SHOP DRAWING REVIEW FORM AND TRANSMITTAL

DATE: **January 13, 2023**

TO: Hans Tuneblom
Northeast Region Director CPM
Veolia Water
825 West Water Street
Taunton, MA 02780

FROM: James Dyment, P.E.
Senior Associate
BETA Group, Inc.
701 George Washington Hwy
Lincoln, Rhode Island 02865

RE: City of Taunton, MA
WWTF Solids Handling Improvements
Contract S-2020-3

Shop Drawing No. 11555-02 REV 0 - Shaftless Screw Conveyor O&M Manual

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BETA COMMENTS:

Item	Action Code	Description/Comments
1	**2**	**Shaftless Screw Conveyor (JDV)** 1. Provide all required startup and training documentation following commissioning of the unit.

Action Codes
1 - No Exception Taken
2 - Make Corrections Noted
3 - Amend and Resubmit
4 - Rejected, See Remarks

a. Installation shall proceed only when Action Code is '1' or '2'.
b. Submittals action coded '3' shall be resubmitted within time limit set in Contract.
c. Review does not relieve Contractor from responsibility of compliance with the Contract Documents.

Hart Engineering Corporation

SUBMITTAL:
11555-02

PROJECT: 9722. - Veolia/Taunton WWTP Solids Handling Improvements **DATE: 11/23/2022**

SUBMITTAL: 11555-02 - Shaftless Screw Conveyor O&M Manual
REVISION: 0
STATUS: Eng
SPEC #: 11555

TO:
Hans Tuneblom
Veolia North America
125 S. 84th Street, Suite 175
Milwaukee, WI 53214
hans.tuneblom@veolia.com

FROM:
Nick George
Hart Engineering Corporation
800 Scenic View Drive
Cumberland, RI 02864
ngeorge@hartcompanies.com

Item	Revision	Description	Status	Date Sent	Date Returned
11555-02	0	Shaftless Screw Conveyor O&M Manual	Eng	11/23/2022	
Notes:					

Additional Notes:

Status Codes
1-APP – No Exceptions Taken
2-ANR – Make Corrections Noted
3-R&R – Revise and Resubmit
4-REJ – Rejected
5-IPO – For Information Purposes Only
6-NRR – Not Required for Review
ENG – Submitted to Engineer

Sincerely,
Hart Engineering Corporation

_____ DATE: 11/23/2022

Shaftless Screw Conveyor

OPERATION & MAINTENANCE MANUAL

Project Name: Taunton, MA

Project Number: 212946

Spec Section: 11555 Shaftless Screw Conveyors

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Project Contacts

1 Project Contacts

Contractor:
Hart Engineering Corp
800 Scenic View Dr.
Cumberland, RI 02864
(401) 658-4600
https://www.hartcompanies.com

Engineer:
Veolia Water North American-Northeast, LLC
53 State St. 14th Floor
Boston, MA 02127
(617) 849-6600
https://www.veolianorthamerica.com

Representative:
Wescor Associates Inc.
686 South St,
Wrentham, MA 02093
(508) 384-8921
www.wescor1.net

Manufacturer:
JDV Equipment Corporation
104 Fulton Street
Boonton, NJ 07005
(973) 366-6556
www.jdvequipment.com

Revision History

2 Revision History

Date	Revision #	Author	Changes Made to Document

Introduction & Guide

3 Introduction & Guide

3.1 How To Use This Manual

This manual serves as a reference guide for the operation and maintenance of JDV Equipment Corporation supplied equipment and systems. The manual is split into three parts with ten (10) sections. The first part, Sections three (3) through five (5), introduces the JDV equipment manual and general system design and operation. Sections six (6) through eight (8) explains in more detail system operation and maintenance routines and requirements, including information on obtaining service and support. The last part of this manual, sections nine (9) and ten (10) and include appendices contain a variety of service forms, drawings, change log details as well as installation and other helpful guides.

Part One:

Section 3 is a general introduction. It contains the how to use the manual guide, contact information and any project specific contractual or legal information.

Section 4 provides guidance on health and safety related warnings while operating and maintaining JDV Equipment Corporation supplied equipment and systems. It describes the different symbols used throughout the manual to highlight and point out warnings of potential hazards.

Section 5 describes the general description of the equipment and or systems for the project. It provides the overall system operation and design parameters.

Part Two:

Section 6 provides detailed operating procedures including routine fault conditions, emergency procedures and a fault finding/troubleshooting guide.

Section 7 outlines the required maintenance procedures with time intervals. This section includes a service/maintenance task matrix.

Section 8 provides a detailed spare parts list with diagram(s), and information on how to contact service for support.

Part Three:

Section 9 contains commissioning, inspection and service forms.

Section 10 contains project drawings, typically submittal and as-built.

Appendices maybe provided and will be contained in the Table of Contents.

3.2 JDV Contact Information

JDV Equipment Corporation
104 Fulton Street
Boonton, NJ 07005
(973) 366-6556
www.jdvequipment.com

If the situation is an emergency and you are unable to contact someone via the JDV office phone, please email support@jdvequipment.com.

3.3 Contract & Legal Information

3.3.1 Warranty

What is covered under JDV's Standard Warranty?

The warranty is included on all items except for motors and gear reducers, which will be original equipment manufacturer (OEM) supplied manufacturers standard.

Equipment and/or systems that have not been maintained per manufacturer's recommendations and/or have been utilized outside of fit for purpose and design are not covered.

What is the Warranty Period?

12 months from date of startup/commissioning service or 18 months from date of shipping, whichever comes first.

What JDV will do to correct problems under warranty?

JDV will repair or replace equipment and/or parts. The customer shall be responsible for any shipping/freight costs.

In addition to the Standard Warranty, what are additional warranty terms agreed to as part of the project order?

Not Applicable.

How to obtain warranty service?

Contact JDV at 973-366-6556. Please have your JDV Project number available, this is located in the JDV Operation & Maintenance (O&M) manual for your equipment and/or system.

If the situation is an emergency and you are unable to contact someone via the JDV office phone, please email support@jdvequipment.com.

3.3.1.1 Limited Warranty Statement

Subject to the general terms and conditions, the Seller warrants until one year after commissioning (written notification to Seller by Buyer required) of the Product or until 18 months after delivery of such Product to Buyer, whichever is earlier, that each Product will be free of defects in material and workmanship. If (a) the Seller receives written notification of such defect during the warranty period and the defective Products use is discontinued promptly on discovery of alleged defect, and (b) if the owner ("Owner") forwards the Product to the Seller's nearest service/repair facility, transportation and related insurance charges prepaid, the Seller will cause any Products whose defect is covered under this warranty to be either replaced or repaired at no cost to the Owner. The foregoing warranty does not cover repairs required due to repair or alteration other than by the Seller's personnel, accident, neglect, misuse, transportation or causes other than ordinary use and maintenance in accordance with the Seller's instructions and specifications. In addition, the foregoing warranty does not cover any Products, or components thereof, which are not directly manufactured by the Seller. To the extent a warranty for repair or replacement of such Products or components not manufactured directly by the Seller is available to Buyer under agreements of the Seller with its vendors, Seller will make such warranties available to Buyer. Costs of transportation of any covered defective item to and from the nearest service/repair center and related insurance will be paid or reimbursed by Buyer. Any replaced Products will become the property of the Seller. Any replacement Products will be warranted only for any remaining term of the original limited warranty period and not beyond that term.

