

Julia
42" x 40 ft 8" #638/4h
1987 42" w x 42 ft. #660/

Liquid/Solid Separation and Drying Products Instruction Manual

Kompress® Belt Filter Press

201-638-6163

Graver Water
Union, NJ
K-S Job No.: I-1525
Cust. Ref. No.: 184314

Mach. # UN-409
UN-410

Model # GRS-1
Job.



Komline-Sanderson

Peapack, New Jersey

High Bridge, New Jersey

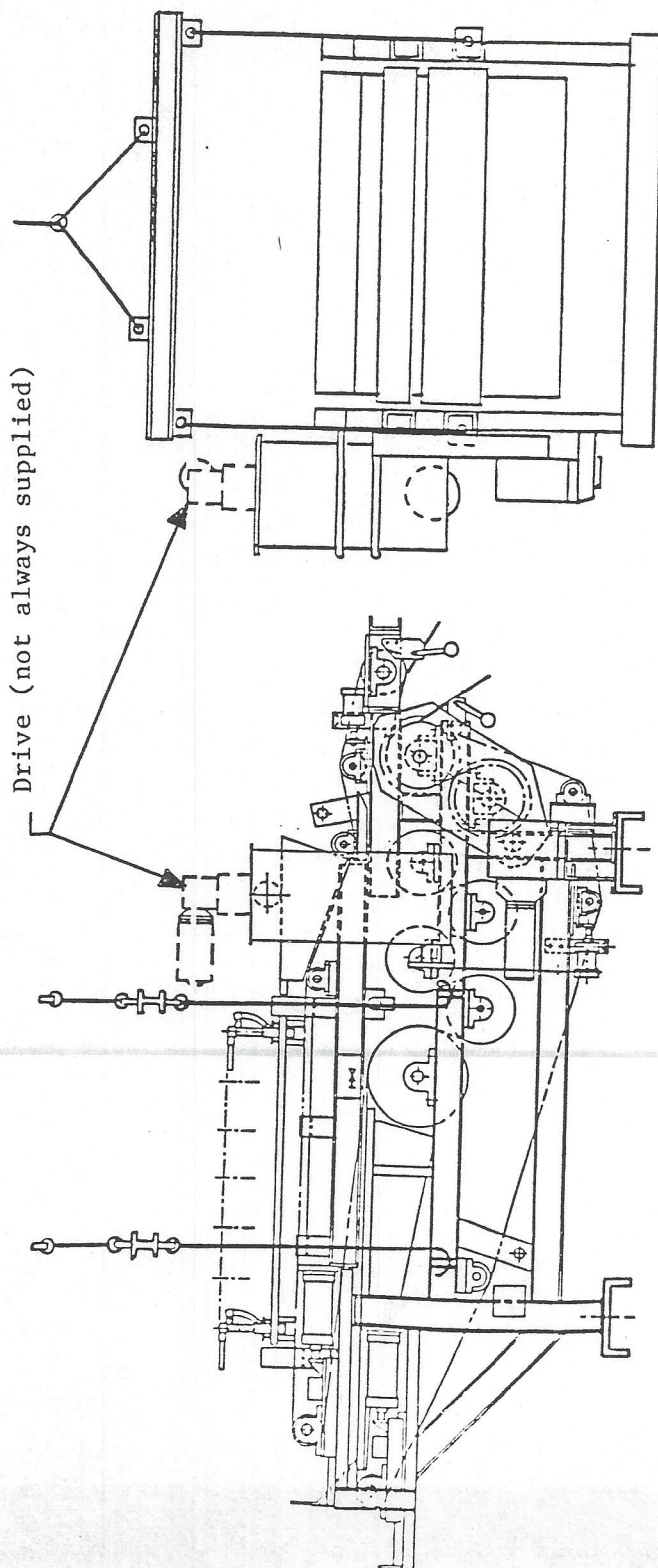
Brampton, Ontario, Canada

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Note 4

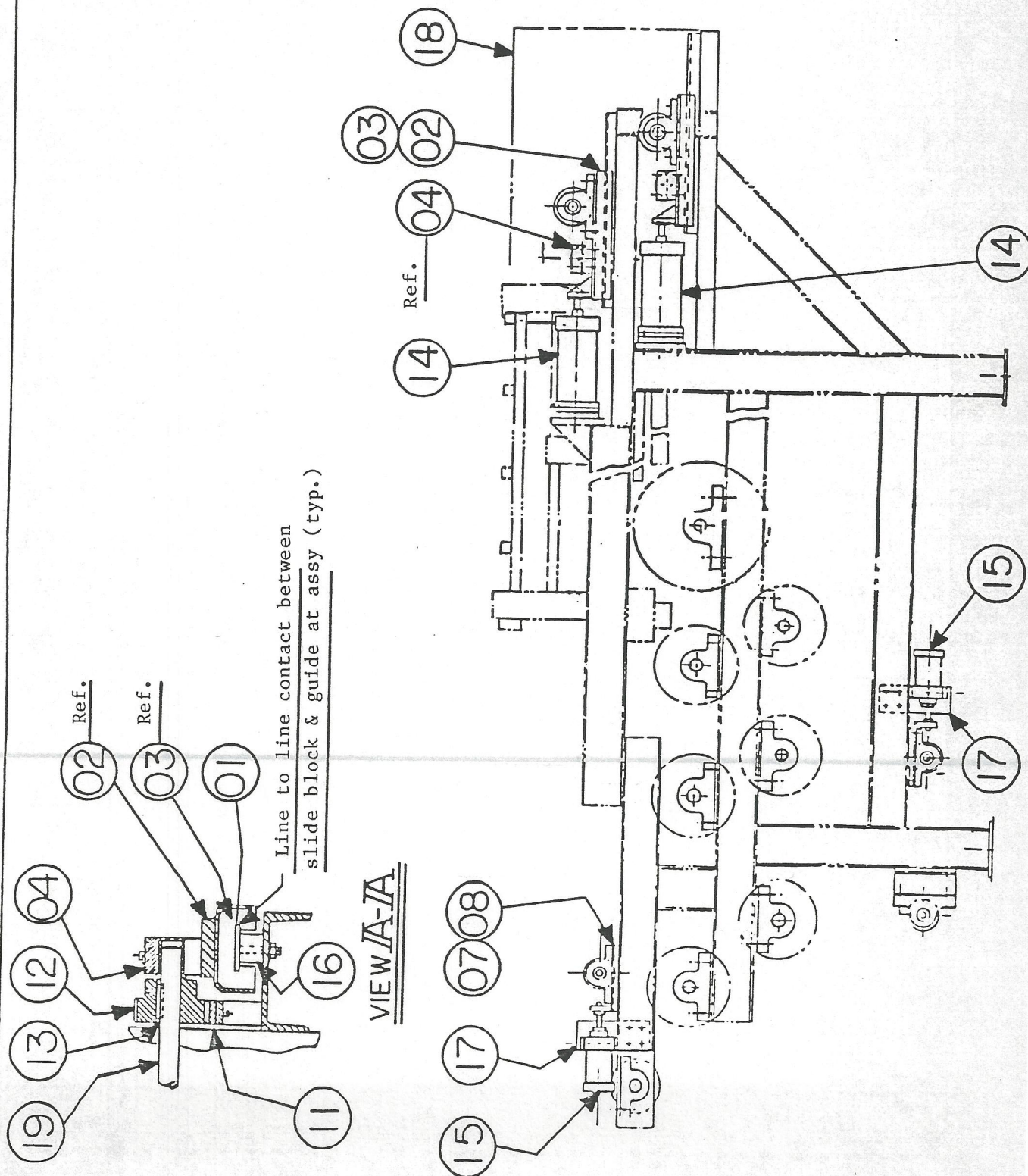
"KOMPRESS" LIFTING INSTRUCTIONS

NOTES:

1. Chains must not contact press.
2. See K-S assembly drawings for unit dimensions and weight.
3. Press is covered with plastic sheet. Cuts must be made in the covering to expose the lifting lugs. Do not remove cover until unit is indoors in its permanent location.
4. Remove shipping skids, (channels) if furnished (usually on 2 meter wide machine only). Before setting unit in its permanent location.

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Take-Up and Steering Assembly
(See page 7-9 for nomenclature)



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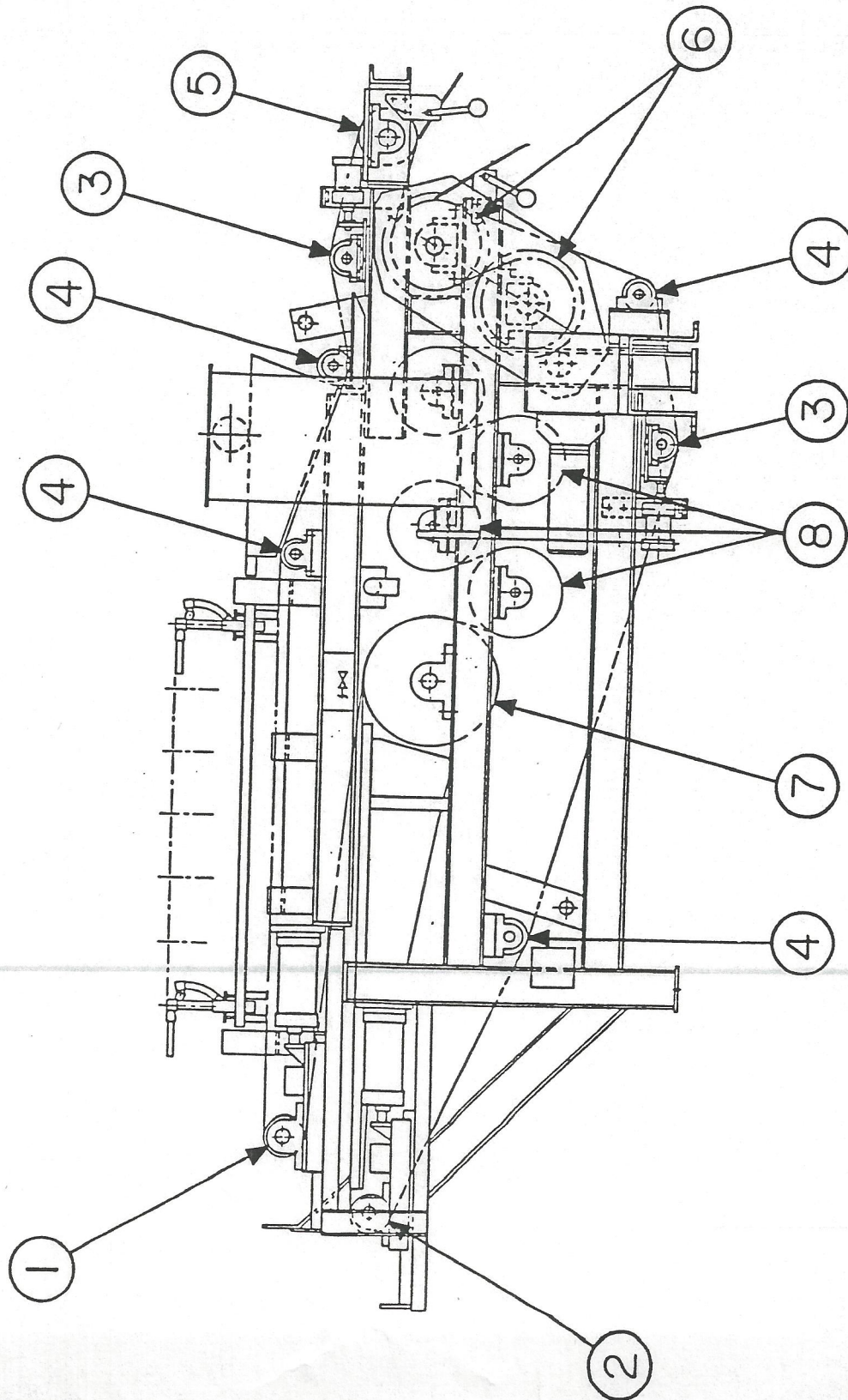
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Drum, Roll, & Bearing Location
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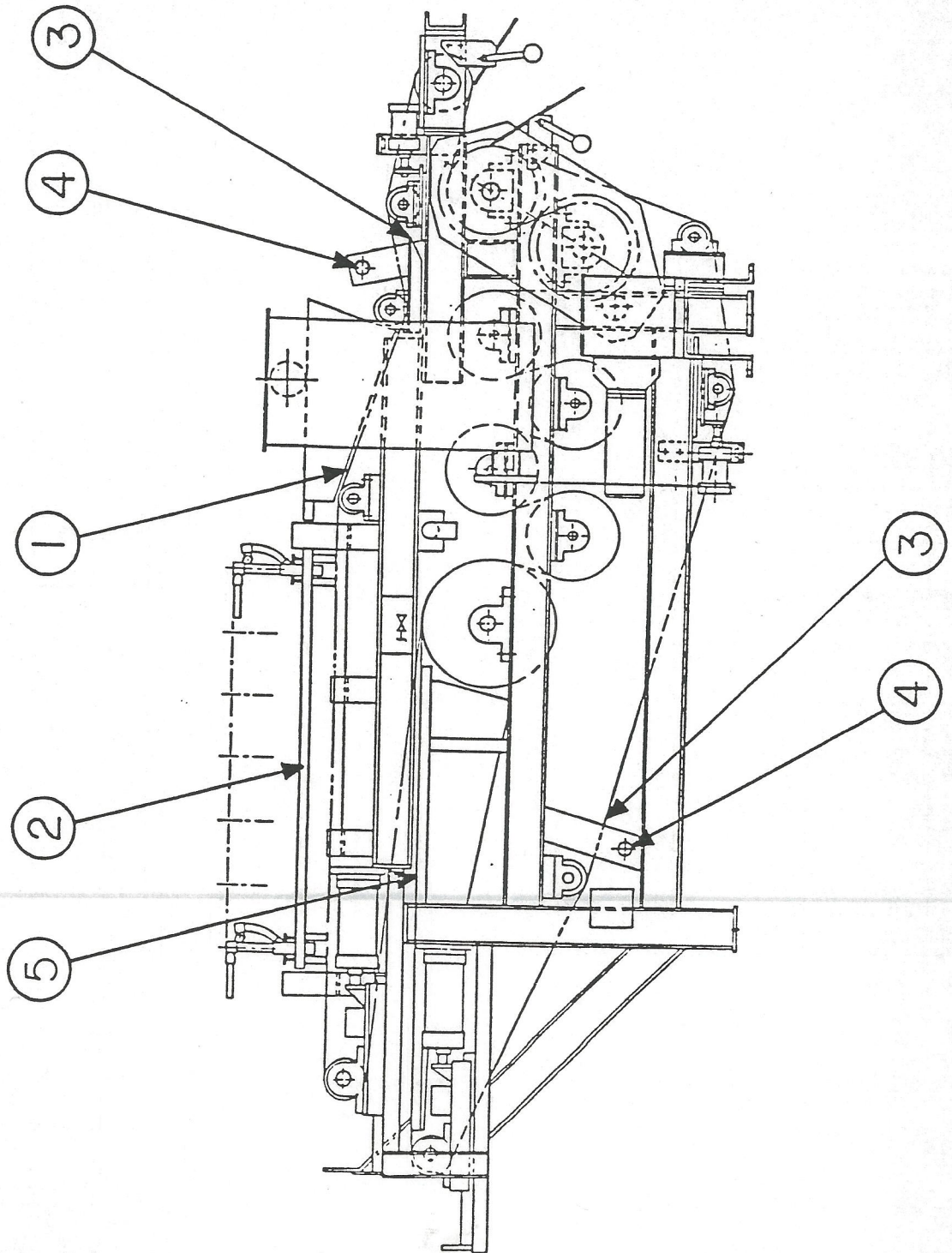
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Seal Location Drawing
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C. Drum, Roll & Bearing Parts List (See previous page for location).
(Note: Items 9 and 10 not shown)

