2 Receiving, Handling, and Installation

2.1 Claims

IMMEDIATELY upon receipt of shipment note on the freight bill and bill of lading any damage or shortage. Check carefully to see that all equipment has been received and is in good condition. SHORTAGES MUST BE REPORTED WITHIN 10 DAYS.

2.2 Care of Equipment

Do not leave any motors or gearboxes uncovered or exposed in any way to water damage. Be particularly careful about water entry into any machinery where freezing conditions may occur. Electrical control panels must be stored indoors at all times.

Komline-Sanderson equipment is prepared for shipment by covering with polyethylene film for protection against road dirt, rain, snow, and general exposure to the elements. Since film will deteriorate and crack if subjected to prolonged sunlight exposure, equipment that is likely to be exposed to sunlight for more than two months should be covered with tarpaulins to preserve the integrity of the packaging until the equipment is ready to be moved indoors.

2.3 Moving the K-S Avery Filter Press

NOTE: Komline-Sanderson assumes no responsibility for the lifting, rigging, and/or unloading unless expressly stated in the sales contract.

Care should be taken during handling to minimize damage to paint. After placement of the machine, touch up any painted areas that have been damaged. See also Section 2.7.

Refer to lifting instructions in Section 2.4 for lift points and other information. In no case should the lifting chain or mechanism be allowed to contact the filter press any place except at designated connection points. Use spreader bars of appropriate width. Cranes should have sufficient capacity to handle the weight shown on the customer assembly drawing. Although use of a crane is preferable, if one is not available the filter press may be jacked from the truck bed and supported on cribbing from the ground so that the truck may be driven out from under it.

2.4 K-S Avery Filter Press Lifting Instructions

Please follow the instructions provided by Komline-Sanderson when unloading, lifting, and moving the filter press. The instructions have been designed to prevent damage to the K-S Avery Filter Press skeleton and personal harm.

Please refer to the General Arrangement Drawing provided for the weight distribution of the filter press designed for your installation.

NOTE: Due to variations in scope of supply, K-S Avery Filter Presses and auxiliary components have varying weights and dimensions. Please consult the General Arrangement Drawing for the weight distribution of the site-specific filter press and auxiliary components prior to lifting them.

NOTE: Lifting mechanisms are not provided by Komline-Sanderson.

WARNING: FILTER PRESSES ARE TOP HEAVY!
USE EXTREME CAUTION WHEN MOVING AND RIGGING!

2.4.1 Steps to Lift the Filter Press

1. Remove and/or secure the filter plates from the skeleton making sure not to damage the plates. Refer to K-S Avery Lifting Plate Instructions drawing in Reference Drawing Section. Consult filter plate specification sheets in Section 4 for the specific weight of each individual plate. Care should be taken to avoid personal injury when lifting the plates. Refer to Section 3.4 for instructions regarding the proper storage of the filter plates.

2. Remove and/or secure the follower plate from the skeleton in order to prevent the plate from sliding when the skeleton is being moved. Refer to K-S Avery Follower Plate drawing in Reference Drawing Section. To remove the follower plate, remove the cylinder ram bolts from the plate and lift the follower from the press. The plate should be removed utilizing the lifting lugs that have been installed.

WARNING: DO NOT attempt to move the filter press until the filter plates and follower is removed and/or secured.

3. Prior to attempting to move the filter press, determine the safe rigging weights from the General Arrangement Drawing. Komline-Sanderson **strongly** recommends utilizing a crane with sufficient capacity to unload and position the filter press.

   Some small filter presses may be lifted and moved utilizing a forklift. The blades of the forklift should be positioned at the maximum width possible and should be placed beneath the sidebars.

4. Position the lifting mechanism (hooks, chains, or straps) on the lifting lugs provided on the top of the hydraulic cylinder support plate and on the static head plate. Refer to K-S Avery Lifting Points Drawing in the Reference Drawing Section.

WARNING: DO NOT utilize piping, filter plates, or the hydraulic cylinder as lifting points for the filter press.

NOTE: When lifting the skeleton take care to ensure that the hooks, chains, or straps do not interfere with the auxiliary equipment such as plate shifters and process piping.

2.5 Setting and Installation Instructions for the Filter Press

In setting and installation of the K-S Avery Filter Press, please follow the directions that have been outlined by this manual. Should your setting for the installation vary from the setting described in these directions, please consult the Applications Department regarding your specific installation.

2.5.1 Placement Considerations

The floor plan and actual position of the filter press and auxiliary components in the plant is the responsibility of the customer. Please make sure that the installation is being performed with the final, certified, or "as built" customer drawings to ensure that the proper installation is achieved. During the engineering and manufacturing of your filter press, design updates and material availability can change "as-built" dimensions from the original customer drawings submitted for approval.

During the placement process, consideration should be given to the following points:

1. Sufficient clearance should be provided around and above the filter press and auxiliary components to facilitate installation, maintenance, and repair.

2. Any foundations required for the filter press or auxiliary components should be constructed with an allowance for grouting after the equipment has been mounted. The unit should be installed by competent mechanics on a level foundation before grouting and piping.

3. Controls, valves, switches and lubrication points should be readily accessible to the operator.

4. A central control station is recommended whenever possible.

5. All electric switches, motors, and controls should be grounded and installed in compliance with all federal, state and local codes.

6. All guards supplied must be securely fastened into proper position. A careful visual inspection should be conducted before attempting to operate the filter press or auxiliary components to preclude any damage because of errors in installation.