DISCLAIMER OF WARRANTIES AND LIMITATIONS OF LIABILITIES

THE SELLER'S FOREGOING LIMITED WARRANTY IS THE EXCLUSIVE AND ONLY WARRANTY WITH RESPECT TO THE PRODUCTS AND SHALL BE IN LIEU OF ALL OTHER WARRANTIES (OTHER THAN THE WARRANTY OF TITLE), EXPRESS, STATUTORY OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY STATEMENTS MADE BY EMPLOYEES, AGENTS OF THE SELLER OR OTHERS REGARDING THE PRODUCTS. THE OBLIGATIONS OF THE SELLER UNDER THE FOREGOING WARRANTY SHALL BE FULLY SATISFIED BY THE REPAIR OR THE REPLACEMENT OF THE DEFECTIVE PRODUCT OR PART, AS PROVIDED ABOVE. IN NO EVENT SHALL THE SELLER BE LIABLE FOR LOST PROFITS, LIQUIDATED DAMAGES OR OTHER SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, EVEN IF THE SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE TOTAL LIABILITY OF THE SELLER TO BUYER AND OTHERS ARISING FROM ANY CAUSE WHATSOEVER IN CONNECTION WITH BUYER'S PURCHASE, USE AND DISPOSITION OF ANY PRODUCT COVERED HEREBY SHALL, UNDER NO CIRCUMSTANCES, EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT BY BUYER. NO ACTION, REGARDLESS OF FORM, ARISING FROM THIS AGREEMENT OR BASED ON BUYER'S PURCHASE, USE OR DISPOSITION OF THE PRODUCTS MAY BE BROUGHT BY EITHER PARTY MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION ACCRUES, EXCEPT THAT ANY CAUSE OF ACTION FOR THE NONPAYMENT OF THE PURCHASE PRICE MAY BE BROUGHT AT ANY TIME.

The remedies provided to Buyer pursuant to the limited warranty, disclaimer of warranties and limitations of liabilities, described herein are the sole and exclusive remedies. They modify the rights and remedies available generally under the laws of the State of New Jersey.

Unless specifically agreed in writing by the Seller, no charges may be made to the Seller by Buyer or any third party employed by Buyer for removing, installing or modifying any Product.

The Seller and its representatives may furnish, at no additional expense, data and engineering services relating to the application, installation, maintenance or use of the Products by Buyer. The Seller will not be responsible for, and does not assume any liability whatsoever for, damages of any kind sustained either directly or indirectly by any person through the adoption or use of such data or engineering services in whole or in part.

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Health & Safety

4 Health & Safety

This section provides guidance on health and safety related warnings while operating and maintaining JDV Equipment Corporation supplied equipment and systems. It describes the different symbols used throughout the manual to highlight and point out warnings of potential hazards.

4.1 Overview

Throughout the manual Health and Safety warning symbols are utilized to warn of potential hazards that may exist while operating and maintaining JDV Equipment Corporation supplied equipment and systems. When you come across a symbol in the margin, it indicates a possible hazard condition may exist, you should follow proper procedures and proceed with caution and awareness that the condition(s) harmful to your health and safety may be present. These symbols and their meaning are provided on the following pages.

These symbols are to be used as a guide and are not to be considered all inclusive of hazards that maybe encountered. It is required that only trained and qualified individuals operate and maintain the JDV Equipment Corporation supplied equipment and systems. Unauthorized and untrained personnel should never be allowed near or to work on equipment and systems.


FLAMMABLE MATERIALS WARNING


HOT SURFACE WARNING


BIO HAZARD WARNING


GENERAL WARNING


ENTRAPMENT RISK WARNING


FALLING OBJECTS WARNING


IRRITANT WARNING


SLIPPERY WHEN WET WARNING


OVERHEAD CRANE WARNING


ROTATING PARTS WARNING


TRIP/WATCH STEP WARNING


FORK LIFT OPERATION WARNING


SUFFOCATION WARNING


HIGH TEMPERATURE WARNING


CUTTER WARNING


HAND HAZARD WARNING


HIGH VOLTAGE WARNING


ENVIRONMENTAL HAZARD


CUTTING RISK WARNING


ELECTROCUTION WARNING


TOXIC WARNING


CORROSIVE WARNING


ELECTRICAL WARNING


OXIDIZING WARNING

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General Description of Project

5 General Description of Project

The following subsections describe the general description of the equipment and or systems for the project. They provide a description of the project specific overall system operation and design parameters.

5.1 Equipment & System Overview

The JDV Equipment Corporation shaftless screw conveyor is designed to move materials of varying characteristics and applications. The final design and construction will depend on project specific requirements. In general, the main components of the conveyor are the U-Trough, Shaftless Transport Screw or Spiral, sacrificial Wear Liners, Motor/Drive Unit, Safety Devices, Inlets and Discharges (see Fig 1 below).

The conveyors can be oriented in a horizontal, vertical or in an inclined position. Multiple conveyors of different orientation are common for installations. Horizontal conveyors efficiently transport material. Inclined conveyors should not exceed 45° incline with gravity fed. The maximum fill rate for horizontal and inclined conveyors is 50% although in some cases 100% fill rates are possible. Vertical conveyors can be sized for a 100% fill rate.