DRUM, ROLL, & BEARING PARTS LIST

I.D. Number	Location & Type	O.D. (in)	Bearing Size	Bearing Style	Bearing Qty. Per Roll
1	Gravity Disch/ upper Belt Take Up	6-5/8	-1-15/16"	Pillow block	Two (2)
2	Lower Belt Take Up Roll	6-5/8	-1-15/16"	Pillow block	Two (2)
3	Steering Rolls	5 Rubber Covered	-1-7/16"	Pillow block	Two (2)
4	Idler Rolls	4-1/2	-1-7/16"	Pillow block	Two (2)
5	Idler Roll	8-5/8	-1-15/16"	Pillow block	Two (2)
6	Drive Rolls	13-1/4 Rubber Covered	-2-15/16"	Pillow block	Two (2)
7	Perforated Drum	20	-2-7/16"	Pillow block	Two (2)
8	Solid Drums*	12-3/4"/ 8-5/8"	-2-7/16"	Pillow block	Two (2)

*See page 7-16 for quantity and size

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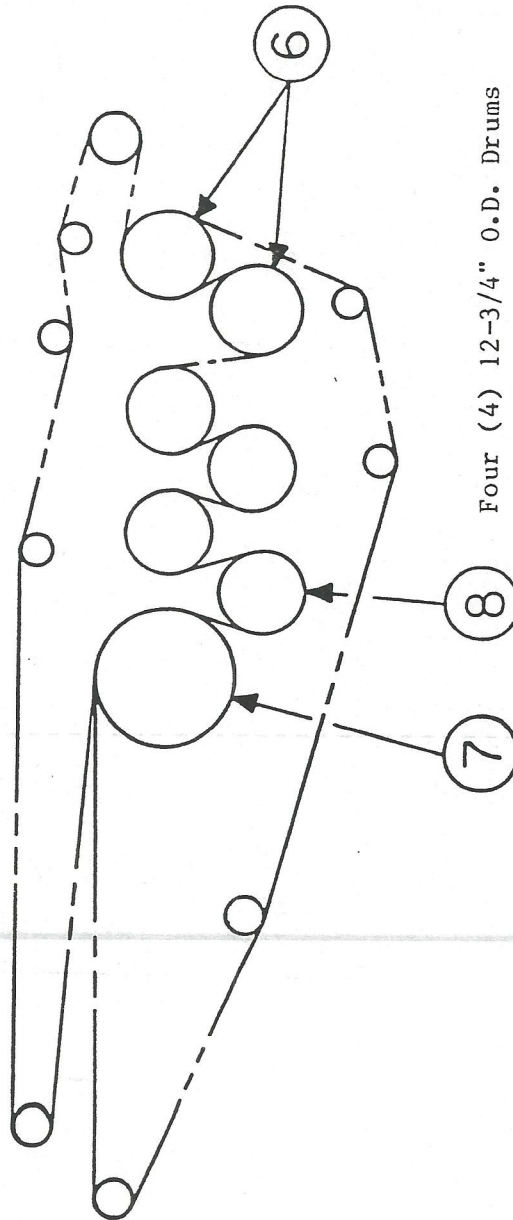
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See Page 7-14 for General Drawing and Page 7-15 for Parts List.



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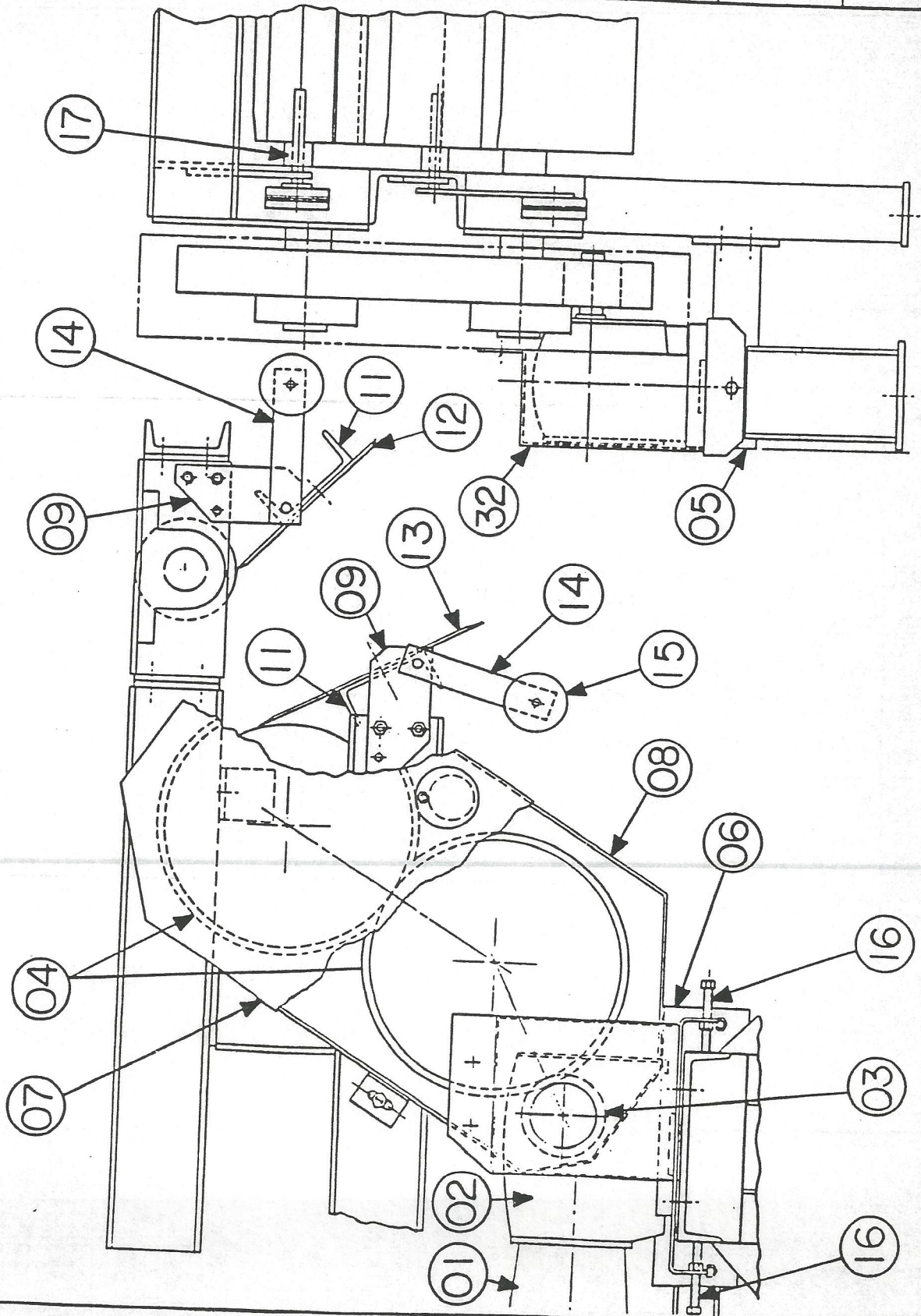
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Belt Drive & Discharge Assembly

(See page 7-18 for nomenclature)

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Belt Drive & Discharge Assembly
(See Page 7 - 17 for Drawing)

ITEM

DESCRIPTION

ITEM

DESCRIPTION

- | ITEM | DESCRIPTION | ITEM | DESCRIPTION |
|------|--------------------------------|------|-------------|
| 01 | Motor | | |
| 02 | Reducer | | |
| 03 | Spur Gear (drive) | | |
| 04 | Spur Gear (driven) | | |
| 05 | Base Assembly-Drive | | |
| 06 | Slide Plate, Drive Mounting | | |
| 07 | Guard Cover | | |
| 08 | Guard | | |
| 09 | Plate-Mounting, Scraper Assy. | | |
| 11 | Scraper Blade Support Assembly | | |
| 12 * | Blade-Scraper (upper) | | |
| 13 * | Blade-Scraper (lower) | | |
| 14 | Counter Weight Arm | | |
| 15 | Counter Weight | | |
| 16 | Drive Gear Mesh Adj. Bolt | | |
| 17 | Spacer-Discharge Scraper | | |

* Recommended Spare Parts

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8 CERTIFIED SPECIFICATIONS

9 COMMERCIAL COMPONENTS

Pressure Belt Assembly:

Motor

Baldor 1 1/2HP, 184C

Reducer

Eurodrive K-86

Steering Cylinders

Hanna

Take-Up Cylinders

Hanna

Belt Wash System

Steinen

Polymer Mixing Valve

Mueller

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CK050-70012D

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CK050-16104C

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SAFETY FIRST!

Any motor driven equipment with exposed moving parts has the potential for inflicting injury. Although the Kompress Belt Filter Press has been carefully designed to eliminate such problems by the slow linear and rotating motions of its parts, carelessness or inattention can result in personal injury, even though it may be as little as a bruised finger.


Before servicing any moving machinery (except for routine lubrication, where the lubrication points are specifically arranged for easy and safe access while the machine is in motion), the person doing the servicing or repairing should be sure to lock out the starting switches so that another party cannot accidentally start the machine. The most commonly used lubrication points on the Kompress are shaft bearings, and the grease fittings on these are easily used without danger from moving parts. Even in lubricating these points, however, one should be careful that loose fitting clothing, ties, shirt sleeves, or long hair are not likely to become entangled with nearby moving parts.

The same caution is offered for machine operators. It is not a good idea to reach inside the machine framework while the machine is running. The machine should almost always be stopped before any attempts are made to remove tramp material or make an adjustment. Under certain circumstances the use of long handled tongs or tools with extension handles may be permitted, but these also have the potential for damaging the machine or belt if dropped.

Nip points should be watched especially carefully. These are the points where the belts and drums come together. Also be careful of drainage holes cut in the dewatering drums. It is not practical to guard all such points without interfering with machine operation, observation and control. However, with a slow running machine like the Kompress, the hazard is minimal.

Do not climb on the frame of the Press. If you need access to the top of the Press for observation or maintenance, use a ladder, portable platform or other safe device. Climbing on the Press frame causes your hands and toes to be close to moving parts. Also by its very nature, the frame is wet and slippery and therefore dangerous for climbing.

Special attention should be paid, if a driven mixer type is supplied, to the rotating portion of the sludge conditioning tank which has protrusions.

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INTRODUCTIONA. Basis of Operation

The theory of the continuous belt filter press is that most of the free water can be removed from the sludge by a combination of gravity drainage and gradually increased pressure over a specified period of time. A total of three dewatering zones may be used:

1. Gravity Drainage
2. Medium Pressure
3. Drum Pressure

The Kompess® utilizes these zones in such a way as to:

1. Provide initial water removal independent of the pressure zones.
2. Apply pressure gradually.
3. Apply high pressures.
4. Keep pressure on for a long period of time.


Each zone of the press prepares the sludge for additional application of pressure in the next zone. In this manner the maximum amount of water is removed from the sludge as it moves in continuous fashion through the system. When the sludge leaves one zone and enters the next it has been processed to the proper consistency and compressibility for the next zone to perform its function effectively.

Two belts are used in the press. They are known as the upper and lower pressure belts. The upper pressure belt is also used for the gravity drainage. The lower belt is used for medium pressure zone drainage. An independent pressure applying member is also used in this zone to aid in dewatering. The two belts then converge to form a "sandwich" within which the cake is squeezed as it goes through the drum pressure zone.

The drawing on page 1 - 3 should be referred to when reading the following section.

B. Operating Sequence1. Gravity Drainage Zone

The dewatering operation starts when the sludge is delivered to the distribution box of the gravity drainage zone. This zone consists of a portion of the pressure belt giving a large amount of surface area through which gravity drainage can take place. The sludge is fed onto the belt and filtrate drains through the belt during its passage over the length of the gravity drainage zone. At this point the belt passes over the discharge roll and dumps the partly dewatered sludge onto the beginning of the medium pressure zone.

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2. Medium Pressure Zone

As the material drops from the gravity drainage zone to the medium pressure zone, the partly dewatered material is "mixed", the more highly dewatered layer nearest the belt being blended with the wetter material at the top of the material mass. This redistribution of the remaining water content allows its further removal and improved efficiency in the drum zone following.

Additional water is removed from the material as it passes through this zone. Longitudinal side seals prevent the material from migrating towards the edges of the belt in this zone. After the material leaves this zone it has become dry enough to accept the higher pressures in the remainder of the machine.

3. Drum Pressure Zone

In the drum pressure zone the cake is squeezed as it is conveyed between the two belts and is flexed from one side to the other as it passes alternately over and under the drums of this section.

Tension on the belts develops a squeezing action on the cake in the sandwich as the belts go around the drums. One drum in the beginning of the zone is perforated for ease of water removal as the cake sandwich passes over it.

