximum or minimum allowable temperatures for the process or for the plate integrity. Refer to process information and filter plate section in the customer specifications.

### 3.4.2 Long Term Cloth Storage

In most instances, filter cloth is shipped in the miscellaneous parts box. Several precautions prior to start-up need to be taken to ensure that the maximum life is obtained from the cloth.

**WARNING:** Do not store filter cloth in direct sunlight. Many types of cloth will degrade due to exposure from ultraviolet radiation.

1. Do not store the cloth in an area where it may be damaged, torn, or sintered from welding, high heat, etc. Even slight damage to the cloth will affect the performance of the filter and your production.
2. Store the filter fabric in an area where the cloth will not be affected by severe weather conditions.

### **3.5 Storage of the K-S Avery Filter Press After Start-up**

If the K-S Avery Filter Press will be stored after start-up and introduction of the process fluid, please note the following guidelines and use these guidelines in conjunction with the beforementioned instructions.

**NOTE:** Regardless of how well protected the equipment may be, monthly inspection will allow you to determine if the protection is adequate. Any corrosion or deterioration of coatings and protective closures should be corrected immediately.

#### **3.5.1 Less Than One Month**

For less than one month storage, keep the K-S Avery Filter Press and auxiliary components clear of debris and out of harms way.

#### **3.5.2 One to Six Months**

Filter Presses stored for less than six months require no special preparation, but the filter gaskets and cloth may stick during startup. Upon start-up, be careful not to tear the cloth or damage the gaskets when separating these items. K-S recommends the following steps.

1. Disconnect and lock out electric and pneumatic power to the filter press, auxiliary components, and controls.

#### **3.5.3 Over Six Months**

For storage of the filter press and auxiliary components over six months, please follow these instructions:

1. Open the press and apply a liberal amount of talcum powder to all chamber sealing surfaces including cloth edges and gaskets.
2. Close all process valves.
3. Disconnect and lock out electric and pneumatic power to the filter press, auxiliary components, and controls.
4. Drain fluid from the hydraulic lines.
5. Lubricate gears, chains, and other moving parts.
6. Cover the filter press with a heavy gage plastic tarp to protect the parts and finish from water, building/demolition waste, welding slag, etc.

### **3.5.4 Bringing the Press into Service**

Install new seal kits if the cylinders leak or the pump is not operating within the specified parameters. Relubricate the filter press as needed. Seal kits can be purchased from our Customer Service Department.