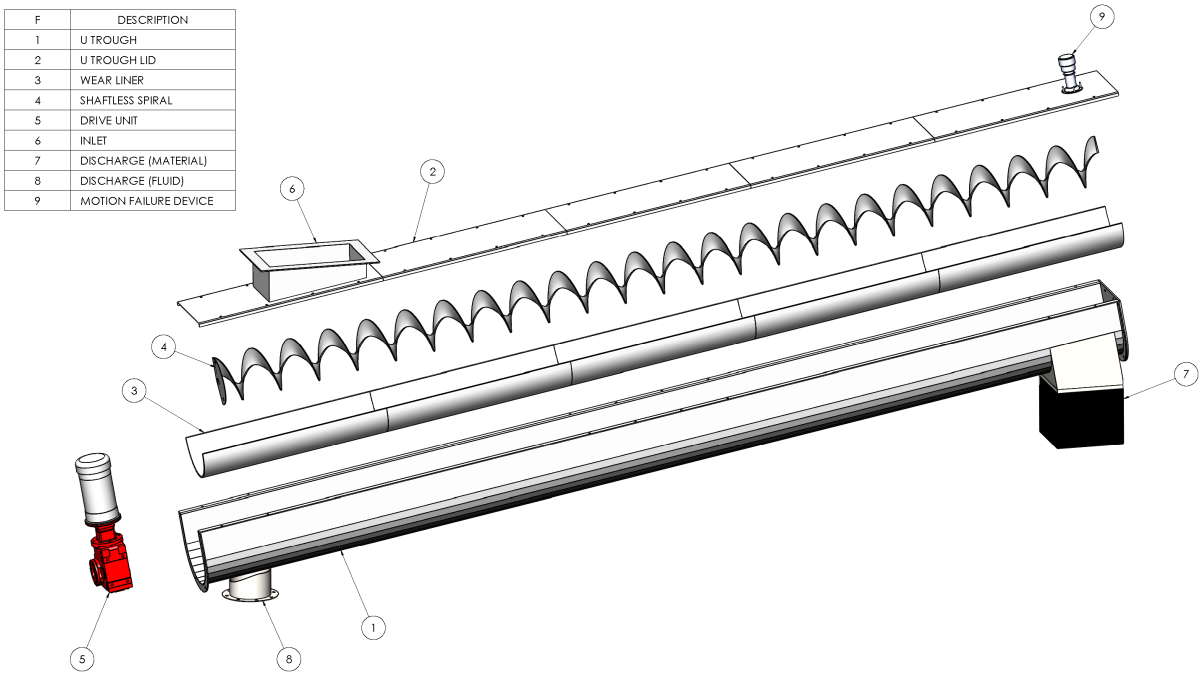

Figure 1 Shaftless Conveyor Main Components

The trough sections make up the body of the conveyor. Trough material and thickness will vary, but generally is comprised of stainless steel 304 or 316. The trough has a formed flange, with the trough and flange formed from the same sheet of stainless steel. This keeps the conveyor lightweight, without sacrificing strength. End flanges are welded for precision fit

and alignment to other trough sections. The standard length of the trough section is 20 feet. The sections are bolted together to form the required length of the conveyor.

Each trough section is covered and sealed with a lid to enclose the material and moving parts. Lids can be bolted, hinged and/or have quick release options for easy access for maintenance and inspection.

Wear liners are installed in the trough and act as a sacrificial wear item between the transport spiral and the trough sections. Without these liners, the transport spiral would wear a hole through the trough material. Wear liners require replacement over time. The interval is determined by material conveyed and hours of operation. Typical replacement is every 3 to 5 years or 10,000 hours. See the Table 1 below for the different liner types and their typical application.

Model	Description	Typical Application
Type A	Segmented Ultrahigh Molecular Weight Polyethylene Plastic	Wastewater Plant Screenings
Type B	Segmented Ultrahigh Molecular Polyethylene Plastic Alloyed with an Anti-Wear Filler and Synthetic Lubricant	Wastewater Plant Dewatered Sludge Cake
Type C	Segmented Stainless Steel Liner Plate with "Hardox" Wear Bars Spot Welded to Liner Plate	Wastewater Plant Grit & other highly abrasive applications
Type D	Rubber Lined Enforced with Backing Plate	Contact JDV
Type E	Steel Wearing Plates	Contact JDV

Table 1 Conveyor Wear Liner Types

The Shaftless Transport Spiral or Screw moves the material along the length of the conveyor. The spiral is sized according to the material being conveyed and the rate at which the material is required to be transported. The shaftless design allows a greater percentage of material to fill the trough and the screw rides along the wear liners at the bottom of the trough. No other support is required, such as hangar bearings that are found in shafted conveyors systems.

Drive units are mounted on the end of the conveyor. The motor and drive unit turn the transport spiral which moves the material along the conveyor length. The Motor/Drive Unit is designed to have enough horsepower (HP) and speed to match the requirements of the material being transported. Some installations have minimal clearance/restrictions and require a drive unit to be oriented away from the obstructions, such as a wall or other piece of

equipment. Multiple options and arrangements are available to fit the need of the installation to avoid obstructions. Motor/Drive Unit general info (see SEW/Nord/other) how deal with?

In order to protect personnel and equipment there are standard safety devices included in the design of the conveyor system. An emergency stop system typically a safety orange pull cord is installed along the length of the conveyor. When the cord is pulled by an operator, the safety device engages and stops the motor of the drive unit and the screw from turning. In the event that a large obstruction/other finds its way into the conveyor and causes the transport spiral to break into one or more pieces, a motion failure device installed at the opposite (typical) end of the drive unit signals the drive motor to stop and turn off.

The inlet(s) point is where material is fed into or enters the conveyor. There are many different options for feeding a conveyor and will be project specific. Typical inlets are inlet chutes, hoppers, etc., and may have devices such as slide gates to control feed rates.

Discharge points along the conveyor are installed to allow the transported material to exit the conveyor and any residual fluid to drain. A material discharge point(s) is typically installed on the bottom and/or at the end of a trough section. The discharge(s) may be open flanged, chutes, slide gates (manual, pneumatic, electrically operated), bagging systems, etc and are project specific requirements. Fluid discharge points are typically located at one end of the conveyor and provide a means of residual fluid to be piped (typical) away from the conveyor.

The conveyor operation is controlled through a control panel and/or local start/stop devices. If JDV has supplied the control panel, there will be a sequence of operation specific to the project in Section 4 - Operating Procedures.

Controls will include (typical) either push button or selector switches and may include a Programmable Logic Controller (PLC) to interface with plant/system wide control software, such as a SCADA system (Supervisory Control And Data Acquisition).

Selector switches are HOA (Hand-Off-Auto) devices and push button controls have Start/Stop buttons. The HOA switches maintain their position, while Start and Stop buttons are devices that have momentary actions.

The HOA switch is used in a situation that has a single point of manual control to allow the motor (or other device) to A - operate from an automated system, O - not operate, or H - operate with no safe guards or automated control.

The Hand position should be used to operate for shorts periods while being observed by operating personnel. The Off position will prevent any operation. This should not be the only method of preventing operation when maintenance is being performed. A Lock-Out-Tag-Out scheme should be used. Start and Stop buttons are intended to allow control of a motor from momentary actions. It's not a good idea to use both a HOA and Start/Stop Buttons at the same location. It may confuse operators.

When controlling a motor or other device from a PLC or other type of controller, you should use the HOA switch. Start and Stop buttons could be wired to the inputs and one output from the PLC would be routed through the Auto position of the HOA to control the motor.

5.2 Design Parameters

The following JDV Conveyor equipment is designed to transport a maximum instantaneous capacity of 200 ft.³/hr. (65 lbs./ft³) of dewatered sludge.