Tension on the belts is automatically controlled by the take-up cylinders on each of the two belt take-up rolls. The dewatering pressure is held constant at the set point on the pressure regulator.

4. General

Belt Take Up -

Take up rolls are provided for each belt to remove slack prior to start up and to adjust dewatering pressure.

Steering -

The pressure belts are kept in alignment automatically by belt location sensors which control a steering roll.

Belt Wash -

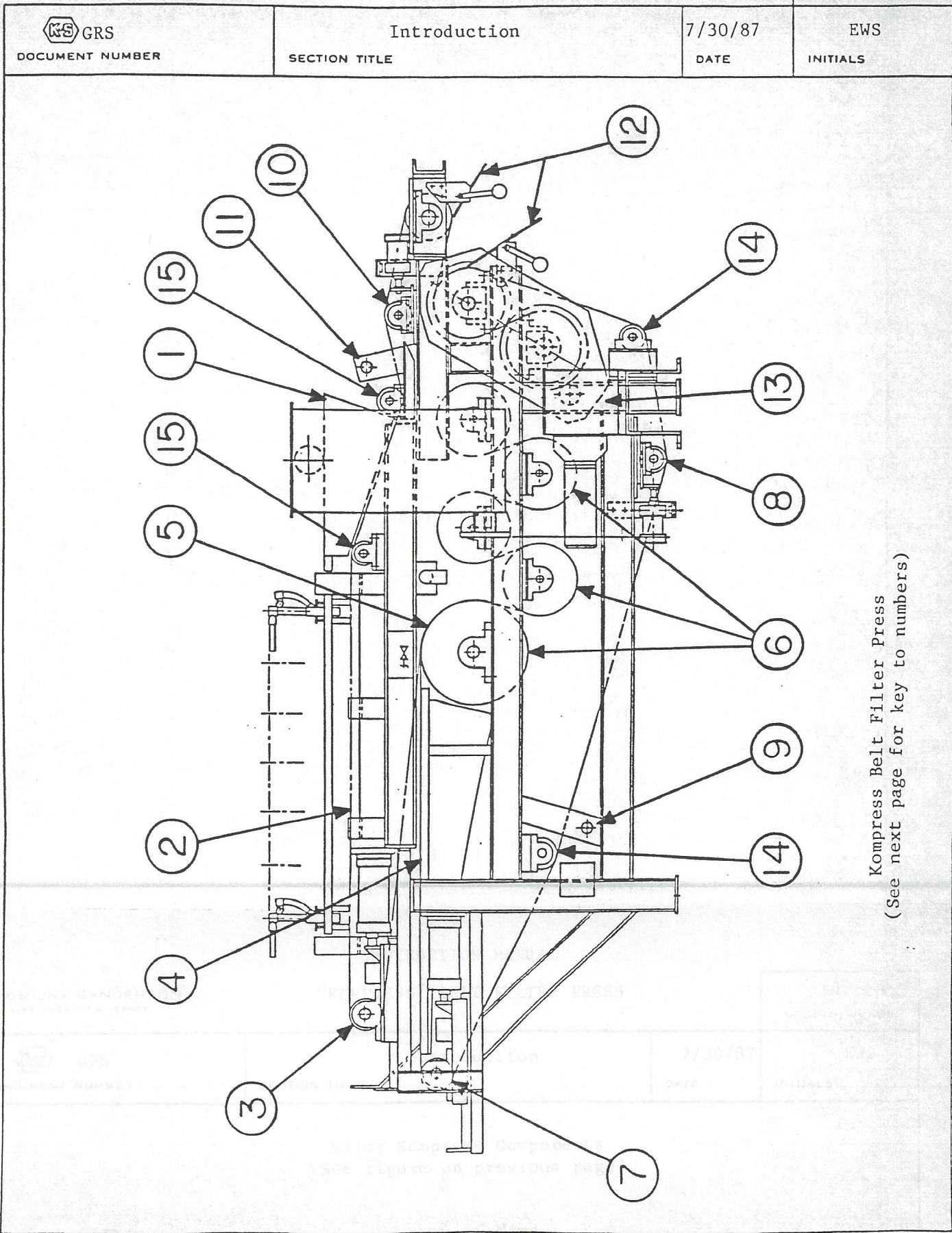
Each belt has a wash system to clean it after cake discharge.

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| 3 | Gravity zone discharge/take-up roll |
| 4 | Medium pressure (wedge zone) |
| 5 | Pressure Belts |
| 6 | Dewatering drums |
| 7 | Lower belt takeup |
| 8 | Lower belt steering roll |
| 9 | Lower belt wash assembly |
| 10 | Upper belt steering roll |
| 11 | Upper belt wash assembly |

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Major Kompress Components
(See figure on previous page)


<u>Item</u>	<u>Name</u>
1	Distribution box
2	Gravity zone
3	Gravity zone discharge/take-up roll
4	Medium pressure (wedge zone)
5	Pressure Belts
6	Dewatering drums
7	Lower belt takeup
8	Lower belt steering roll
9	Lower belt wash assembly
10	Upper belt steering roll
11	Upper belt wash assembly
12	Doctor blade (cake discharge)
13	Belt Drive
14	Lower Idler Rolls
15	Upper Idler Rolls

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RECEIVING, HANDLING, AND INSTALLATIONA. Claims:

IMMEDIATELY on 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.

B. Care of Equipment:

Do not leave any motors or gear boxes 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. "Clear" film is used instead of black to permit inspection or identification of the equipment so wrapped. Since clear 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.

C. Moving Press:

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 paragraph F, page 2 - 2.)

Refer to lifting instructions (page 2 - 2) for lift points and other information. In no case should the lifting chain or mechanism be allowed to contact the 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 job assembly drawing. Although use of a crane is preferable, if one is not available the 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.

Once off the delivery vehicle, as an alternative to the use of a crane within the building, pipe rollers 4" to 6" in diameter may be used with longitudinal skids under the machine legs.

D. Setting:

In setting the Kompress, level the leg pads to $\pm 1/16"$, square the frame to $1/4"$, tighten anchor bolts, grout in place and connect piping. Squareness is checked by diagonal measurements across the bottom of the press between legs. The maximum differential between the diagonal measurements should be $1/4"$. When making these measurements be sure the tape is not touching any components such as the drums, rolls, or wash box. Drive rolls and pressure drums must be level and parallel within $\pm 1/16"$ or belt tracking problems will occur.


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E. KOMPRESS Lifting Instructions

1. Do not remove the plastic sheeting covering the press until the unit is indoors in its permanent location. The lifting "lugs" are covered by the plastic and cuts in the covering must be made to expose them. The lifting points are located on both sides of the press in the drum area of the unit, approximately halfway up the side, (see Page 2-5).
2. In some cases channels are placed under the press to aid in shipping. Remove the channels before placing the press in its permanent location. They may be left in place if the press is being stored temporarily at another location.
3. To determine the crane capacity required, see the K-S assembly drawings for unit dimensions and weight.
4. Chains should be attached to the press only at the lifting locations on the sides of the unit where the frame members are provided with hook openings.
5. Use slings, spreader bars, and similar devices as necessary in order to prevent the chains from contacting any part of the press, particularly the drive assembly, wash boxes or the gravity plow assembly frame.

Spreader bars are also necessary in order to provide a purely vertical lift, to prevent the forces on the chains from pulling the press frame inward toward the center of the press.

6. Check frame to be sure all nuts and bolts are tight before lifting.
7. Balance the load carefully before lifting it clear of the ground, shortening or shifting chains as required to provide a level lift.

F. Paint

The Kompress® is usually finish painted in the shop. See the K-S job paint specification for details. Care should be taken to minimize damage to paint during handling. After placement, touch up any damaged paint and apply finish paint as required. Be sure the paint used is the same as or compatible with paint previously applied. Follow the paint manufacturer's instructions. Surface preparation for touch-up should be equal to that used for the original paint.

G. Wash Water

Wash headers are shop installed but may have become misaligned during shipment. Be sure headers are aligned properly before piping to water supply system. Contact the K-S Customer Service Department if there are any questions as to proper alignment. It is recommended that a manual shut off valve and strainer be installed in the main supply line.



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H. 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.

After wiring motors but before using 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.

CAUTION: DC motors have live field voltage when they are turned off with the control on the panel. Therefore, be sure to shut off all power to the panel before wiring these motors.


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I. Miscellaneous Parts

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

1. Gauges
2. Valves and fittings
3. 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.

(a) Vertical conditioning tank mounting instructions:

Conditioning tanks of this type will be removed for shipping only when shipping restrictions require. Otherwise they will be shop mounted prior to shipment.

Note: The following instructions are only for units shipped with conditioning tank removed or in cases where field installation requires separate handling of conditioning tank.

Since the maximum dry weight of the conditioning tank assembly is approximately 600 lbs an overhead hoist with sufficient load capacity is recommended, although a crane may be used if desired.

Carefully place a sling beneath and around the top flange and outlet of the tank. Care must be exercised in order to avoid sling contact with any drive equipment supplied.


Chains or cable should not be used in lieu of a sling but may be employed to lift the sling provided they do not contact any portion of the tank assembly.

Hoist the tank from the shipping trailer using care to insure that the distribution header, piping connections and drive, if supplied, are not damaged.

The tank should then be lowered into position on the side (near drive) of the Kompress® such that the discharge pipe rests on the support bracket for the distribution header with the tank resting against the semi-circular cutout in the Kompress® frame. (Note there are two tabs welded to the tank that should rest on the frame member).

The two large U-bolts should be placed around the tank and through the four holes provided in the horizontal frame members on the press. Nuts and washers should then be installed and tightened and the lifting sling carefully removed.

Then install the U bolt and nuts in the support bracket being careful that the distribution header remains horizontal.

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STORAGEA. Long Term Storage (Field Storage* or Storage Over 30 Days)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 which will either detract from the appearance of the equipment or contribute to premature failure.

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 the Komline-Sanderson. Recommended measures are outlined on pages 3 - 2 to 3 - 5.

If special arrangements between K-S and its customer have called for protection for longer periods of time or against abnormal environmental conditions, the equipment will have been packaged accordingly and any needed supplementary instructions will be attached at the end of this section (see page 3 - 5).

3. Basis of Recommendations

The suggestions which 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. A motor-driven gear reducer, for example, will require reference to sections for gear reducers and sections for motors in determining the proper storage conditions and protection required.

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.


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B. Standard Pre-Shipment Preparation

The entire machine has been wrapped with heavy plastic film which should be left in place until the unit 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, slits 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 too should be left in place to the greatest degree possible until the machine is ready for operation.

All motors, gear boxes, and grease fittings have been lubricated according to their manufacturers' specifications.

Electrical control panels, if supplied by K-S, are also wrapped with a heavy plastic covering.

C. Maintenance During Storage by the Contractor or Owner1. Location

- a. 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.
- b. 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 out of high water levels) using properly sized timber beams and planks for supports.

- (2) The heavy plastic film used by Komline-Sanderson for protecting equipment during shipment is a clear polyethylene film. Its principal purpose is protection against road dirt, rain, snow, and general exposure to the elements. "Clear" film is used instead of black to permit inspection or identification of the equipment. Since clear 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.

Waterproof fabric or 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.

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- (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.

2. Equipment Support

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

3. Surface Protection

- a. Painted Surfaces: All equipment which 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.
- b. 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.).
- c. 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.

4. Drives

- a. Manufacturers' Manuals: Reference should be made to the manufacturers' manuals for the specific items involved for detailed instructions.
- b. Motors: These should be removed (except from unit type variable speed drives such as Reeves, U.S. Varidrive, etc., for which see (c) below) and located in a dry central area or building where they can be electrically connected and run for one hour each month. Lubrication should be completed according to the manufacturer's instructions. Motors should be kept loosely covered with a plastic or other waterproof cover between running periods.


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<p>c. Variable Speed Drives: Belt driven variable speed drives should be tightly wrapped or boxed so as to minimize attack by moisture. The wearing faces of the sheaves of Reeves drives are protected against corrosion by a special coating applied by the manufacturer. This coating need not be removed but will wear off in use. These drives should be run monthly also, if the motors are part of the unit, but without any attached load. The speed adjustment should be varied over the full range and left in the low speed position at the conclusion of each running period.</p> <p>d. Seals: Special attention should be paid to protecting seals from deteriorating. A heavy application of grease or Compound L completely covering the seals is usually sufficient. Rotating shafts should be turned frequently to prevent them from sticking.</p> <p>e. Reducers:</p> <ol style="list-style-type: none"> (1) If at all possible, reducers should be coupled with the appropriate motors on a base and driven periodically. The proper lubricants should be used and required level maintained if this procedure is followed. At start-up the gear boxes should be completely drained and refilled to the proper level with the correct grade of lubricant. (2) An alternative is to drain the reducers and refill them to the top with the manufacturer's recommended oil preservative to prevent corrosion and rusting of the gears. Breather or vent holes should be loosely plugged to permit venting in case of pressure build-up. Before the reducers are put into service, the oil preservative should be drained and the reducers refilled to the proper operating level with the appropriate lubricant. When a preservative oil is used, seals may deteriorate and need replacement to prevent leakage in operation. Reducers should be checked monthly during both storage and use for appropriate oil levels and the existence of any leaks. <p>f. Bearings: All bearings should be liberally greased through their grease fittings. Seals or exposed portions should be heavily greased so as to minimize penetration of air or water.</p> <p>g. Drive Gears: Gears should be greased or protected with a rust preventive, renewed as required.</p>			

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5. 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.

D. Supplementary Instructions

None, unless attached.

