

Customer: Giles Chemical Corp.
 Customer PO No(s): 114374
 Komline-Sanderson Job Number: I-2314
 Equipment: 1200-100 LS/50-64/32 K-S Avery

EQUIPMENT SPECIFICATIONS
 Rev: B DATE: 2-13-01

Equipment Specifications

Page Revision Sheet

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Note: The current submittal, if made after the original Revision 0 submittal, includes only those revised pages shown highlighted in the above list. All other pages are as previously submitted with revision letter as listed.

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The page numbers specified represent the actual location where the technical design information can be found. Should any discrepancies exist, please contact the K-S Avery Applications Department so that equipment specification and design may be confirmed.

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PROCESS DESIGN CONDITIONS -

Process Material:	MgSO ₄
Batch Size:	40,000 gpd
Time to Process Each Cycle:	TBA
Feed Slurry Total Solids:	1 % TSS
Process Operating Temperature:	75° - 85° C
Feed pH:	6.5 – 8.5
Maximum Allowable Feed Pressure:	74 psi @ 75° C 30 psi @ 85° C
Maximum Allowable Squeeze Pressure:	95.5 psi @ 85° C

NOTE: The K-S Avery Filter Press specified in this document has been designed based on the process conditions and parameters described above. Should any discrepancies exist, please contact the K-S Avery Applications Department so that equipment specification and design may be confirmed.

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K-S AVERY FILTER PRESS -

MODEL: 1200-100 LS /50-64/32

MAXIMUM DESIGN PRESSURE: 100 psi

FILTRATION AREA: 1210 ft² expandable to
1550 ft²

FILTRATION VOLUME: 61.4 ft³ expandable to
78.5 ft³

CAKE THICKNESS: 32 mm (pre-squeezed)

OVERALL DIMENSIONS:

Filter Press-

Length: 23 feet 7 1/8 inches
Width: 5 feet 6 inches
Height: 6 feet 10 11/16 inches

Hydraulic Power Unit – shipped loose

Length: 3 feet
Width: 2 feet
Height: 3 feet

Squeeze skid –

Length: 4 feet 6 inches
Width: 3 feet 4 inches
Height: 2 feet 9 inches

Squeeze Water Tank –

Diam.: 3 feet 9 inches
Height: 5 feet

OVERALL WEIGHT OF FILTER PRESS ASSEMBLY:

Dry Operating Conditions: 23,300 pounds
Wet Operating Conditions: 28,350 pounds

REFERENCE DRAWINGS:

General Arrangement
Electric Schematic
Squeeze System Arrangement
P&I Diagram

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K-S AVERY SKELETON ASSEMBLY -

FRAME DESIGNED FOR MAXIMUM NUMBER OF CHAMBERS:	64 Chambers
STATIC HEAD PLATE -	
Number:	One (1)
Material of Construction:	Carbon Steel
Type of Feed Porting:	Corner, Top Left
CONNECTOR PLATE -	
Number:	One (1)
Material of Construction:	Polypropylene
FOLLOWER PLATE -	
Number:	One (1)
Material of Construction:	Carbon Steel
CYLINDER BRACKET PLATE -	
Number:	One (1)
Material of Construction:	Carbon Steel
SKELETON SIDE BARS -	
Number:	Two (2)
Material of Construction:	Carbon Steel
Wear Strips:	304 Stainless Steel
METAL FINISH SPECIFICATIONS -	
Mil Spec:	Standard
Welds Grind Finish:	Standard
Welds Ground Finish:	Standard

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K-S AVERY HYDRAULIC CYLINDER ASSEMBLY

HYDRAULIC CYLINDER -

Quantity:	Two (2)
Bore Size:	Six (6) inches
Stroke:	Twenty-Four (24) inches
Material of Construction:	Carbon Steel.
Material of Construction, Rod:	Carbon Steel, Chrome Plated.
Paint:	Manufacturer's Standard Epoxy.

K-S AVERY HYDRAULIC POWER UNIT ASSEMBLY

HYDRAULIC POWER UNIT -

Number:	One (1)
Type:	Electric Driven, 5 hp
Operating Pressure:	3900 psi
Material of Construction:	Manufacturer's Standard Carbon Steel and Elastomers.
Paint:	K-S Standard Epoxy.
Hydraulic Fluid:	ISO-46 Petroleum base

Hydraulic Pump -

Manufacturer:	Bosch
Type:	Tandem Gear Pumps

Motor-

Manufacture:	WEG
Horsepower:	5 HP
Nominal speed:	1800 RPM
Frame:	213 TC
Type:	TEFC With C Face
Voltage:	3/60/230-460
Service Factor:	1.15

Directional Control Valve-

Manufacturer:	Bosch
Number:	One (1)
Type:	Four Way, Solenoid Op.
Material:	Carbon Steel and Aluminum

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K-S AVERY HYDRAULIC ASSEMBLY (continued) -

Relief Valve -

Manufacturer:	Sterling
Qty:	One (1)
Setting Range:	1000- 6000 psi
Material:	Carbon Steel and Aluminum
Factory Set Point:	4200 psi

Hydraulic Lines -

Manufacturer:	Imperial Eastman
Material:	Carbon Steel and High Pressure Elastomer Hoses.