Unit No. 1: Conveyor SBC-7303
- Model No: U320
- Capacity: 200 ft³/hr. @ 20 rpm
- Length: 33'-3"
- Orientation: Inclined at 4 Degrees
- Drive Location: Discharge end
- Inlet Location: Above from two (2) centrifuges
- Discharge Location: At end thru bottom into SBC-7304
- Drive Unit: 3 HP constant speed

Unit No. 2: Conveyor SBC-7304
- Model No: U320
- Capacity: 200 ft³/hr. @ 20 rpm
- Length: 17'-4"
- Orientation: Inclined at 18 Degrees
- Drive Location: Discharge end
- Inlet Location: Above from SBC-7303
- Discharge Location: At end thru open bottom
- Drive Unit: 3 HP constant speed

5.2.1 Bill of Materials - Conveyor SBC-7303

212946 - TAUNTON, MA - SHAFTLESS SCREW CONVEYOR BILL OF MATERIALS

REV. 0-1

ITEM	DRAWING	QUANTITY	DESCRIPTION	PART NO.	PAINT CODE
SHAFTLESS SCREW CONVEYOR SBC-7303 FEATURES					
1	212946-10 212946-20	33'-3" Shipped in (2) Two Sections	**U-trough Model:** U320 Material: AISI 304 Stainless Steel Thickness (in.): 1/8 With neoprene rubber gasket seal on top flange: 1/8" THK. X 3/8" W in Two (2) locations on either side of bolt holes	8XX3333333	1
2	212946-20	32'-10" Shipped in (2) Two Sections	**Shaftless Spiral:** Material: High Strength Special Steel/Alloy Carbon Steel Hardness - 220 Brinell, minimum OD (mm): 285 Pitch (mm): 275 Outer Spiral (mm): 60 X 25 Inner Spiral (mm): 40 X 15	1SH8104022	2
3	N/A	1 LOT	**Trough Cover:** Material: AISI 304 Stainless Steel Thickness (in.): 1/8 Bolted Notes: 1. Covers have a maximum span of 4'-0". 2. Covers to have 1" turn down edge	N/A	1
4	N/A	7 @ 48" 1 @ 47"	**Trough Liner:** RCH 1000 UHMW PE Plastic with one-color Thickness (in.): 3/8" AISI 304 Stainless Steel retaining clips	1SH8002102	N/A
5	N/A	1 LOT	**Trough Flanges:** Material: AISI 304 Stainless Steel Thickness (in.): 1/4"	N/A	1
6	N/A	1	**Trough End Plate (opposite of drive):** Material: AISI 304 Stainless Steel Thickness (in.): 1/4	N/A	1
7	N/A	1	**Trough End Plate (drive end):** Material: AISI 304 Stainless Steel Thickness (in.): 3/8	N/A	1
8	N/A	1 LOT	**U Trough Stiffeners:** Material: AISI 304 Stainless Steel 2"W X 3/16"Thk. Nominal Bolted & Removable	N/A	1
9	N/A	1 LOT	**Assembly Hardware (nuts, bolts, washers, etc.):** Material: AISI 304/18-8 Stainless Steel	N/A	1
10	212946-40 212946-41	1 LOT	**Supports:** Material: AISI 304 Stainless Steel Thickness (in.): 1/4 (See drawings for clarification)	N/A	1
11	212946-20	1	**Drain Connection:** Material: AISI 304 Stainless Steel 4" Diameter, Flanged, Covered (See drawings for location)	N/A	1
12	212946-30	1	**Inlet Chute:** Material: AISI 304 Stainless Steel Thickness (in.): 1/8	N/A	1

ITEM	DRAWING	QUANTITY	DESCRIPTION	PART NO.	PAINT CODE
13	212946-20	1	**Discharge Chute:** Material: AISI 304 Stainless Steel Thickness (in.): 1/8	N/A	1
			DRIVE SYSTEM		
14	N/A	1	**Motor Mount:** Material: Carbon Steel Diameter (in.): 12 Length (in.): 6-3/8 Thickness (in.): 1/2	N/A	2,3
15	N/A	1	**Drive Shaft:** AISI 1018 Machinery Steel. The drive shaft is fitted with a spiral connection semicircular plate	N/A	2
16	N/A	1	**Packing Gland Seal with Adjustable Retainer at Drive End:** AISI 304 Stainless Steel with three (3) rings of Teflon impregnated packing.	N/A	1
17	212946-10 212946-20	1	**Drive Assembly:** Gear Reducer - SEW Eurodrive flange mount helical-gear reducer with reinforced bearings and double output seals. RPM = 20 Ratio = 88.97 Motor -SEW Eurodrive TEFC, Premium efficiency, 40°c, constant speed, 1.15 SF. NEMA MG1, Inverter Duty, Class F Insulation HP = 3.0 Electrical - 230V/460V, 3 Phase, 60Hz. Note: Motor factory set @ X460V	KAZ77 DRN100LM4	OS2
			SAFETY ACCESSORIES		
18	N/A	2	**Safety Switch Mounting Plate (STI):** Material: AISI 304 Stainless Steel (Shipped loose for field mounting)	N/A	1
19	N/A	1 LOT	**Safety Switch pull cord support brackets:** Material: AISI 304 Stainless Steel (Shipped loose for field mounting)	N/A	1
20	212946-20	1	**Safety Switch with Cord:** Rope activated emergency stop switch with the following components: Safety switch - NEMA 6 enclosure, 500VAC - 1 A, 250VAC - 2A, 100VAC - 5A, 2 N/C + 1 N/O Contacts Pull cord length 66'-0" (Cord to run on one side of each conveyor)	8SH8301032 8SH8301036	N/A
21	212946-10 212946-20	1	**Motion Failure Alarm:** 115 VAC, NEMA 4x Single Pole Double Throw (SPDT) Contact (See drawings for location)	WM100	N/A