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B. Field Service1. Preparation Prior to Field Service

Field service is available from Komline-Sanderson for Kompress Belt Filter Press check out and start up instructions. Refer to the final contract documents for the terms of service for the project. In order to apply service time to the best advantage of the installing contractor and the owner, the following points should be confirmed before submitting the request form for the Komline-Sanderson Service Representative. All service request forms must be signed by an authorized representative of the contractor/owner.

a. When CHECKOUT ONLY will be requested:

- (1) The plastic shipping cover, blocks and banding material have been removed. All equipment must be thoroughly cleaned of debris to prevent any possible damage to the equipment.
- (2) All components have been accounted for and filter installation is complete. (with the exception of filter cloth (belt) installation).
- (3) The contractor must have men available continuously to assist the K-S Servicemen. The amount of help required will depend on the size of the filter installation.
- (4) All motors and controls are connected and power is available. All field wiring and interlocks have been completed and tested for continuity.
- (5) Water is available at all water connections. All piping has been tested for leaks, flushed and cleared of debris.
- (6) A pneumatic or hydraulic supply is provided and operable.
- (7) Piping has been checked for correct supports (hanger size and location). Rotation direction and oil level of each drive is a required. Units have been greased according to recommendations.
- (8) A clean work space must be provided around the belt press installation area.
- (9) Lighting in the area must be adequate.

b. Where complete CHECKOUT and STARTUP have been requested:

- (1) All of the above apply.
- (2) A supply of conditioning polymer of the proper type or types should be on hand in sufficient quantity for normal operation.
- (3) Sufficient material of at least the specified solids level should be available to permit a minimum 2 day run.
- (4) The superintendent and filter operators should be on hand full time while the K-S service representative is present. The plant personnel can learn much even during checkout of equipment.
- (5) Instruction manuals should have been thoroughly read by plant personnel.


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OPERATIONA. Start-Up Preliminaries (to be done in conjunction with K-S Service Technician).1. Machine and Auxiliary Equipment Preparation

- a. General: Check to see that machine is installed completely and properly, it is level and square and all rolls and drums are aligned. See page 6 - 4 for further information on roll and drum alignment. Also Check that the gravity zone seals apply pressure evenly on the belt.
- b. Clean-up: Clean all construction debris and foreign material from the machine, its belts and the immediate vicinity of the machine.
- c. Set-Screws and Bolts: Check for nuts and bolts that have become loose during installation or shipment. Particularly check all set-screws.
- d. Electrical: Check to be sure that -
 - (1) Proper voltage is supplied to panel.
 - (2) All fuses, relays and timers are in place.
 - (3) There is no loose wiring on any starters, controls or other components.
 - (4) Interconnecting wiring between the control panel and junction box terminal strips is complete and correct.

CAUTION - Be sure power is OFF to the panel before doing any of the above checks. See additional CAUTION on page 6 - 13.

- e. Lubrication: Check to ensure that all bearings, gears, pumps, drives, etc. have been properly lubricated (see Section 6). Any damage that may occur from lack of or improper lubrication voids the warranty.
- f. Couplings: Check that all couplings are installed properly and aligned. Sometimes they can become loose or misaligned during shipment and/or installation.
- g. Piping and Tubing: Visually check all piping, pneumatic tubing, electrical conduit, etc. and connectors for proper support and tightness of connections.
- h. Motor Rotation: Check all motors for proper direction of rotation, correct if wrong. Note: do not run pumps for feed, belt wash or polymer dry for more than 3 seconds.


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2. Pre-Start-Up Check Points and Adjustments

- a. Wash Water: Flush all lines including the headers containing the nozzles. Then operate the system to be sure it will come up to the proper pressure and does not contain any leaks. At the same time check for leaks in the wash water collection system.
- b. Adjust wedge seals on each side (Note: the side seal is held in by a horizontal rod in two locking collars. While this rod is not affixed to the side seal support angle it should be positioned on top of the horizontal angle leg to hold the side seal down as well as in.
- c. Setting Timers: Set timers in control panel. (See attached schematic) Note: If a programmable controller is used this section does not apply. The timers are included in the programmable controller and are preset at the factory.
 - (1) Start Sequence: Set timer 1 TM at 5 minutes for belt wetting.
 - (2) Shut-down Delay: Set as required for the running speed used. This timer (3 TM) delays automatic shutdown by sufficient time to allow complete belt wash-down after material feed has been stopped. Range of times is 3 minutes to 30 minutes. A setting of 15 minutes is recommended for the slow belt speeds used during start-up operations.
- d. Belt Installation: Install all belts as described in Section 6.

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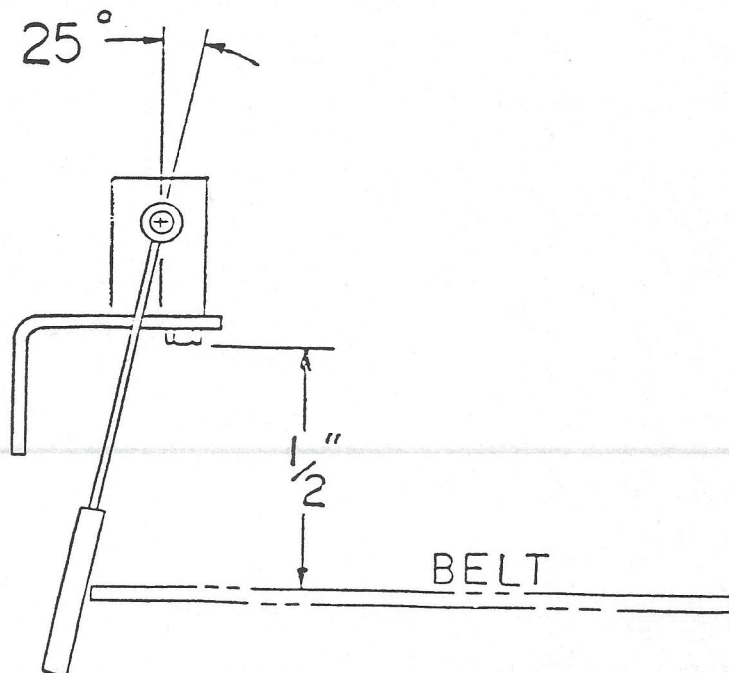
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e. Pneumatic Belt Steering:

- (1) Preset the pressure regulator for the belt tracking cylinders to 80 psi minimum (see figure, page 5 - 5). Be sure air supply is on and all valves are open, including any automatically operating solenoid valves.
- (2) With the belts centered on the machine and the steering rolls 90° to the long axis of each belt, set each switch and paddle so that the paddle is offset approximately 25° from vertical and the closest part of the switch is approximately 1/2" from the belt.




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<p>f. Pressure Belt Take-up and Tensioning, Pneumatic:</p> <p>Two (2) pneumatic (air operated) cylinders, one on each side of the press, are supplied for each pressure belt. Each pair of air cylinders employs a mechanical (rack and pinion gears) connection link such that belt take-up and tensioning for a single belt will increase or decrease uniformly across the belt width when air pressure is increased or decreased. (Refer to Page 6 - 4 for further information on alignment).</p> <p>CAUTION - Never operate (or pressurize) the pneumatic take-up cylinders without the guards in place. (See diagram on Page 5 - 5A).</p> <p>(1) Using the take-up air pressure regulator on the air control panel (see diagram on page 5 - 5A), slowly adjust the pressure to take up the visible belt slack. <u>Do not over tension!</u> After the press is started the tension should be increased to the point that the belts do not slip on the drive rolls. Both the upper and lower pressure belts will now have the proper initial tension settings.</p> <p>(2) In order to establish the optimum pressure setting and belt tension for process requirements fine adjustments in air pressure can be made once the press is in operation.</p> <p>Belts should not be allowed to become slack while the machine is running. This is especially important when the machine is being shut off and emptied of cake, or if the material feed unexpectedly shuts off. If the belt becomes slack there is a good possibility that it will become wrinkled. This can cause permanent damage or lead to shortened life.</p> <p>CAUTION - See warning label on air control panel on press for maximum air pressure setting for take-up rolls.</p> <p>g. Low air pressure switch:</p> <p>Test unit by shutting off air supply and allow pressure to drop below set point. Switch must initiate instant shutdown of the belt filter press and feed pumps. If the unit does not go into the shutdown mode, do not operate the belt filter press until the fault is located.</p>			

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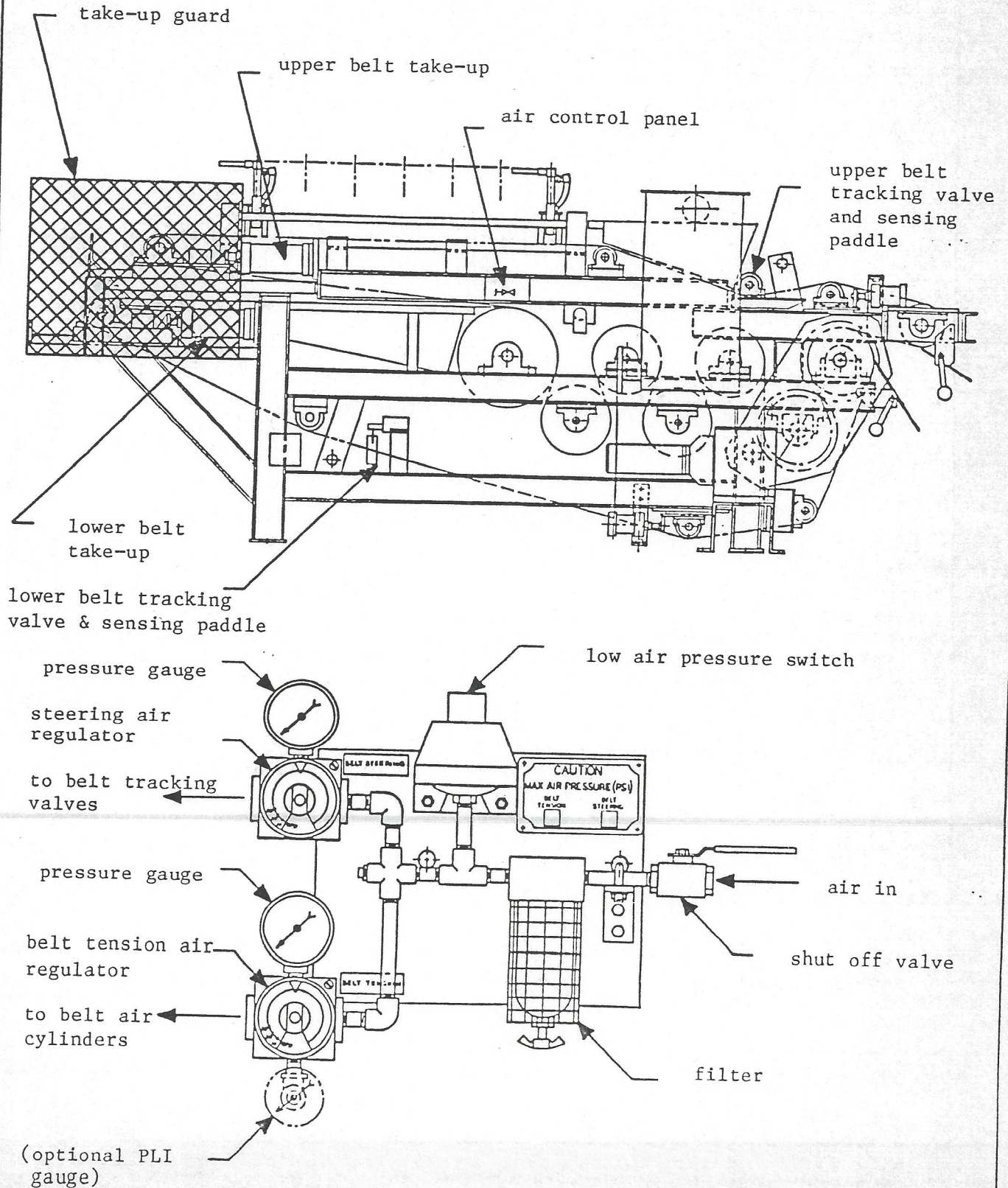
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3. Operating Modes

Note: The following Kompress operating (control panel) information is general for correct operation of the K-S Kompress unit. If the control panel is furnished by Komline-Sanderson the specific instructions are inserted after section five (5) page sixteen (16).

A unit may be arranged for start-up and shut down in either of two operating modes: Manual or Semi-Automatic.

(Note: if a "Manual Only" control panel has been furnished, disregard all reference to semi-automatic).

a. Manual

In this mode the operator assumes complete control of all start/stop functions. Other functions, such as belt tracking and alarm systems operate automatically.

b. Semi-Automatic


In this mode the operator initiates start up and shut down by actuation of a single control. Timers control the starting and stopping of the various motors.

Other functions, such as belt tracking and alarm systems operate automatically. Individual components may be controlled manually while running. In some cases there are interlocks for equipment protection or safety purposes and stopping one item will also stop another.

4. Selection of Mode and Speed

When all materials and supplies are on hand, all connections made, and all check points examined the unit is ready to be started. During the initial start-up and trial run, manual operation may be preferred, even with semi-automatic machines.

Once satisfactory operating conditions and speed have been established, the various adjustable speed controls can be pre-set at desired levels, permitting the Kompress® to be started up rapidly and uniformly at such levels, either manually or semi-automatically. During initial start-up periods, however, or in testing programs, it may be most practical to have all controls at their minimum levels, raising speeds as results indicate.

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B. Check Points at Start-Up1. Check Points Before First Start-Up

Prior to the first start-up the following checks should be made.

a. Safety Features

- (1) Inspect the press to make certain that all guards and covers are in place. Never operate the unit without guards.
- (2) Inspect the control panel and all electrical enclosures to make certain that they are properly sealed and there are no exposed wires. Never operate press with exposed wiring or connections.
- (3) Check operation of emergency stop cable, alarm systems and silence button. Never operate the press unless all alarms are functioning properly.

b. Gravity zone

- (1) Check support grids and plows to be sure they are in the proper place and the belt will not catch on them.

c. Belt drive

- (1) Run this for at least one hour to check for proper belt tracking and drive operation. (See belt misalignment, Section 5, Page 9)

d. Pump Calibration


The sludge and polymer pumps should be calibrated so that a chart or graph can be prepared showing the gpm or gph pumped at the various speed settings. This is normally accomplished by pumping water (or preferably the liquid to be pumped in actual operation) into a known volume container and measuring the fill time.

e. Other Calibrations

The speed of the pressure belts (in fpm).

f. Polymer Selection and Preparation

- (1) Flocculation Tests: These should be made on a bench scale utilizing a K-S capillary suction timer to confirm or determine the required polymer type, concentration, feed rate, etc. (See attachment after Section 7 Page 1)

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- (2) Solution Preparation: A solution of polymer selected on the basis of flocculation tests should be prepared in the polymer mix tanks.