2.5.2 Setting of the K-S Avery Filter Press

Proper installation of the filter press is vital to performance and longevity of the filter. Follow the steps outlined to ensure that the skeleton is properly set in place.

1. Refer to K-S Avery Drawing #CAF99-00009 (page 1) in the Reference Drawing Section.

2. Measure the distance corner-to corner between the stationary head and the cylinder bracket on line "A".

3. Measure the distance corner-to-corner between the stationary head and the cylinder bracket on line "B".

   For proper alignment of the filter press skeleton, the "A" and "B" measurements must be within 1/8" for presses with an overall length under 100" and within 1/4" for presses with an overall length greater than 100".

4. To compensate for misalignment, shift either the stationary head or cylinder bracket as shown in drawing number CAF99-00009K (page 2) in the Reference Drawing Section.

5. Ensure that the sidebars are level to the stationary head and cylinder bracket. Do not check at the center of the filter press, due to the fact that the bars may sag slightly at the center.

6. Once the skeleton has been set in place, the skeleton should be anchored to the floor.

2.5.3 Skeleton Installation

After the K -S Avery Filter Press skeleton has been correctly placed into position, follow the necessary procedures to correctly anchor the skeleton to the support mechanism. Refer to the General Arrangement drawing for anchor bolt connections.

WARNING: Follow the procedures defined by Komline-Sanderson to correctly anchor the skeleton to the floor. Improper installation may result in filter performance deficiencies and/or personal harm.

1. Locate the bolt-down holes on the filter press static head plate foot and the cylinder bracket slider plate.

2. Utilizing the appropriate size bolts, anchor the head-end of the filter press skeleton to the support mechanism such that this end of the filter is not permitted to move. This will enable the plant to install permanent piping that will not be effected by reactive expansion of the skeleton frame.

3. Utilizing the appropriate size bolts, anchor the cylinder-end of the filter press skeleton to the support mechanism. These anchor brackets have slotted feet to permit expansion of the skeleton frame when the filter is being operated. DO NOT over tighten these bolts. The bolts should be tightened such that they serve as a tracking mechanism for the frame.

WARNING: Filter presses must be permitted to expand and contract freely. Over tightening of these bolts may cause bowing in the sidebars of the skeleton frame and damage to the filter press and/or people around the filter. DO NOT subject the support structure or filter press skeleton to excess force.

4. Reinstall the follower plate and filter press plates making sure that the cylinder ram bolts are correctly fastened to the follower plate. Care should be taken when reinstalling each component of the K-S Avery Filter Press. Refer to Section 4.1.3 for instructions on the proper installation of the filter plate to ensure that the filtration cycle will be optimized.

2.5.4 Air and Electrical Component Installation

K-S Avery Filter Presses can be operated pneumatically, electrically, or in combination. Refer to the customer drawings located in the Reference Drawings Section for specific installation requirements on the system provided.

2.5.4.1 Air Installation

1. Connect the air supply to the hydraulic power unit, if a pneumatic unit is provided. Refer to the customer drawings for the connection size required. A constant supply of 80 psi air is necessary.

2. Connect the plant air to the air line filter on the control panel, if provided.

2.5.4.2 Electrical Installation

Please consult the customer drawings for the power requirements for the site-specific installation.

NOTE: All work should be performed by a certified electrician.

1. Bring power into the main control panel. Confirm that all electricity is off when installing the main control box.

2. Refer to the "Interconnection Diagram" drawing located in the Reference Drawings Section for other required wiring.

2.5.5 Process Connection Installation

Process connections or piping on the filter press may or may not be provided depending on Komline-Sanderson's scope of supply for the job. Generally, K-S Avery Filter Presses are manufactured with one feed port and three or four comer discharge ports depending on the location of the feed port. Each feed and filtrate discharge port should be isolated with a ball valve, and the filtrate discharge streams should be manifolded to one common discharge.

If process connections or piping is not provided, please refer to the General Arrangement drawing for the proper installation of the process connections or piping.

2.6 Paint

The majority of the K-S Avery Filter Press components are carbon steel, stainless steel, or plastic. After placement, touch up any damaged paint as required. Be sure the paint used is the same as, or compatible with, paint previously applied as noted in the Customer Specifications. Surface preparation for touch up should be equal to that used for the original paint. Please follow any instructions provided by the paint manufacturer.

NOTE: K-S does not provide any touch-up paint.

2.7 Electrical Equipment and Control Panel

All electrical equipment must be stored in a warm dry place as soon as received. Dust, dirt, or water from outdoor locations can cause shorting and severe damage to all such components. Particular care should be taken to protect control panels.

The electrical control panel furnished as part of the system should be installed securely in a vertical position with at least 30" of access space in front of the panel. K-S panels are furnished with numbered terminal strips and a wiring diagram for ease of installation and reference. See customer drawings provided in Reference Drawings Section.

After wiring motors but before operating the panel, make a visual check of the panel with the main disconnect off. Be sure all overload relays are in place and set, fuses are in place, and components are mechanically secure. Examine the connections of motors to their driven units to make sure that they are free to operate.

2.8 Miscellaneous Parts

Following are some standard parts that may be found in the miscellaneous parts box or removed for shipping:

1. Gauges
2. Valves and Fittings
3. Filter Fabric
4. Squeeze Pumps
5. Hydraulic Tubing
6. Instrumentation
7. Parts removed for shipping clearance.*

* Under ordinary circumstances there are very few such parts and if field assembly instructions are required they will normally be sent prior to shipment of the equipment. If, for some reason, they have not been received at the time shipment is due please contact K-S Customer Service Department.