5.2.2 Bill of Materials - Conveyor SBC-7304

212946 - TAUNTON, MA - SHAFTLESS SCREW CONVEYOR BILL OF MATERIALS

REV. 0-1

ITEM	DRAWING	QUANTITY	DESCRIPTION	PART NO.	PAINT CODE
SHAFTLESS SCREW CONVEYOR SBC-7304 FEATURES					
1	212946-10 212946-23	17'-4" Shipped in (1) One Sections	**U-trough Model:** U320 Material: AISI 304 Stainless Steel Thickness (in.): 1/8 With neoprene rubber gasket seal on top flange: 1/8" THK. X 3/8" W in Two (2) locations on either side of bolt holes	8XX3333333	1
2	212946-23	16-11" Shipped in (1) One Sections	**Shaftless Spiral:** Material: High Strength Special Steel/Alloy Carbon Steel Hardness - 220 Brinell, minimum OD (mm): 285 Pitch (mm): 275 Outer Spiral (mm): 60 X 25 Inner Spiral (mm): 40 X 15	1SH8104022	2
3	N/A	1 LOT	**Trough Cover:** Material: AISI 304 Stainless Steel Thickness (in.): 1/8 Bolted Notes: 1. Covers have a maximum span of 4'-0". 2. Covers to have 1" turn down edge	N/A	1
4	N/A	4 @ 48"	**Trough Liner:** RCH 1000 UHMW PE Plastic with one-color Thickness (in.): 3/8" AISI 304 Stainless Steel retaining clips	1SH8002102	N/A
5	N/A	1 LOT	**Trough Flanges:** Material: AISI 304 Stainless Steel Thickness (in.): 1/4"	N/A	1
6	N/A	1	**Trough End Plate (opposite of drive):** Material: AISI 304 Stainless Steel Thickness (in.): 1/4	N/A	1
7	N/A	1	**Trough End Plate (drive end):** Material: AISI 304 Stainless Steel Thickness (in.): 3/8	N/A	1
8	N/A	1 LOT	**U Trough Stiffeners:** Material: AISI 304 Stainless Steel 2"W X 3/16"Thk. Nominal Bolted & Removable	N/A	1
9	N/A	1 LOT	**Assembly Hardware (nuts, bolts, washers, etc.):** Material: AISI 304/18-8 Stainless Steel	N/A	1
10	212946-42	1 LOT	**Supports:** Material: AISI 304 Stainless Steel Thickness (in.): 1/4 (See drawings for clarification)	N/A	1
11	212946-23	1	**Drain Connection:** Material: AISI 304 Stainless Steel 4" Diameter, Flanged, Covered (See drawings for location)	N/A	1
12	212946-31	1	**Inlet Chute: (Transitions)** Material: AISI 304 Stainless Steel Thickness (in.): 1/8	N/A	1

ITEM	DRAWING	QUANTITY	DESCRIPTION	PART NO.	PAINT CODE
13	212946-23	1	**Discharge Chute:** Material: AISI 304 Stainless Steel Thickness (in.): 1/8	N/A	1
			DRIVE SYSTEM		
14	N/A	1	**Motor Mount:** Material: Carbon Steel Diameter (in.): 12 Length (in.): 6-3/8 Thickness (in.): 1/2	N/A	2,3
15	N/A	1	**Drive Shaft:** AISI 1018 Machinery Steel. The drive shaft is fitted with a spiral connection semicircular plate	N/A	2
16	N/A	1	**Packing Gland Seal with Adjustable Retainer at Drive End:** AISI 304 Stainless Steel with three (3) rings of Teflon impregnated packing.	N/A	1
17	212946-10 212946-23	1	**Drive Assembly:** Gear Reducer - SEW Eurodrive flange mount helical-gear reducer with reinforced bearings and double output seals. RPM = 20 Ratio = 88.97 Motor -SEW Eurodrive TEFC, Premium efficiency, 40°c, constant speed, 1.15 SF. NEMA MG1, Inverter Duty, Class F Insulation HP = 3.0 Electrical - 230V/460V, 3 Phase, 60Hz. Note: Motor factory set @ 460V	KAZ77 DRN100LM4	OS2
			SAFETY ACCESSORIES		
18	N/A	2	**Safety Switch Mounting Plate (STI):** Material: AISI 304 Stainless Steel (Shipped loose for field mounting)	N/A	1
19	N/A	1 LOT	**Safety Switch pull cord support brackets:** Material: AISI 304 Stainless Steel (Shipped loose for field mounting)	N/A	1
20	212946-23	1	**Safety Switch with Cord:** Rope activated emergency stop switch with the following components: Safety switch - NEMA 6 enclosure, 500VAC - 1 A, 250VAC - 2A, 100VAC - 5A, 2 N/C + 1 N/O Contacts Pull cord length 66'-0" (Cord to run on one side of each conveyor)	8SH8301032 8SH8301036	N/A
21	212946-10 212946-23	1	**Motion Failure Alarm:** 115 VAC, NEMA 4x Single Pole Double Throw (SPDT) Contact (See drawings for location)	WM100	N/A

5.2.3 Gear Reducer Data Sheet - Conveyor SBC-7303 & SBC-7304

Equipment:	Conveyor SBC-7303 & Conveyor SBC-7304	Manufacturer:	SEW Eurodrive
Quantity:	1	Model:	KAZ77
Performance Data			
Motor Power (hp):	3.0	Input Speed (rpm):	1758
		Ratio:	88.97
Service Factor:	1.29	Output Speed (rpm):	20
Duty:	Continuous	AGMA Class:	II
Mechanical Data			
Gear Type:	Helical-Bevel	Housing Material:	Class SAE 30 Cast Iron
Mounting Position:	M4-M5A / 5° M4-M5A / 20°	Type of Cooling:	Air
Cable Entry Position:	n/a	Bearing Type:	Reinforced Tapered Roller
Type of Reduction:	Triple	L-10 Life (hrs.):	100,000
Lubrication:	Oil - Shell Omala 220	Efficiency:	95.50%
Configuration:	Permanent		
Miscellaneous			
AGMA Certification:	Yes	Finish:	OS2
Features			
Inspection Cover	Fill Holes		
Oil Breather	Drain Holes w/Plugs		
Double Output Seals			

5.2.4 Motor Data Sheet - Conveyor SBC-7303 & SBC-7304

Equipment:	Conveyor SBC-7303 & Conveyor SBC-7304	Manufacturer:	SEW Eurodrive
Quantity:	2	Model:	DRN100LM4
Operating Conditions			
Type of Drive:	Close Coupled	Degree of Protection	IP66
Ambient Temperature	-4°F to 104°F	Altitude (ft.):	30
Environment	Severe, Wet	Inverter Rated:	Yes
Design Data			
Power (hp):	3.0	Voltage (V)	230/460
Full Load Speed (rpm)	1765	Phase	3
Full Load Torque (lbs.-in.)	105	Frequency (Hz.)	60
No Current Amperage (A) @ 460V	2.35	Current (A)	8.3//4.15
Locked Rotor Amperage (A) @ 460V	9.4	Service Factor:	1.15
Frame Size:	100	Motor Weight: (lb)	75.00
Duty:	Continuous	Enclosure Type:	TEFC
Bearing Type:	Double Sealed	Insulation Class	F
B-10 Life (hrs.)	30,000	Efficiency Per NEMA Design	MG-1
Lubrication	Grease	Finish	OS2- Silver
Motor Efficiency @ Full Load	89.5	Power Factor @ Full Load	0.74

Operating Procedures

6 Operating Procedures

This section provides detailed operating procedures including routine fault conditions, emergency procedures and a fault finding/troubleshooting guide.

6.1 General

ONLY TRAINED AND QUALIFIED PERSONNEL SHOULD OPERATE THE EQUIPMENT AND/OR SYSTEM. OPERATORS SHOULD BE FAMILIAR WITH ALL SAFETY INSTRUCTIONS AND WARNINGS, IN ADDITION TO ANY FACILITY SPECIFIC SAFETY REQUIREMENTS.