CAUTION: Chemical safety goggles must always be worn when working with polymers. Clean up any spills immediately. Polymer solutions are very slippery.

Dry polymers are usually prepared at a concentration of 0.1 to 0.2% and should be mixed for at least one hour after being added to the required amount of water. (0.1% concentration will require 0.83 lbs. or 378 grams of dry polymer per 100 gallons of water). Certain dry polymers contain extremely fine particles and a dust mask may be required during handling. Consult manufacturers safety data sheet before opening.

"Liquid" polymers (actually concentrated polymer solutions), will normally be used at a nominal concentration of 1 to 2% in water, and at least 1/2 hour of mixing should be provided before use. (1% concentration will require 1 gallon of liquid polymer to 99 gallons of water).

2. Push Button and Switch Operation

CAUTION: Make certain that the main disconnect switch on the electrical control panel has been turned off before attempting to make any adjustments inside the panel!

Each component of the system is controlled by a push button control. The push button is used only in the Manual mode of machine operation and operates on a pull-to-start and push-to-stop basis. A light inside the push button turns on when the push button is actuated, and shows that the affected motor is on.

The pressure belt drive has a two position selector switch, the second position being "Jog". When in this position the drive can be operated by pulling the push button switch outward. The drive will continue to operate only as long as the push button is held in that position. The "Belt Drive Misalignment" shutdown function is by-passed when the selector switch is in the "Jog" position. This is to allow operation for belt realignment. Belts should not be operated under misaligned conditions except to move them back into alignment, and then only under close observation to be sure that the belt is not damaged.

Normally each component is operated as part of the automatic start sequence, initiated by actuating the "Cycle" push button. All motors may also be operated manually by using the individual push buttons.


Some components should not start until others have been running for some brief period of time. In such cases, timers separate the start sequences. These are pre-set by Komline-Sanderson, but may be adjusted in the field if necessary (check with K-S!).

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3. Check Points Before Each Run

Before starting a run in any mode, the following preliminary checks should be made:

- a. Inspect the press to make certain that all guards and covers are in place. Never operate without guards.
- b. Inspect the press for tools or other objects that may have been left on or near the press. Serious damage to the belts, rolls or drums could occur if metal or other noncompressible objects are run through the unit.
- c. Inspect the control panel and all electrical enclosures to make certain that they are properly sealed and there are no exposed wires. Never operate with exposed wiring or connections.
- d. The main breaker to supply power to the control panel should be on. Be sure the Emergency Stop is in the reset position.

(Note: Power should be on to the panel at all times, except when electrical maintenance is being performed.)

- e. Pre-set all speed controls (pressure zone drive, polymer pump, sludge pump) to the proper levels using the speed controls on the panel. Adjust the upper and lower belt takeup devices as described on page 5 - 4.
- f. Check operation of emergency stop cable, alarm systems and "Silence" button. For example, all belt misalignment indicators can be checked by moving the sensing rods toward the outside of the press. Never operate the press unless all alarms and interlocks are functioning properly.
- g. If the alarm sounds acknowledge (silence) the alarm by pressing the "Silence" button, then correct the condition causing the alarm. It will be one of the following:

- (1) Pressure Belt Misalignment (initiates instant shutdown).

Before going any further it will be necessary to check and reposition the belts. This is done by operating the belt at low speed and with great care. The selector switch for the belt must be in the "Jog" position. The control for the belt can then be held manually in the "On" position for as long as it is necessary to run the belt and move it into alignment. While doing this, check carefully to make sure that the belt alignment sensors are functioning, and that the belt is slowly moving back toward its proper position. Belt retracking may be aided as follows. With the press turned off, bleed off the tension on the belt so that it becomes slack. Pull the belt toward the center of the press immediately before and after the take-up roll. Retention the belt when it is in the proper location.


- (2) Low Air/Hydraulic Pressure (initiates instant shutdown).

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CAUTION: Never attempt to make adjustments to rolls, drums or gear racks while the machine is operating or under tension. Make certain that power to the belt drive has been turned off and "locked out" to prevent accidental operation while adjustments are being made. All pneumatic or hydraulic pressure to the cylinders must be bled off and supply valves closed to prevent accidental pressurization while adjustments are being made.

C. Manual Start-Up and Shut-Down Procedure

1. Start-Up

All components start and stop independently including the material feed pump and polymer feed pump.

The manual start-up procedure is as follows. It can also be used for test purposes, manual process control and override of automatic control.

- a. Be sure that polymer solution is available in the supply tank, belt wash water is available, and material is at hand for processing. Check all valves in the polymer and material lines to make sure the polymer and material will flow properly from the source to the pump and to the press.
- b. Close the main disconnect switch (i.e. supply power to the machine control panel) never operate the press unless all procedures in Paragraph B-3 have been followed. (If the control panel is furnished with a programmable computer, power to the panel should be left on all times, except when electrical maintenance is being performed.
- c. Start the discharge conveyors and any other related auxiliary equipment.

CAUTION: Make certain that all equipment has been checked and safety guards are in place prior to starting it up.


- d. Set "Run - Jog" switch to "Run".
- e. Start the air compressor or open valve to plant air system.
(Note: If unit furnished with hydraulics - start hydraulic system, check gauges to be certain of setting as outlined in Paragraph B-3.
- f. Actuate the belt drive control. (With this and other SCR drives there will be a slight delay between the time the contacts close and the start of operation of the drive itself.)
- g. Start the wash water pump. Water should spray from the belt wash nozzles. If not, check the valves, pump, or water supply. Belts should be wet before material is delivered to them.
- h. Wait until the wetted portion of the belts reach the material introduction points.

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- i. Actuate the polymer pump and material feed pump in that sequence.
- j. The entire unit is now in operation. Adjustments to optimize performance may be made at the variable speed drive controls or other components, as required.
- k. Each component may be turned on or off independently of the others using its own push-button. The drives may also be turned off simultaneously using the "Emergency Stop" push button.
- l. Monitor press operation. Alarms and instantaneous shut-down and program shut-down controls are all functional during Manual operation.

2. Shut Down

- a. Stop the sludge pump and polymer pump in that order.
- b. Allow the belts to discharge sludge completely and be washed down by a full pass under the spray nozzles. Belts should not be allowed to become slack while the machine is running. This is especially important when the machine is being shut off and emptied of cake. If the belt becomes slack there is a good possibility that it will become wrinkled. This can cause permanent damage or lead to shortened life.
- c. Stop the belt drive and belt wash pump.
- d. Stop any auxiliary drives.
- e. Stop the air compressor, or shut off valve to plant air system.

(Note: If unit furnished with hydraulics - shut valve and stop hydraulic power system).


(Note: If unit is shut down with pneumatics/hydraulics turned off or belt becomes slack the lower steering roll must be independently supported on air cylinder side.)

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D. Semi-Automatic Start-Up and Shut-Down Procedure

In this mode the entire machine will start up in accordance with the settings of the selector switches and speed adjustments simply by actuating the "Cycle" button. This semi-automatic start includes the conveyors, air compressor or hydraulic system, and wash water pump if they are connected to the electrical panel.

There is a delay after the belts are started to make certain their surfaces are wetted. After about 2 minutes delay the sludge pump, polymer pump and auxiliary motors are started simultaneously.

The reverse sequence will occur when the "Cycle" button is pressed. It will stop the sludge pump and polymer pump, but not allow the belt drive to stop until a brief time interval has passed during which the belts are cleared of sludge and washed. At the end of this interval the belt drive and belt wash will be stopped, and the machine has been shut down. Auxiliary drives will also be stopped.

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E. Emergency Stop and Automatic Shutdowns

1. Emergency Pushbutton:

The "Emergency Stop" system can be used to turn off the entire machine in case of an emergency. It will function at any point in any mode. It should not be used except in a true emergency since it will leave the machine loaded with material which will have to be removed either manually or by re-starting the entire machine.

2. Automatic Shutdown:

Integral safeguards have been provided which will shut the machine down automatically in either a sequential fashion or all components simultaneously if unsafe or improper operating conditions occur. These are listed on page 5 - 9 along with the type of shutdown they initiate.

3. Emergency Stop Pull Cord

The emergency stop pull cord can be used to turn off the entire machine in case of an emergency. It will function at any point in any mode. It should not be used except in a true emergency since it will leave the machine loaded with material which will have to be removed either manually or by resetting the entire machine.

If any of these occur, both an audible alarm and a visual indicator on the control panel are actuated to single out the cause at the same time that the shutdown is initiated.

CAUTION: Functions described in Paragraphs E-1, E-2, & E-3 must be tested daily prior to start-up of the machine and on every shift. Do not operate the machine if functions are not operating properly.

F. Miscellaneous Shut Down Details


1. Main Breaker

When all drives have been de-energized the main breaker on the panel may be opened, shutting off all power to the machine.

(Note: If the control panel is furnished with a programmable controller, power should be left on to the panel at all times, except when electrical maintenance is being performed).

2. Conditioning Tank

The conditioning tank should be drained and flushed after any shut down of more than a few minutes duration.

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G. Operating Adjustments1. Gravity Zone

- a. Note floc size and dewatering rate. Maintain minimum floc size consistent with satisfactory dewatering prior to gravity discharge.
- b. Adjust polymer feed rate for best visual dewatering rate just prior to the gravity discharge. If material is drained in less than half the length of the gravity section, the polymer feed rate is too high.
- c. Adjust belt speed to best drainage condition (volume reduction and cake discharge characteristics).
- d. Adjust the Roto-Trak™ plows so they properly contact the belt to provide maximum dewatering. Plows must be set on a slight angle (1/2 to 1 degree) to the belt in the direction of belt travel, otherwise they may have a tendency to smear. They should also be spaced to cover the full width of the belt leaving no gaps in the direction of belt travel.

2. Pressure Zones

- a. Adjust speed so that cake thickness at the entrance gap to the wedge zone will produce a final cake discharge less than 1/2" - recheck gravity drainage.
- b. Observe material passage through the machine. Note the width of the cake on the 20" diameter drum at the end of the medium pressure zone and also at the point of discharge. The material should be kept within the width of the belts. If it protrudes outside the belts, the belt speed should be increased slightly.
- c. After material flow has stabilized (1/2 hour or more) adjust the belt speed and tension, keeping the material within the belt edges at all times.
- d. Adjust feed rates and pressure zones to obtain desired balance between throughput rate, cake solids and polymer use.
 - (1) Variation of belt speed in one zone may require other changes in different parts of the machine.
 - (2) Variation in feed rate of material or amount or type of polymer may call for changes in belt speeds or zone pressures.
 - (3) For optimum dewatering operation the thickness of the discharge cake should be about 3/8". All adjustments should be made with this objective in mind. Do not run greater than 1/2" cake thickness without checking with K-S.
- e. A half hour or more should be allowed for stabilization of operation before samples are taken for analysis.
- f. Material and polymer flow rates and solids level in the material feed should be confirmed periodically to be sure no changes have occurred.



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H. Data Recording


Accurate and complete data on all variables should be kept for every run. Observations of performance and unique occurrences should be recorded also. These will be valuable in reviewing performance, determining economics, and planning for the future.

A suggested form of data sheet is provided in Appendix A. It provides for recording of speed settings and inlet sludge, filtrate, and cake characteristics along with other pertinent details. Its use is recommended.

I. Routine Operation

Once desired operating conditions and plant operating conditions have been established and stabilized, the Kompress® can be operated in either the manual or semi-automatic mode. In either case, it is desirable that an operator be present during the first and last half hour of operation.

Periodic checks and sampling during the operating day are always desirable to take note of possible malfunctions or maintenance needs, and to help keep a proper log of machine performance.

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J. <u>Trouble Shooting Check List</u>			
	Trouble	Possible Cause	Remedy
1. Poor gravity drainage	Belt speed too high; improper washing Plows not in contact with belt Improper conditioning Build-up on doctor blade		Reduce belt speed; check nozzles Clean & re-position Adjust polymer feed or type Clean
2. Sludge build-up on belts and rolls	Improper washing Excessive or insuf- ficient pressure on sludge cake Improper conditioning		Check and clean nozzles; realign nozzles; check water pressure Adjust belt tension as required Adjust polymer feed or type
3. Belt(s) not tracking properly	Sludge build-up on rolls and drums Insufficient belt tension Drum or roll misalign- ment Limit switches out of position Limit switches not functioning Seals improperly adjusted (gravity)		Check (2) above Increase pressure Realign Reposition Check and repair Adjust
4. Cake migrating at edges of belt	Pressure too high Sludge build-up on belt Loading rate too high Improper conditioning		Reduce pressure Check belt washing system Check solids in feed; increase belt speed or decrease sludge feed rate Check and adjust



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J. Trouble Shooting Check List (continued)

Trouble	Possible Cause	Remedy
5. Cake extruding through belt	Improper conditioning	Adjust
	Too much applied pressure	Reduce pressure
6. Low or inconsistent sludge feed rate	Plugged piping	Clean or flush lines
	Pump wear	Disassemble and inspect
	Air in suction line	Inspect and repair
7. Final cake moistures too high	Belts blinded	See (2) previous page
	Improper gravity drainage	See (1) previous page
	Not enough applied pressure	Increase air pressure (caution - do not exceed warning label max. setting)
	Improper conditioning	Adjust
	Belt speeds too high	Reduce
8. Improper cake discharge	Doctor blades not adjusted	Adjust per page 6 - 10 (P.)
9. Specific component operating problems (applies to components supplied but not manufactured by K-S)	----	Contact K-S Customer Service Dept. for recommendations

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EQUIPMENT: KOMPRESS		No. Assemblies: TWO(2)

OPERATION: MANUAL MODE

Operator assumes complete control of all start/stop functions. Alarm conditions energize visual and audible annunciators. Belt tracking is automatic between limits. Alarm and shutdown occur with belt alignment beyond limits. Any additional alarm interlocks, see page 2.

INITIAL CONDITIONS:

To be confirmed by operator before starting.

1. Sludge available for processing.
2. Polymer available for processing.
3. Belt wash water supply available.
4. Power supply available to panel. Main disconnect closed.
5. Air supply available.

1. START UP:

- a. Activate the air/washwater solenoid switch.
- b. Activate the belt drive start controls.
- c. Wait until wetted portion of belts pass beneath sludge introduction points.
- d. Activate the sludge and polymer feed pumps. (Not K-S controlled)
- e. Monitor press operation.