Interlock Pressure Switch-

Manufacturer:	ITT-Neodyne
Qty:	One (1)
Factory Set Point:	Interlock - 3500 psi

Pump Start Pressure Switch-

Manufacturer:	ITT-Neodyne
Qty:	One (1)
Factory Set Point:	Interlock - 3700 psi

Pump Stop Pressure Switch-

Manufacturer:	ITT-Neodyne
Qty:	One (1)
Factory Set Point:	Interlock - 4100 psi

Fluid Reservoir-

Size:	30 Gallon
Level Indicator:	Visual w/ Temperature gage

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K-S AVERY FILTER PRESS PLATE STACK ASSEMBLY

PLATE STACK STYLE -	1200mm x 1200mm Membrane Mixed Pack Empty Chamber Style
Material of Construction:	Polypropylene Copolymer membranes Homopolymer chamber plates and membrane plate core
Feed Style:	Corner Feed Top Left 3" Nom Dia.
Discharge:	Three Corner Closed 2" Nom Dia.
Chamber Recess:	16 mm
Total Un-squeezed Cake Thickness:	16 mm
Maximum Allowable Squeeze Pressure:	100 psi @ 60° C. *
Minimum Allowable Squeeze Water Temperature:	30° C
Maximum allowable Feed / Wash pressure:	100 psi @ 20° to 55° C. * 74 psi @ 75° C. * 30 psi @ 85° C. *
Head Plate Qty:	One (1)
Membrane Plate Qty.:	Twenty-five (25)
Recessed Chamber Plate Qty.:	Twenty-four (24)
Tail Plate Qty:	One (1)

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*** Note: Maximum allowable squeeze pressure and maximum allowable feed / wash pressures are temperature dependent. Refer to manufactures pressure / temperature charts for details. Operating conditions exceeding manufactures recommendations for pressure / temperature will void mechanical warrantee on filter plates.**

K-S AVERY FILTER MEDIA

K-S CLOTH STYLE -

Material:	Polyester
Flow Rate:	1 CFM
Weight:	18 oz/sq. Yd.
Weave:	Twill
Yarn:	Multi
Count:	164 x 33
Finish:	Heat set

HEAD PLATE -

Quantity:	One (1)
Type of Cloth Installed:	Barrel neck sewn sleeve

INTERMEDIATE FILTRATION PLATES -

Membrane Plates:	Twenty-five (25)
Chamber Plates:	Twenty-four (24)
Type of Cloth Installed:	Barrel neck sewn sleeve

TAIL PLATE -

Quantity:	One (1)
Type of Cloth Installed:	Barrel neck sewn sleeve

EDGE SEALANT:

Single Latex

WIRE TIE GROMMETS:

Material:	Brass
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K-S AVERY PLATE SHIFTER ASSEMBLY

PLATE SHIFTER TYPE -	Reciprocating Shuttle Car
CONTROL -	Fully automatic by PLC control Semi-Auto by pendant control
FRAME -	
Material of Construction:	Carbon Steel & 304 Stainless Steel
GUARDS -	
Material of Construction:	Carbon Steel
SHUTTLE CARS -	
Quantity:	Two (2)
Material of Construction:	Aluminum, 304 Stainless Steel & Nylon 6/6
DRIVE CHAIN -	
Size:	RC50
Material of Construction:	Nickle plates Carbon Steel
DRIVE -	
Gearmotor Reducer-	
Manufacture:	Sew Eurodrive
Model:	
Motor:	
Manufacture:	Sew Eurodrive
Horsepower:	1/2
Frame Size:	DT71 TEFC
Voltage:	3 / 60 / 230-460

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K-S AVERY SQUEEZE SYSTEM ASSEMBLY

SQUEEZE SYSTEM -

Medium:	Water with Glychol
Maximum Allowable Squeeze Pressure:	100 psi
Minimum Allowable Squeeze Water Temp:	30° C
Maximum Allowable Squeeze Water Temp:	60° C

SQUEEZE MANIFOLD -

Number of Ports:	Twenty-five (25)
Port Size:	1/2"
Material of Construction:	304 Stainless Steel
Manifold Size:	2" sch 40 pipe

SQUEEZE HOSES (From Manifold to Plates) -

Number of Lines:	Twenty-five (25)
Material of Construction:	Synthetic Rubber Liner Textile Braid reinforced Black Synthetic Rubber Cover
Pressure Rating:	300 psi
Inner Diameter:	½ inches

SQUEEZE HOSE QUICK DISCONNECTS-

Qty:	(2) per hose
Manifold end:	Single Shut off type
Plate end:	Open type
Material of Construction:	Brass Body Stainless Steel balls and springs

VALVE SYSTEM –

Squeeze Water to Manifold Valve -

Size:	1-1/4"
Actuation:	Electric Solenoid Spring Close (F.C.)
Material of Construction:	Cast Bronze

Squeeze Water Vent / Return Valve -

Size:	2"
Actuation:	Electric Solenoid Spring Open (F.O.)