ALL ELECTRICAL POWER MUST BE SHUT OFF AND LOCK OUT/TAG OUT PROCEDURES FOLLOWED BEFORE ATTEMPTING MAINTENANCE OR REPAIRS.

BEFORE START-UP OF THE CONVEYOR:

- CHECK THAT NO PERSONNEL ARE STANDING NEAR THE EQUIPMENT
- CHECK THAT ALL INSPECTION LIDS AND OTHER OPENINGS ARE CLOSED
- CHECK THAT THERE IS NO ACCESS TO MOVING PARTS

ENSURE THAT NO UNAUTHORIZED PERSONNEL HAVE ACCESS TO THE EQUIPMENT DURING OPERATION. ALL PERSONNEL SHOULD BE CAREFUL TO KEEP HANDS, HAIR AND CLOTHING CLEAR OF ALL MOVING PARTS. CONTACT WITH MOVING PARTS MAY CAUSE INJURY.

IF WELDING IS REQUIRED ON ANY PART OF THE EQUIPMENT, DO NOT ATTACH GROUND LEADS WHERE CURRENT MAY PASS THROUGH BEARINGS, GEARING, OR ELECTRICAL EQUIPMENT.

6.2 System Start Up

Before the start-up, all basic mechanical and electrical adjustments must be made. In all circumstances these adjustments must be made by skilled tradesmen.

Prior normal operation it is recommended to:

1. Inspect the safety devices for proper operational before adding any material to the conveyor
2. Inspect the conveyor inlet for any obstructions or material that will interfere with normal operation

NOTE: Prolonged operation of an empty conveyor will increase wear to the spiral and/or liner.

DO NOT INSPECT, CLEAR THE INLET, OR REMOVE THE LIDS OF THE CONVEYOR WHILE THE CONVEYOR IS IN OPERATION. SERIOUS INJURY MAY OCCUR.

The conveyor system operation is typically interfaced and controlled by other processes or equipment.

Conveyor(s) will start automatically and is determined by the control equipment programming. A local L-O-A switch may allow independent operation of the conveyor(s) from the interfaced equipment.

In normal operation the "Automatic" position should be used. The "Hand" position should be used only when performing maintenance or inspection.

The Safety Switch(s) with pull cords attached to the conveyor system are designed to immediately shutdown the system when the switch is activated by pulling on the cord.

Following an emergency shutdown, it will be necessary to reset the Safety Switch. This should be done before attempting to restart the system.

A blue reset button is provided to easily return the safety switch back to its machine run position after actuation.

6.3 System Shut Down

SHORT TERM SHUTDOWN PROCEDURE:

Short term shutdown procedures are for durations no more than seven (7) days.

1. From the control panel, initiate a shutdown according to the control panel supplier's instructions.

    a) If L-O-A switch is in "Auto" position the conveyors will stop automatically several minutes after a control system shutdown procedure is initiated.

    b) If L-O-A switch is in "Local" position allow conveyor to operate until all material has been discharged from conveyor.

2. No cleaning or other maintenance is required.

3. Follow normal operating procedures for routine start up.

LONG TERM SHUTDOWN PROCEDURE:

Long term shutdown procedures are for durations that exceed seven (7) days.

1. From the control panel, initiate a shutdown according to the control panel supplier's instructions.

2. Thoroughly wash down all internal surfaces of conveyor removing any accumulated solids or debris.

3. Inspect inlets and discharges for obstructions and debris. Remove and clean as necessary.

4. Rotated spirals once per month by starting the drive unit and running for 30 to 60 seconds.

5. Prior to a restart inspect the following items:

    a. Gearbox lubricant
        i. Levels OK?
        ii. Clear fluid?
    b. Trough liners for wear
    c. Safety Devices for proper operation

6. Follow normal operating procedures for routine start up.

6.4 Alarm Conditions

Please refer to your control panel supplier for alarm condition information.

6.5 Troubleshooting

6.5.1 Conveyor

SYMPTOM	CAUSES	ACTIONS
Conveyor trough liner worn	Unless the waste is unusually abrasive average liner life exceeds 10,000 hours	Replace liner
Conveyor Inlet/ Discharge Clogged	Excessive Debris	Clean debris
Conveyor stops and motor is not running	Safety device activated	Check zero speed switch or safety switch, over current protection, supply voltage to conveyor

6.5.2 Motor

SYMPTOM	CAUSES	ACTIONS
Unusual, irregular running noise	Meshing/grinding noise: Bearing damage	Check the oil
	Knocking noise: Irregularity in the gearing	Contact JDV
Oil leaking From the inspection cover From the motor flange From the motor oil seal From the gear unit flange At output-end oil seal	Rubber gasket on the inspection cover leaking	Tighten the screws on the inspection cover and observe the gear unit If oil still leaks: Contact JDV
	Gasket defective	Contact JDV
	Gear unit not ventilated	Vent the gear unit see "Mounting Positions"
Oil leaking from breather valve	Too much oil	Correct the oil fill quantity
	Function-related oil mist	There is no fault
	Drive installed in incorrect mounting position	Properly adjust the breather valve see "Mounting Positions" Correct the oil level

SYMPTOM	CAUSES	ACTIONS
	Frequent cold starts (oil foams) and/or high oil level	Use an oil expansion tank
Output shaft does not turn although the motor is running or the input shaft is rotated	Shaft-hub connection in the gear unit interrupted	Send in the gear unit for repair
Motor does not start up	Supply cable interrupted	Check the connections and (intermediate) terminal points, correct if necessary)
	Supply cable fuse has blown	Replace fuse
	Motor protection (switch) has triggered	Check that the motor protection (switch) is set correctly; current specification is on the nameplate
	Motor protection does not trip	Check motor protection control
	Malfunction in control or in the control process	Observe the switching sequence; correct if necessary
Motor only starts with difficulty or does not start at all	Motor power designed for delta connection but connected in star	Correct the connection from star to delta; follow the wiring diagram
	Motor power designed for star-star connection but only connected in star	Correct the connection from star to star-star; follow the wiring diagram
	Voltage or frequency deviate considerably from set point, at least while being switched on	Provide better power supply system; reduce the power supply load; Check cross section of supply cable, replace with cable of larger cross section if need be
Motor does not start in star connection, only in delta connection	Star connection does not provide sufficient torque	If the delta inrush current is not too high (observe the regulations of the power supplier), start up directly in delta; Check the project planning and use a larger motor or special version if necessary