2. SHUTDOWN:

- a. Depress the sludge and polymer feed pumps.
- b. Allow belts to completely discharge sludge and wash down.
- c. Depress belt drive.
- d. Depress air/washwater control.

3. During operation a belt guide system will monitor and correct minor misalignment of belts without any signals to or from the panel.

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4. During operation the system will perform monitoring and alarm functions as follows (Alarm conditions will cause audible and visual alarm indications):
 - a. Low air pressure: After adequate air pressure is sensed (indicator light will de-energize), start the belt drive. Loss of air pressure during operation will cause instant shutdown of the press and all auxiliaries controlled from this panel. Air pressure is sensed by a pressure switch mounted on the Kompress.
 - b. Belt Drive Failure: Loss of rotation from the perforated roll will cause audible and visual alarm, and instant shutdown of the belt filter press. Rotation is sensed by a proximity switch.
 - c. Pressure belt misalignment/Emergency Stop Misalignment prior to start up will prevent initiation of start up. Misalignment during operation will de-energize the belt drive. Emergency stop (pushbutton or trip wire): This causes instant shutdown of the belt filter press. Belt misalignment/Emergency trip is sensed by limit switches mounted on Kompress.
 - d. See table (sheet 4) for other alarm conditions.
5. The reset/test button is a dual function control. The reset function resets the alarm circuitry after the alarm is corrected. The test function activates all lamps. To use the test function depress and hold for at least one (1) second.
6. The programmable controller memory is provided with a battery to maintain its contents when AC power is off. A new battery can maintain memory without application of power for 2 to 5 years. The battery is not used when power is applied to the system, therefore it approaches shelf life which is 8 to 20 years. Battery life is monitored by the PC, which causes the Emergency stop light to flash when battery is low. When this light is flashing the battery should be replaced within several days. Refer to series one maintenance pg. 6-5 for replacement instructions.

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7. Jog/Run operation: In the manual mode of operation, setting the selector switch to "Jog" will allow the operator to jog any motor controlled by the KS supplied panel. This selector must be set to "Jog" to operate belt drives for realignment after shutdown occurs due to misalignment. Turn the selector switch to "Run" for normal press operations.
8. Special Functions:
 - a. The PC monitors the motor thermal cutouts (TCO), motor overloads (OL) devices or any other N.C. motor fail contacts by timing the period that the stop circuit is open. Normal stop control actuation time is less than 500 msec. If any stop circuit is open for five (5) seconds or more the device being monitored is assumed to be tripped. When this occurs the respective status light will begin flashing, the alarm horn will sound and the belt press may go into a shutdown mode.
 - b. Air/washwater selector switch: To open the air/washwater solenoid valves (Customer supplied) turn the selector switch to the "open" position. To close the solenoid valve turn to the "closed" position. In the "auto" position the solenoid valves open and close automatically with the operation with the belt drive.
 - c. Belt Filter Press Selection: To choose which belt filter press is to operate, turn the selector switch to the "No.1" or "No.2" position for the respective press.

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ALARMS

Alarm Condition	Alarm		Shutdown	
	Audio	Visual	Instant	Programmed
Main Drive Fail	X	X	X	-
Main Drive Belts Misaligned	X	X	X	-
Low Air Pressure	X	X	X	-

CONTROL COMPONENTS CATALOG CUTS

INCLUDED

DESCRIPTION

X Circuit Breaker, Thermal Magnetic Square D FAL Series
 X Contactor, Siemen-Allis
 X SCR-DC Drive, KBIC
 X Transformer, G.E.
 X Transformer, Hevi-Duty
 X Pushbutton/Light, Microswitch PT Series
 X Pushbutton, Microswitch PT Series
 X Selector Switch, Microswitch PT Series
 X Indicator, Microswitch PT Series
 X Potentiometer, Microswitch PT Series
 X Horn, Edwards AC Series
 X Programmable Controller, G.E.
 X Enclosure, Hoffman
 X Relay, S & D
 X Ammeter, Extech


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MAINTENANCEA. Warranty and Service

With any system of machinery, no matter how simple, it is absolutely imperative that a preventive maintenance program be initiated and actively pursued. It is only through a regular schedule of lubrication, inspection, and replacement of parts subject to wear that the guaranteed performance and long life of the equipment can be assured.

Stated below is Komline-Sanderson's standard warranty which covers all components except the filter medium:

WARRANTY - Seller warrants that the material and workmanship going into our products is of good quality and in conformity with best commercial practice. Parts found to be defective in material or workmanship under normal use and service within one year after shipment will be repaired or replaced without charge f.o.b. original point of shipment, the responsibility of Komline-Sanderson being limited to the cost of the defective parts. Decomposition by chemical action and wear caused by the presence of abrasive materials shall not constitute defects. We assume complete undivided responsibility for the satisfactory functioning of all equipment supplied by us.

Replacement of defective parts within the warranty period can be handled in a number of ways, but the following method is preferred. When a faulty part or material is found it should be reported to K-S by the contractor, superintendent, or operator. K-S will send a replacement along with an invoice for the part, and cancel the invoice upon receipt of the defective part at Peapack, New Jersey. This procedure eliminates replacement, at K-S expense, of items that have simply been lost or mislaid or replacement of parts that have been damaged and were not truly defective.

When ordering parts or requesting information, give the location of the installation (city and state), serial number and job number from the Kompress® name plate; and if applicable, the make, model number, size, electrical characteristics, and serial number of any of the items in question. Direct these inquiries to:

Customer Service Department

Graver Water Company

2720 US Hwy 22

Union, New Jersey 07083

Instructions for the maintenance of specific machine components are given on the pages which follow.



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B. Lubrication

The table of Lubrication Recommendations on page 6 - 3 lists the various points to be lubricated on a regular basis and the lubricants to be used. A list of Lubricant Equivalents is provided below.

C. Lubrication of Auxiliary Equipment

Instructions for any special equipment supplied by Komline-Sanderson but not manufactured by Komline-Sanderson will be found in the manufacturers' literature attached.

Motors, gear reducers, and variable speed drives may come from a number of different manufacturers and lubrication recommendations may vary accordingly. Follow name plate instructions for frequency and method of lubrication. Where available, manufacturers' instructions for these items are attached.

D. Lubricant Equivalents**1. "Gulflex Moly" Equivalents**ManufacturerLubricant Name

Cities Service Company

Citgo Extra Range Grease

Exxon Company

Beaco Q-2 Lithium Base Moly Grease

Sun Oil Company

Sunfleet XL Grease

Texaco

Molytex Grease

2. AGMA 5 EP LubricantsManufacturerLubricant Name

Gulf Oil Company

E. P. Lubricant S-100

Mobil Oil Corporation

Mobilgear 630

Moly - XL Company

Moly - XL Gear Oil #90


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E. LUBRICATION RECOMMENDATIONS

ITEM	POINT OF LUBRICATION	LUBRICANT (a)	INTERVAL
Drum Bearings	Grease fittings (1 on each bearing)	Gulflex Moly Grease	Weekly (wmir)
Idler Rolls	Grease fittings (1 on each bearing)	Gulflex Moly Grease	Weekly (wmir)
Take Up Rolls	Grease fittings (1 on each bearing)	Gulflex Moly Grease	Weekly (wmir)
Take up Roll Alignment Shafts	Rack & Gear	Gulflex Moly Grease	Weekly
Steering Rolls	Grease fittings (1 on each bearing)	Gulflex Moly Grease	Weekly (wmir)
Drive Rolls	Grease fittings (1 on each bearing)	Gulflex Moly Grease	Weekly (wmir)
Drive Reducer (b)			
Drive Gears	Gear face	Gulflex Moly Grease	Weekly (C)

Conditioning Tank

Drive Reducer (b) (if supplied)			
Steady Bearing (if supplied)	Grease fitting	Gulflex Moly Grease	Weekly

- (a) See page 6 - 2 for equivalent lubricants
 (b) See attached Manufacturers' literature
 (c) Apply grease to gear face thru guard access hole while machine is stopped. Then start machine to transfer grease to other gears.
 (wmir = while machine is running)



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F. Roll and Drum Alignment

Keep all rolls and drums properly aligned. Misalignment could cause problems in belt tracking, and if severe, could prevent the tracking mechanism from maintaining belt alignment. Alignment has been set at the factory and checked at installation by the Komline-Sanderson field service representative.

Once the unit has been placed in operation, all set screws and fasteners should be checked on a weekly basis during the first month of operation; then on a monthly basis to insure tightness.

If for some reason alignment has changed, first check the drive rolls. They should be parallel and square with the frame. Each other roll or drum should be set so as to be parallel to them. Particular attention must be paid to the take-up rolls (after the belts are installed and tensioned). If the take-up roll needs adjustment - loosen one gear rack under pinion on cross shaft and slide it forward or backward until roll is in proper location - then tighten gear rack.


CAUTION: Never attempt to make adjustments to rolls, drums or gear racks while the machine is operating or under tension. Make certain that power to the belt drive has been turned off and "locked out" to prevent accidental operation while adjustments are being made. All pneumatic and hydraulic pressure supplies to the cylinders must be bled off (after closing supply valves) to prevent accidental pressurization while adjustments are being made.

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<p>G. <u>Belt Installation</u></p> <p>1. <u>General:</u></p> <p>CAUTION: Before initiating belt installation, make certain that power to the belt drive has been turned off and locked out. Relieve all pressure to tensioning cylinders and make certain that supply valves (pneumatic or hydraulic) are closed and secured to prevent accidental tensioning during the installation procedure.</p> <p>The Kompress uses two separate belts which follow different paths through the machine (see figure on page 6-7). Based on their respective levels at the discharge point, they are known as "upper" and "lower" belts, even though this relationship changes frequently during the pass through the machine.</p> <p>The pressure belts also are continuous, usually joined by a clipper seam at their ends. Details of the seam are shown in the figure on page 6 - 6. Fabric type may vary with the application (see Specifications).</p> <p>The upper and lower belts are of different lengths (the lower belt is always the longer of the two) and therefore are not interchangeable. Be sure the correct belt is being used when installing a new one.</p>			

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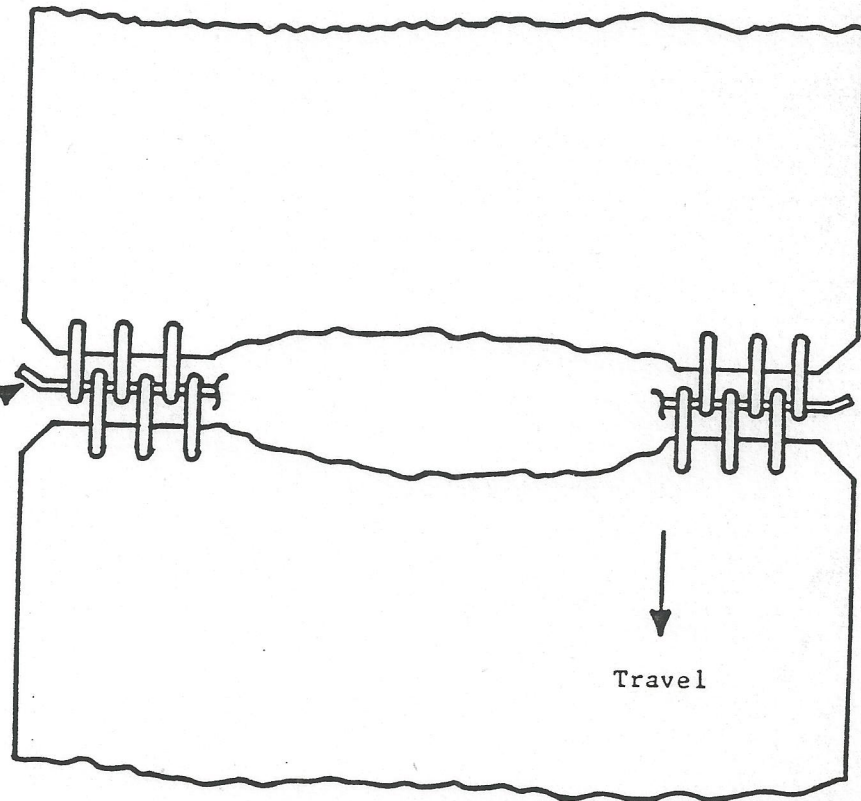
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cut
1/4" long -
make slight
bend - both
ends



Note: Hooks in splice should appear as above. Edges of belt should be aligned within 1/8".