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Material of Construction: Cast Bronze

K-S AVERY SQUEEZE SYSTEM ASSEMBLY – Cont.

OVERPRESSURE RELIEF VALVE -

Size: 1"
Factory Set Point: 110 psi

SQUEEZE PRESSURE TRANSMITTER-

Range: 0 - 150 psi
Output: 4 - 20 mA
Power Requirement: 24 VDC

SQUEEZE SKID ASSEMBLY -

Medium: Water
Maximum Allowable Squeeze Pressure: 100 psi
Power Source: 3 hp Electric Driven Centrifugal Pump

Pump Construction
Wetted: Cast Iron & 304 Stainless Steel

Motor Stand & Coupling: Cast Iron
Motor: 3 hp, 3600 rpm, TEFC, 3/60/230-460

SQUEEZE WATER TANK --

Size: 45" Dia x 119" Hgt
Capacity: 750 gallons
Material of Construction: Hi Dens. Polyethylene
Maximum Tank Temperature: 60° C

Overflow / Drain Piping-

Size: 1 ½" Sch 80
Material: PVC

NOTE:

Squeeze pump skid and tank supplied loose for installation and assembly by others. Interconnecting piping is the responsibility of the purchaser.

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K-S AVERY PROCESS PIPING ASSEMBLY

PROCESS PIPING -

Material of Construction: 304 Stainless Steel

FEED VALVE -

Quantity: One (1)
Port: Corner, Top Left
Size: Three (3") inches
Manufacture: Apollo
Type: Ball
Material of Construction: Bronze body
Interconnecting Piping: ANSI 150# RF
Actuation: Pneumatic, Air to Air
Fail Last
Pilot air valve: Remote mounted

FILTRATE PORT VALVES -

Quantity: Three (3)
Size: Two (2") inches
Manufacture: Apollo
Type: Ball
Material of Construction: Bronze body
Interconnecting Piping: ANSI 150# RF
Actuation: Pneumatic, Air to Air
Fail Last
Pilot air valve: Remote mounted

WASH INLET VALVE -

Quantity: One (1)
Size: Two (2") inches
Manufacture: Apollo
Type: Ball
Material of Construction: Bronze body
Interconnecting Piping: ANSI 150# RF
Actuation: Pneumatic, Air to Air
Fail Last
Pilot air valve: Remote mounted

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AIR BLOW INLET -

Location	Upper Right
Size:	3/4"
Manufacture:	Asco
Type:	Solenoid
Material of Construction:	Bronze
Connection	Threaded

AIR BLOW INLET CHECK VALVE –

Location	Upper Right
Size:	3/4"
Manufacture:	NuPro
Type:	Spring
Material of Construction:	316 Stainless Steel
Connection	Threaded

LINER PIPES -

Material of Construction:	316 Stainless Steel
Feed Size:	3" Sch 40
Discharge Size:	2" Sch 40
O-rings	Buna-N
Lock Nuts:	Polypropylene

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K-S AVERY CONTROL PANEL

TO BE SUPPLIED: Yes

QUANTITY TO BE SUPPLIED: One (1)

Refer to electrical submittal under separate cover.

K-S AVERY DRIP TRAY ASSEMBLY

TYPE- Bombay Door,
7 deg Drainage Slope

MATERIALS OF CONSTRUCTION- 1/2" THK Polypropylene sheet
Carbon Steel Frame
304 stainless Steel Launder

ACTUATION- One (1) Pneumatic Cylinder

MOUNTING- Trays mounted to filter press legs

CONTROLS- By PLC

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K-S AVERY UTILITY REQUIREMENT SUMMARY

ELECTRICAL CHARACTERISTICS

<u>Equipment</u>	<u>No. Req'd</u>	<u>HP</u>	<u>Voltage & Frequency</u>	<u>FLA (1)</u>	<u>LRA (1)</u>
Hydraulic Power Unit	1	5	3/60/230-460		
Plate Shifter Motor	1	0.5	3/60/230-460		

AIR REQUIREMENTS

<u>Equipment</u>	<u>CFM</u>	<u>PSI</u>
Drip Tray Actuator	10	60-80
Cake Air Blow	157	40
Core Blow	8	80-100

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EQUIPMENT PAINTING (Carbon Steel Only) -

SURFACE PREPARATION: All oil, grease and other foreign matter will be removed from metal surfaces per SSPC-SP6-63 (Commercial sandblast).

PAINT-

Finish Coat:	Tnemec #104 H.S. Epoxy
Color:	BB32, Blue-Jay
Thickness:	4 to 6 mils dry film

EQUIPMENT SCOPE OF ASSEMBLY

All equipment will be delivered as fully assembled as possible. When certain items must be delivered partially disassembled because of shipping limitations or other special conditions, field assembly will be the responsibility of the customer. This will normally consist of joining sections by mechanical means such as with bolts, nuts, and screw. If any field welding is required, it will be so stated in these specifications. K-S Supervision is available at our per diem rate plus travel expenses, to supervise field assembly, if required.

SPARE PARTS -

<u>Quantity</u>	<u>Part Number</u>	<u>Part Description</u>
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