SYMPTOM	CAUSES	ACTIONS
	Contact fault on star/delta switch	Check the switch, replace if necessary; Check the connections
Incorrect direction of rotation	Motor connected incorrectly	Swap two phases of the motor supply cable
Motor hums and has high current consumption	Winding defective	Send motor to specialist workshop for repair
Fuses blow or motor protection trips immediately	Short circuit in the motor supply cable	Repair short circuit
	Supply cables connected incorrectly	Correct the wiring, observe the wiring diagram
	Short circuit in motor	Send motor to specialist workshop for repair
Severe speed loss under load	Motor overload	Measure power, check project planning and use larger motor or reduce load if necessary
	Voltage drops	Check cross section of supply cable, replace with cable of larger cross section if necessary
Motor heats up excessively (measure temperature)	Overload	Measure power, check project planning and use larger motor or reduce load if necessary
	Insufficient cooling	Provide for cooling air supply or clear cooling air passages, retrofit forced cooling fan if necessary. Check the air filter, clean or replace if necessary
	Ambient temperature is too high	Observe the permitted temperature range, reduce the load if necessary
	Loose contact in supply cable (one phase missing)	Tighten loose contact, check connections, observe wiring diagram

SYMPTOM	CAUSES	ACTIONS
	Fuse has blown	Look for and rectify cause (see above); replace fuse
	Supply voltage deviates from the rated motor voltage by more than 5% (range A)/ 10% (range B)	Adjust motor to supply voltage
	Rated operation type (S1 to S10, DIN 57530) exceeded, e.g. through excessive starting frequency	Adjust the rated operating mode of the motor to the required operating conditions; consult a professional to determine the correct drive if necessary
Motor running very loud	Ball bearing compressed, dirty or damaged	Re-align motor and the driven machine, inspect rolling bearing and replace if necessary
	Vibration of rotating parts	Look for the case, possibly an imbalance; correct the cause, observe method for balancing
	Foreign bodies in cooling air passages	Clean the cooling air passages

6.5.3 Zero Speed Switch

SYMPTOM	CAUSES	ACTIONS
Conveyor stops but motor runs	Zero speed switch activated	Check for broken spiral or drive shaft
		Switch improperly installed

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Maintenance Procedures

7 Maintenance Procedures

This section outlines the required maintenance procedures with corresponding time intervals and a service/maintenance task matrix.

7.1 Maintenance Task Matrix

ITEM	ACTION	DAILY	WEEKLY	MONTHLY	QUARTERLY	ANNUALLY
Trough	Inspect trough for obstructions of material flow, wash-down if required and remove any debris	X				
Conveyor	Inspect all safety equipment, if necessary adjust or calibrate		X			
Conveyor	Clean and wash down the conveyor inside/outside			X		
Trough Liner	Inspect the liner for wear			X		
Spiral	Inspect the spiral for damage or uneven wear			X		
	Inspect the spiral for wear. A maximum of 20% of the spirals original dimensions can be worn away before it needs to be replace. If the spiral is extremely long >15M it should be replaced before this level of wear is reached.			X		
Spiral Coupling Disk & Drive Shaft	Inspect for corrosion, if present clean and re-coat with two part epoxy paint.					X
Packing Seal	Inspect the packing box for leaks			X		
Conveyor	Inspect all bolts and welds, tighten as necessary				X	

ITEM	ACTION	DAILY	WEEKLY	MONTHLY	QUARTERLY	ANNUALLY
Gear Reducer	Inspect oil level and its color, fill and/or replace as necessary				X	
Gear Reducer	Check running noise for possible bearing damage			X		
Gear Reducer	Visually inspect seals for leakage			X		
Motor	Check rolling bearing and change if necessary - Every 10 000 operating hours					X
Motor	Replace the oil seal - Every 10,000 operating hours					X
Motor	Clean the cooling air passages - Every 10,000 operating hours					X
Electrical Components	Inspect for tight connections and any evidence of corrosion. Repair/replace as necessary				X	
Safety Switch	Check correction operation of system at locations along all coverage lengths. Nominal tension settings, re-tension if necessary.		X			
Safety Switch	Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture. Repair/replace as necessary			X		

7.2 Lubrication Matrix

ITEM	LUBRICATION	DAILY	WEEKLY	MONTHLY	QUARTERLY	ANUALLY
Gearbox – Check Level	Shell Omala S2G220			X		
Gearbox – Change Oil	Shell Omala S2G220					X
Packing Gland – Lubricate Packing	Food-Grade, Silica thickener, NLGI 2, Synthetic base oil, PTFE Grease			X		
Packing Gland – Replace	Three (3) lengths of Teflon impregnated seal packing					X

7.3 General Maintenance Procedures

7.3.1 Replacement of the Trough UHMW Liner

The JDV conveyors have been furnished with U trough liners in 4 feet long segments. Refer to the shaftless conveyor Data Sheets in Section 1 for type supplied. This liner was especially selected to give long life and still protect the life of the spiral.

When excess wear becomes evident ie. the spiral is about to wear through the liner to the U trough, it is recommended that the liner be replaced. Note, in many cases it is recommended that the entire liner be replaced, although this is not always necessary.

Replacement liners can be purchased from JDV Equipment in either as "rolled and braced" or as "flat stock" for local fabrication. If the liners are to be inventoried it is recommended that they be purchased as "flat stock" to facilitate storage, minimizing possible damage and shipping costs.

If the liners are purchased as "flat stock", prior to replacement of liner:

Contact a local steel/metal fabricator with a "press brake" or "rolling mill". If a rolling mill isused, it must have a capacity 2" smaller than the radius of the U trough of the conveyor.

Option 1:

"Press brake" - "Brake" U trough liner sections in 1" increments across the width of the liner panel until a "U" shape is formed.

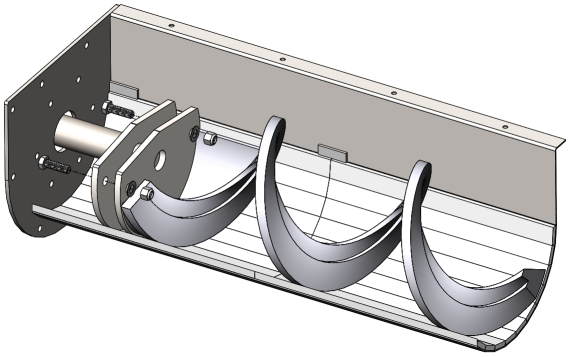
Option 2:

"Rolling Mill" - "Roll" U trough liner sections with a rolling mill to a radius 2" smaller than the radius of the U trough.

Strap/brace the liner panels following fabrication so that they do not return to their original flat shape. The material characteristics of these liners require that they should be installed as soon as possible following fabrication, preferably within two days.

To Replace Liner Proceed As Follows:

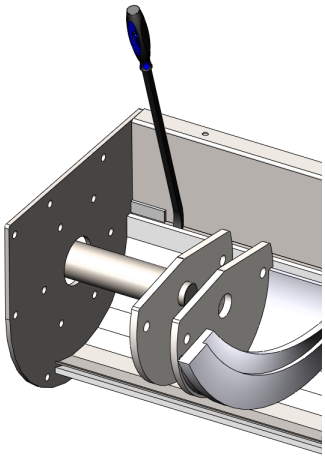
1. Electrically "Shutdown" and "Lockout" system.
2. Remove trough covers.
3. Remove bolts between spiral flange and flange for drive shaft.