Belt Splice

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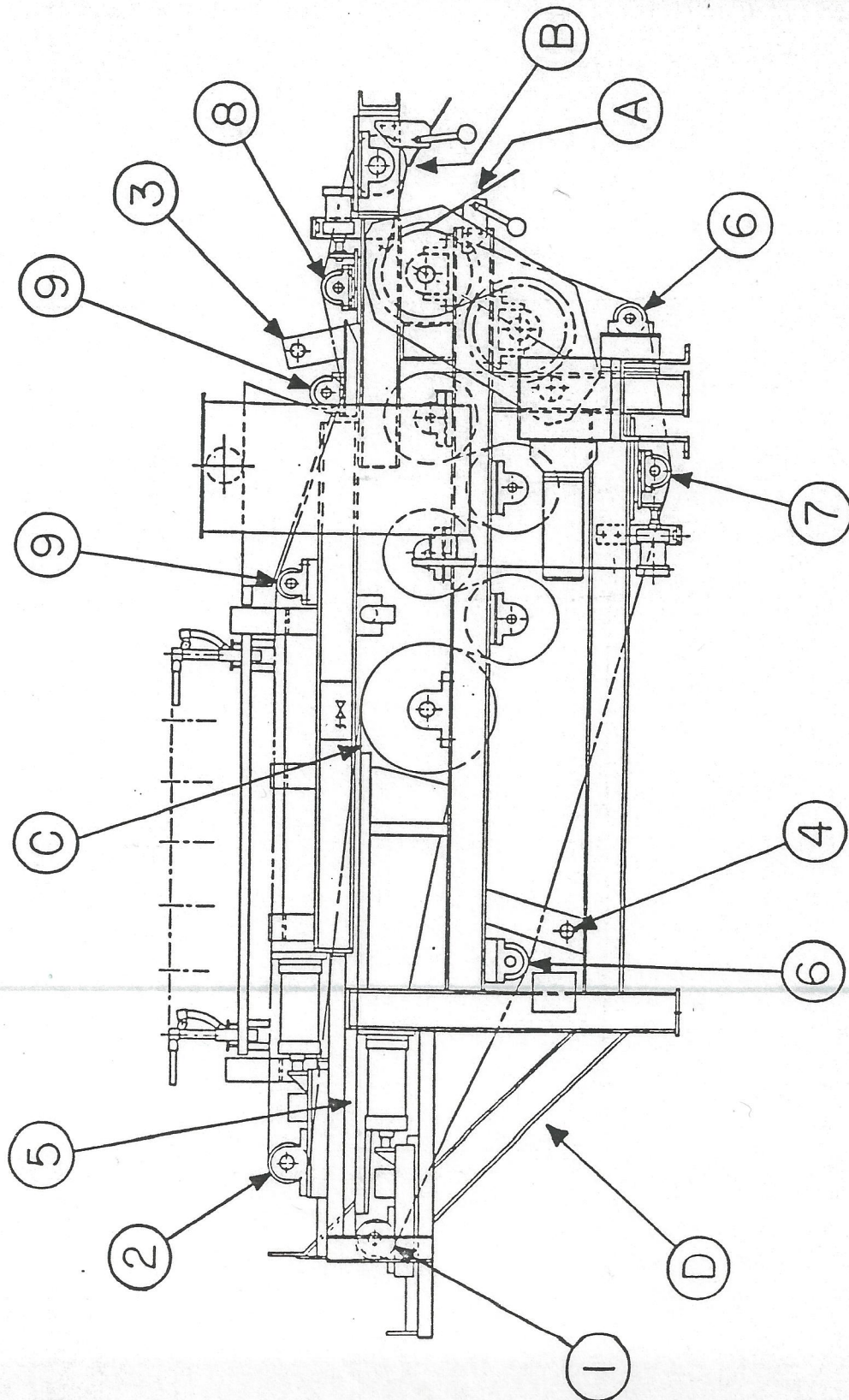
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Belt Installation

(See next page for key to numbers and letters)

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BELT INSTALLATION KEY

(See Figure, Page 6-7)

Major Belt Guidance and Control Points

- 1 Lower belt take up roll
- 2 Upper belt take up roll
- 3 Upper belt wash box
- 4 Lower belt wash box
- 5 Wedge
- 6 Lower Idler Roll
- 7 Lower Steering Roll
- 8 Upper Steering Roll
- 9 Upper Idler Rolls

Belt Installation Reference Points

- A Lower belt splicing point
- B Upper belt feed point and splicing point
- C Meeting point, upper and lower belts
- D Lower Belt Feed Point


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2. Belt Installation Instructions (Six (6) men required!):

- a. Retract upper and lower belt take-up rolls as described on page 5-4. (See Control Points 1 and 2 on Figure, page 6-7).
- b. Loosen top half of upper wash box (See Control Point 3) and bottom half of lower wash box (See Control Point 4).
- c. Retract upper and lower doctor blades near points B and A respectively.
- d. Loosen wedge side seal adjusting rod.
- e. Place rolled lower belt under press near Point D. Inspect belt for direction of travel arrows and "this side up" markings.
CAUTION: be sure personnel have proper support when handling the belt. Also be sure belt does not catch or snag on anything.
- f. Start leading edge of belt at Point D, thread around take-up roll through the wedge zone (under the side seals and the pressure applying members) and stop at Point C at large diameter drum (follow installation drawing). One man is positioned on each side of the press to thread the belt and a third man is stationed at Point D to feed the belt evenly into the press.
- g. Place rolled upper belt near the upper discharge roll (see Point B). Observe same precautions as for lower belt regarding direction of travel and proper side up.
- h. Start leading edge of upper belt over the discharge roll, over the steering roll, through the wash box under idler roll, across inclined gravity trays, over idler roll, across the gravity trays, around upper take-up roll, (point 2) over wedge zone, and thread to Point C (follow the installation drawing using same technique as with lower belt).
- i. Once Point C has been reached with both belts, two men are required to rotate the drum while holding the belts against the face. As the belts advance, the men on either side of the press simultaneously thread both of the belts through the drum section (see customer submittal drawing for correct drum profile/cloth path) and out through the discharge rolls at Points A and B. The drum rotation should be slow in order to avoid overtravel of the upper belt past the juncture at Point B. Other man should guide the belts as they unroll.


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<p>j. Discontinue rotation of drum once both ends of upper belt are positioned at Point B. Inspect leading end of splicing wire for burrs or sharp points and remove any found. A rounded end will eliminate snagging during the splice. Two men are required, one on either side of the belt to join the ends of the belt while the third man inserts the splicing wire into the clips. Inspect the clips on both sides of the belt to ensure that the ends are even across the width and to ensure that every other clip is opposed and that clips are properly meshed prior to inserting the splicing wire. If several clips are bunched together, the splice will not be uniform and the belt will bunch up at that point.</p> <p>Insertion of the wire is done most effectively with a pair of lineman's or needlenose pliers. Feed the wire by hand until it becomes difficult to feed. Then grasp the wire with pliers 1" outside the starting clip and continue to feed the wire into the splice 1" at a time. Do not attempt longer strokes or you may bend or kink the wire. If the wire becomes hung up or difficult to move forward, rotating it a quarter turn will usually free it. Upon completion of the splice bend the wire slightly at both first and last clips, then cut the wire within 1/4" of the clips. (See Figure on page 6 - 6).</p> <p>k. The balance of the lower belt is unrolled, threaded under the press and up to the lower discharge roll at Point A. Proper sequence is under idler roll, through the wash box, under the steering roll, under the idler roll and around the discharge roll.</p> <p>l. Splicing procedure is identical to that of the upper belt.</p> <p>m. Reassemble both wash boxes.</p> <p>n. Reset wedge.</p> <p>o. Extend upper and lower take-up rolls as described on page 5-4.</p> <p>p. Position upper and lower doctor blades against belts on discharge rolls. The nuts holding the blades against the roll should be hand tight only. Do not use a wrench to tighten. The blades should touch evenly across the width of the roll. Shim as necessary behind the blade to accomplish this. When the blade is properly adjusted, the belt splice will not catch on it.</p>			


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3. Belt Replacement Instructions (With old belts on press):

- a. Remove tension on the doctor blades.
- b. Position the splice of the belt to be replaced at Point A or B (See Figure, page 6-7).
- c. Remove tension on the belt as described on page 5 - 4.
- d. Remove splicing wire.
- e. Attach the leading end of the new belt to the trailing end of the old belt with a new splicing wire.* Observe the direction of travel and the top side as marked on the belt.
- f. Start the pressure belt drive and allow the new belt to be pulled through the machine. Belt speed should not exceed 2 feet per minute and the operation should be closely monitored to prevent damage as a result of overtravel of the belt to one side or the other.
- g. When the new belt end reaches the start point, disconnect it from the old belt and connect the ends of the new belt with a new splicing wire.* Use wire cutting pliers to trim the splicing wire within 1/4" of the last clip on both sides of the splice. Before making the trim cut, impart a slight bend to the wire at both ends.
- h. Re-set the belt tension to the original level. It is adequate when the belts may be driven without either one slipping at the drive roll.
- i. Re-tension the doctor blade (see page 6 - 10, p.).

*Important Note: Use only the special splicing wire furnished with the new belts. Do not substitute other types of wire or severe damage to belts could result.

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INITIALSH. Belt Wash Spray Nozzles

CAUTION: Always wear chemical safety goggles when cleaning, flushing or purging nozzles.

One spray nozzle header is provided at each belt cleaning station. The nozzles are manufactured by the William Steinen Manufacturing Company. This type of nozzle is not self cleaning, and a 100 mesh or finer strainer should be installed in the wash water supply line to remove particles which might plug the nozzles. If the nozzles become plugged in spite of the presence of the strainer, the header must be removed and the nozzles unscrewed and cleaned by hand.

The nozzles may also be cleaned by "rodding" the orifice with a small piece of wire of the proper diameter, but in this case the particles are pushed back into the header, and the header itself should be flushed by removing the plug on the end opposite the water inlet and flushing water through while rodding the nozzles.

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INITIALSI. Idle Equipment

If the Kompress® is to be idle for an extended period, it is advisable to run all components for at least one-half hour each month, bringing motors and gear boxes up to normal running temperatures. Before running equipment, make sure all lubrication instructions have been followed completely. (See the lubrication tables in Section 6).

J. Electrical

Electrical problems with the Kompress are not common and any malfunction can generally be isolated and corrected by the plant electrician.

Each drive motor in the system must have short circuit protection using a circuit breaker or fuses. Komline-Sanderson control panels include the above, as well as a main circuit breaker. They are wired to numbered terminal strips and furnished with a corresponding wiring diagram. This wiring diagram should be followed in checking for proper connections.

CAUTION: DC motors have live field voltage when they are turned off with the control on the panel. Therefore, be sure to shut off all power to the panel before servicing these motors.

Each electrical junction box has been provided with an oxidation inhibiting cartridge (Cutler-Hammer Cat. No. C799J1, or Hoffman Engineering Co. A-HCI-5E). Labels on the cover plates of the junction boxes indicate the presence of the cartridge and state the date of its installation. The active life of these cartridges is one year for the Cutler-Hammer unit and 18 months for the Hoffmann device. They should be changed at the end of such periods for continuing protection. Both may be purchased at most electrical supply houses or through the Customer Service Department of Komline - Sanderson.

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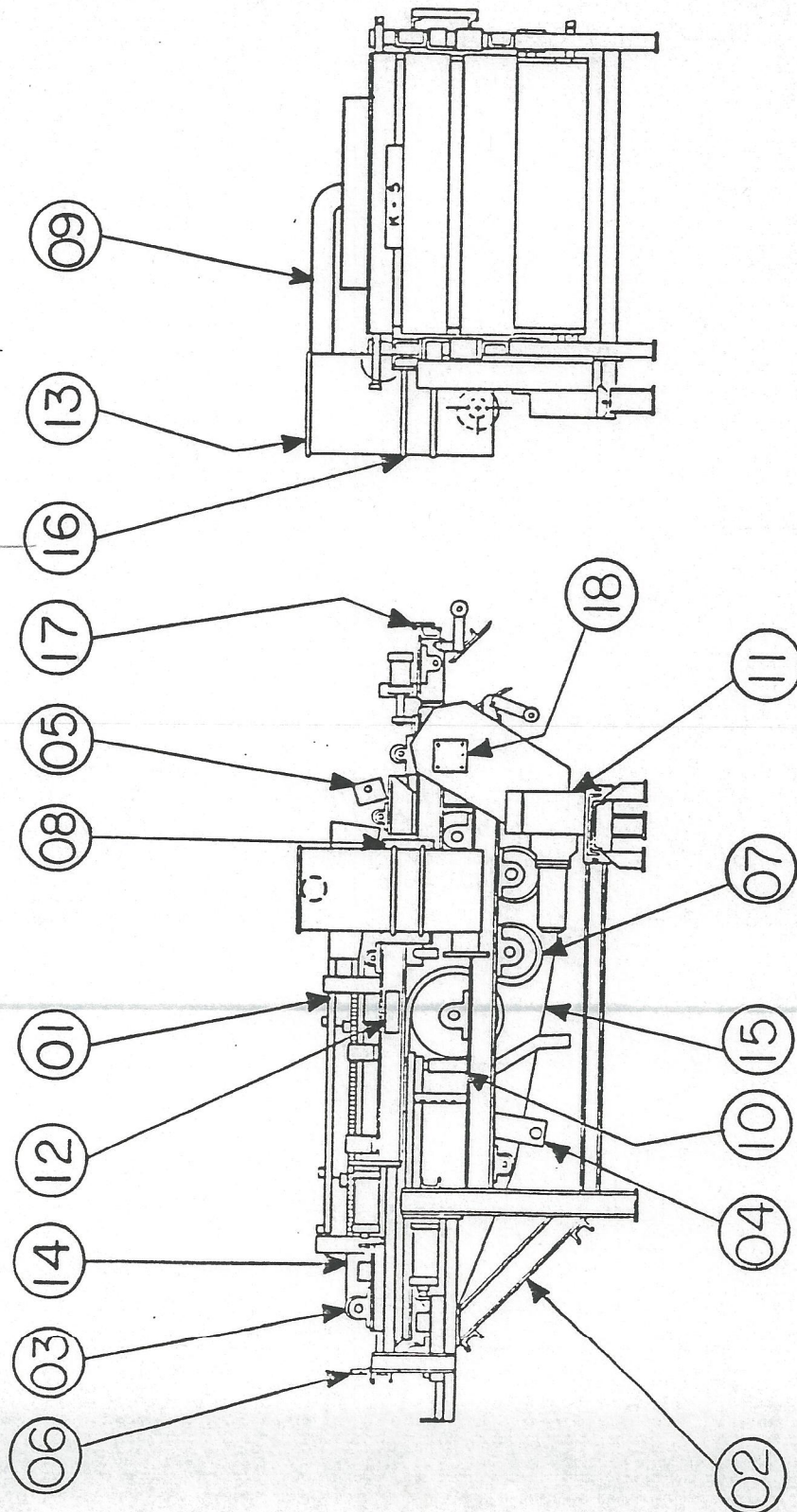
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Kompress Assembly
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Kompress Assembly Nomenclature
(See Page 7 - 1 for Drawing)

ITEM	DESCRIPTION	ITEM	DESCRIPTION
01	Gravity Section Assembly		
02	Main Frame Assembly		
03	Takeup & Steering Assembly		
04	Belt Wash Box Assembly-Lower		
05	Belt Wash Box Assembly-Upper		
06	Wedge Zone Assembly		
07	Drum, Roll & Bearing Assembly		
08	Support-Conditioning Tank		
09	Sludge Feed Piping		
10	Plastic Hose		
11	Belt Drive Assembly		
12	Pneumatic Control & Inter. Assy.		
13	Conditioning Tank Assembly		
14 *	Filter Belt - Upper		
15 *	Filter Belt - Lower		
16	U-Bolt		
17	Nameplate		
18	Nameplate		

Gravity Section Assembly Nomenclature
(See Page 7 - 8 and 7 - 9 for Drawings)

01	Flow Assembly	19	Hose
02	Tray - Drain, Gravity	20	Clamp, Hose
03	Gravity Tray Drain Assembly	21	Elbow
04	Tray-Drain, Gravity	22	Nipple
05	Distribution Box Assembly	23	Bracket, Mounting-Drain Grid
06	Sludge Distribution & Feed Piping	24	Distribution Box Support Assembly
07	Back-up Strip, Side Seal	25	Cap
08 *	Side Seal	26	*Seal-Distribution Box
09	Angle-Mtg., Side Seal	27	Wash Box Drain Pan Assembly
11	Drain Grid Tube Assembly		
12	Angle-Support, Side		
13	Hose		
14	Plastic Hose		
15	Clamp Hose		
16	Elbow-Drain, 90°		
17	Bracket-Mounting Drain Grid		
18	Angle-Support		

* Recommended Spare Parts

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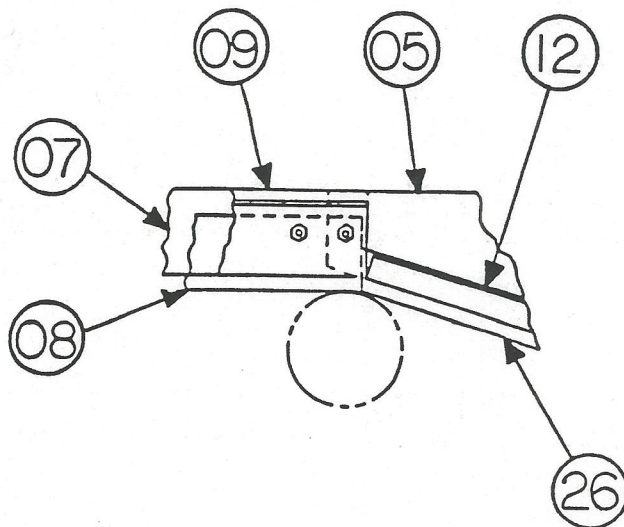
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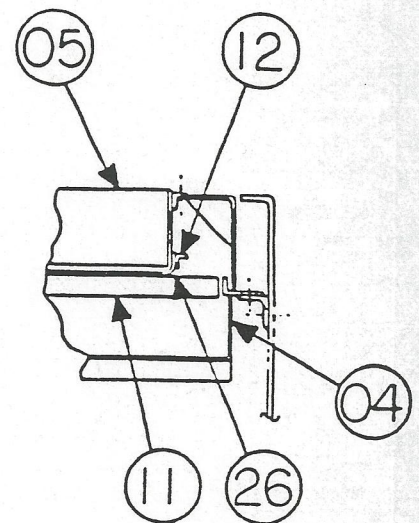
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Gravity Section Assembly (Sheet 2)

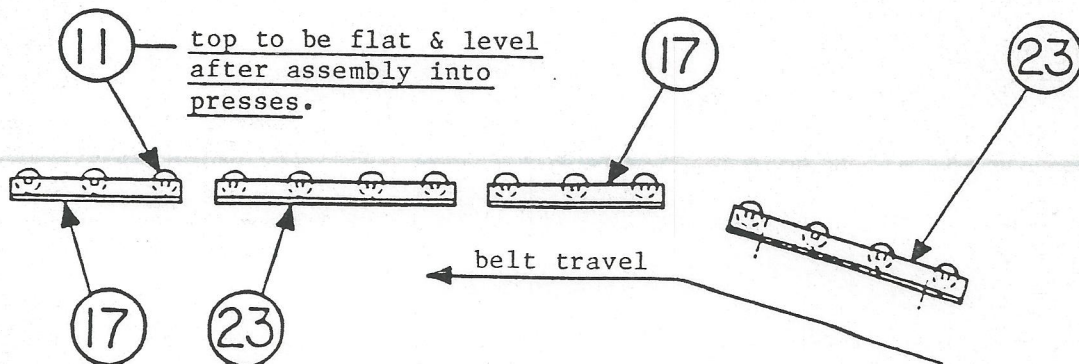
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SECTION A-A



SECTION C-C



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PARTS LISTS

Seals and bearings complete with location drawings and part numbers are listed on the following pages.

A. Seal Parts List

(See page 7 - 6 for part numbers and page 7 - 7 for seal location drawing).


<u>Seal I.D. No.</u>	<u>Part Name</u>	<u>Qty</u>
1	Distribution box seal	1
2	Gravity side seal	2
3	Belt wash box end seal	4 total (2/wash box)
4	Belt wash box pipe seal	4 total (2/wash box)
5	Wedge zone seal	2

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Take-up & Steering Assembly
(See Page 7 - 8 for Drawing)

ITEM	DESCRIPTION	ITEM	DESCRIPTION
01	Guide-Slide		
02	Housing-Slide Block		
03 *	Slide Block (take-up)		
04 *	Pillow Block, HDPE		
07	Plate-Slide		
08 *	Slide Block (steering)		
11	Gear Rack		
12	Spur Gear		
13	Key		
14 *	Actuator Cylinder (take-up)		
15 *	Actuator Cylinder (steering)		
16	Spacer-Slide Block		
17	Bracket-Mounting, Steering Act'r.		
18	Guard Assembly		
19	Gear Shaft		

Belt Wash Box Assembly - Lower
(See Page 7 - 10 for Drawing)

01	Plate-Cover
02	Shallow Wash Box Weldment
03	Lower Wash Box Weldment
04 *	Gasket-End Seal, Wash Box
05	J-Bolt, Belt Wash Pipe
06	Pipe-Belt Wash
07	Seal-Pipe, Wash Box
08	Plate-Rect., Two Slots

Belt Wash Box Assembly - Upper
(See Page 7 - 11 for Drawing)

01	Cover-Wash Box
02	Upper Wash Box Weldment
03	Shallow Wash Box Weldment
04	J-Bolt, Belt Wash Pipe
05	Pipe-Belt Wash
06 *	Seal-Pipe, Wash Box
07	Plate-Rect.
08	Spacer-Upper Wash Box


* Recommended Spare Parts

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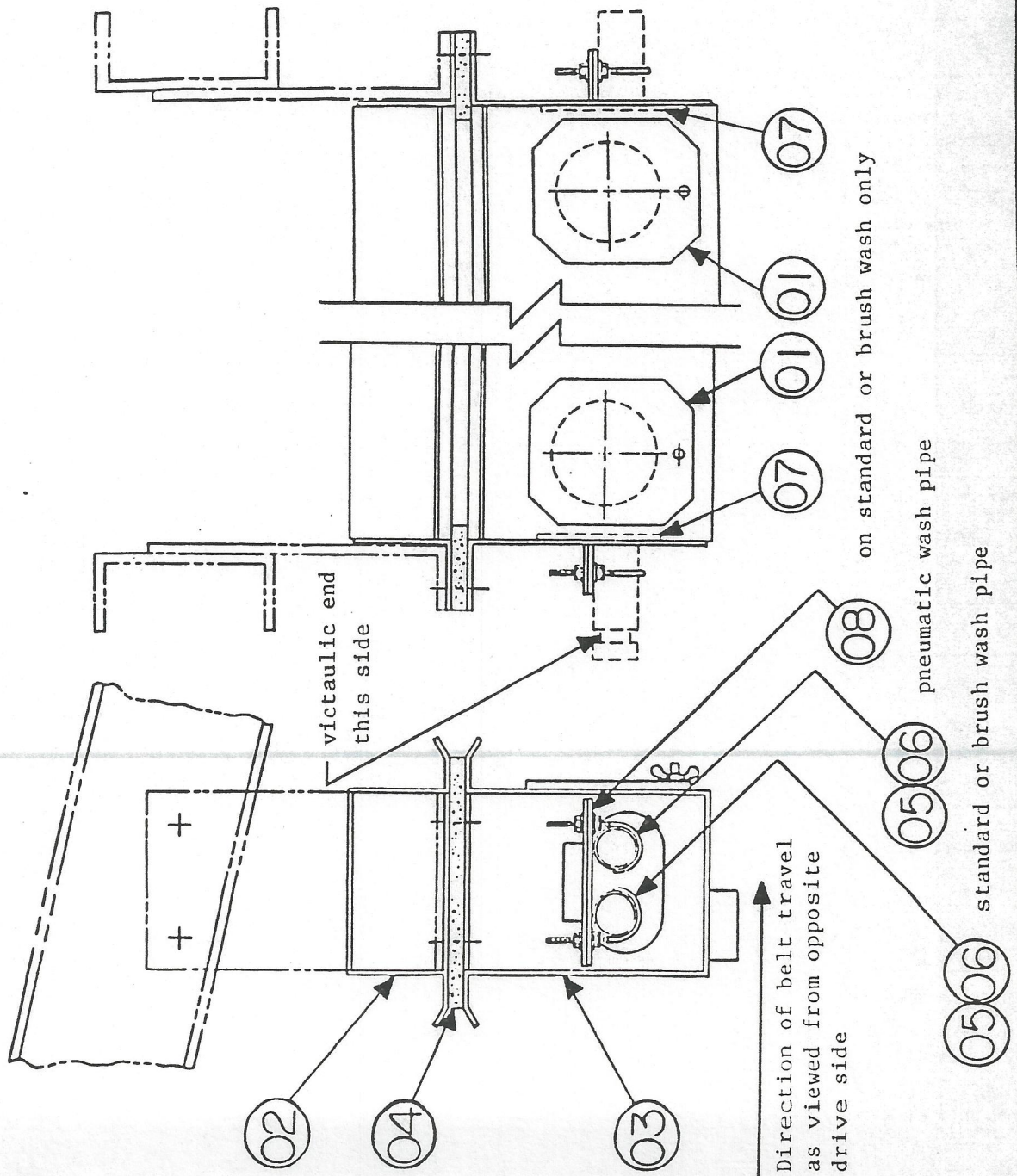
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Belt Wash Box Assembly - Lower
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(See page 7-9 for nomenclature)



Belt Wash Box Assembly - Upper
(Sheet-2)

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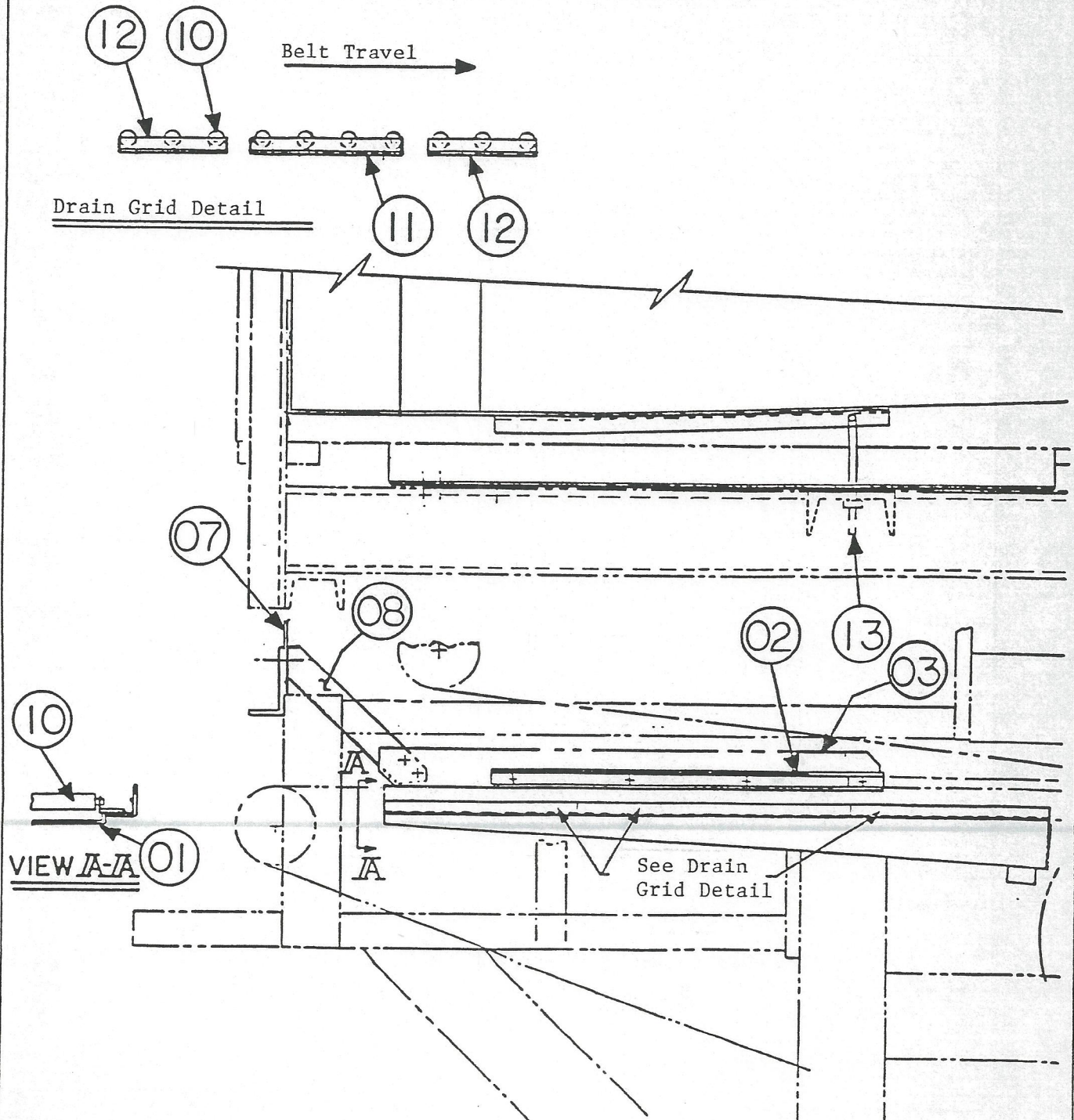
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Wedge Zone Assembly (See page 7-13 for nomenclature)



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Wedge Zone Assembly
(See Page 7 - 12 for Drawing)

ITEM	DESCRIPTION	ITEM	DESCRIPTION
01	Tray-Bottom Wedge Zone		
02	Angle-Seal Support		
03 *	Seal		
07	Splash Shield		
08	Discharge Chute		
10	Drain Grid Tube Assembly		
11	Bracket-Mounting Drain Grid		
12	Drain Grid Tube Assembly		
13	Seal Adjusting Rod		

* Recommended Spare Parts