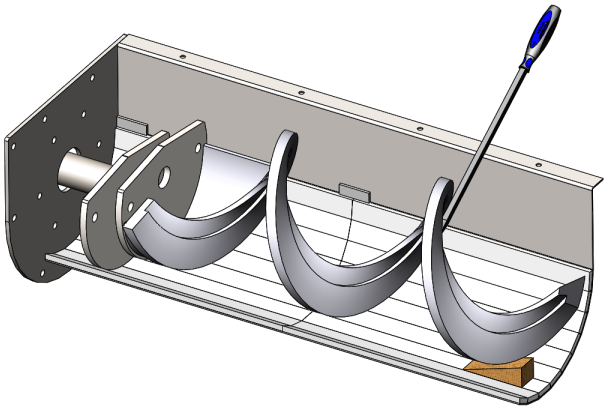
4. Elevate spiral over section of liner to be replaced. Note, the spiral is very strong and rigid axially but has some flexibility in other directions. Therefore, one can normally lift the spiral one inch above the section to be removed without lifting the entire spiral.

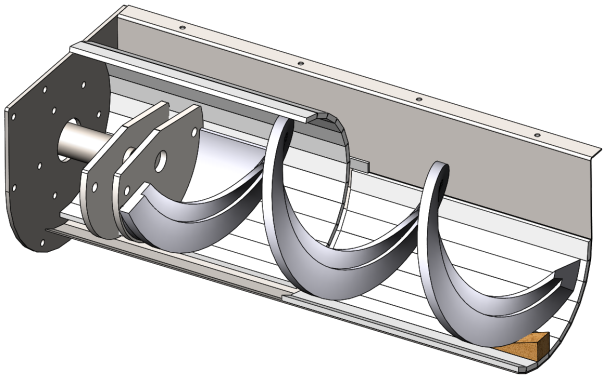
5. Remove U-trough stiffeners if they interfere with liner removal.

6. Pry the section to be removed from the retainer clips on one side.



7. Pull section up and free of conveyor trough.





8. Clean any loose sludge and debris from area.

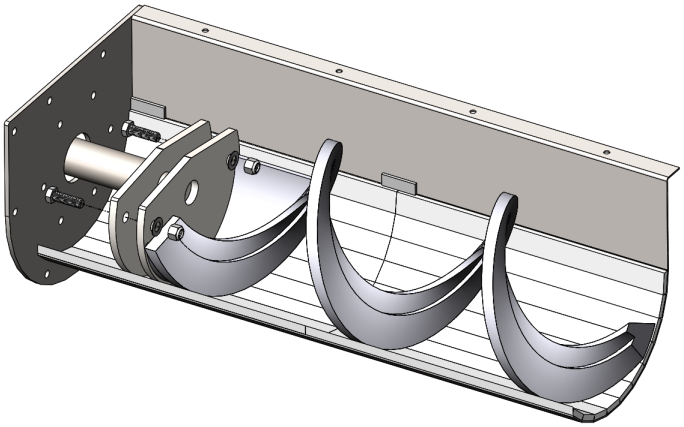
9. Install new liner section, reversing the process, making certain that the new section is fully retained by the clips.

10. Lower spiral onto new liner and repeat with other sections as required.

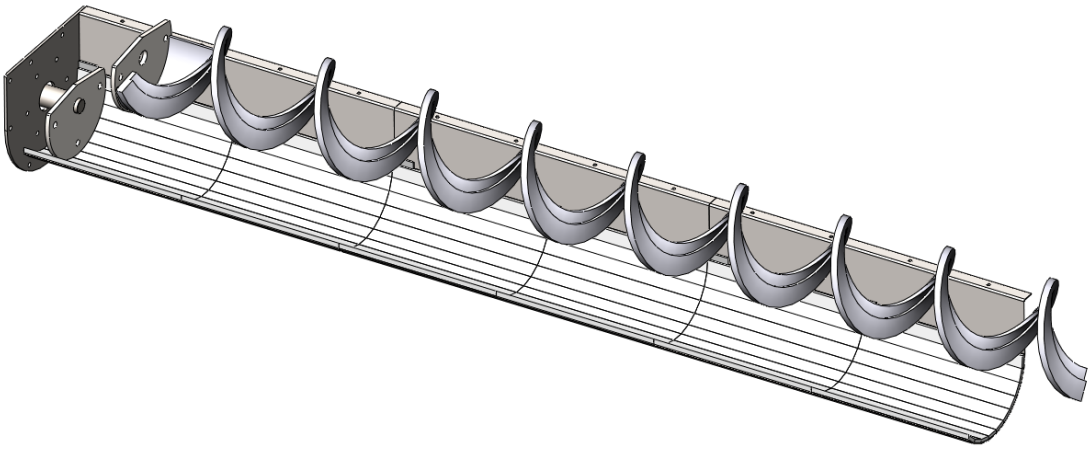
7.3.2 Replacement the Spiral

There should be no joints in the spiral closer than 4 spiral-turns to the spiral's coupling disc.

1. Undo the screws holding the protective cover and remove it from the trough.
2. Check that the new spiral has the dimensions given on the drawing.
3. Unscrew the spiral's coupling disc from the drive shaft's coupling disc.



4. Lift the spiral from the trough. Depending on the local conditions the spiral can be removed in several ways. The spiral can be lifted, pushed out through the trough's opening or cut into sections etc.
5. Place the new spiral in the trough. Refer to installation guide for welding procedure.

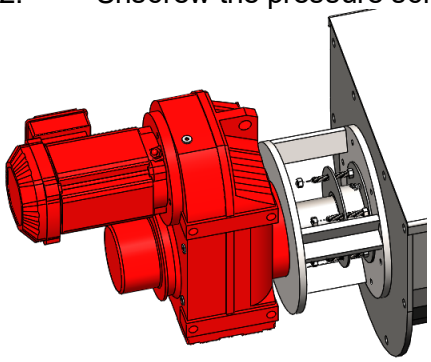


6. Screw the coupling discs together (use locking nuts).
7. Replace the protective cover to the trough.

7.3.3 Replacement the Packing Box

1. Electrically "Shutdown" and "Lockout" system.

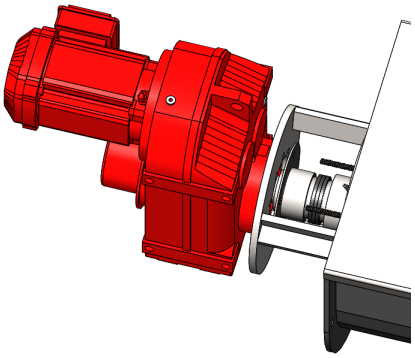
2. Unscrew the pressure screws and slide the gland back along the drive shaft.



3. Remove the packing and clean the packing box seats.

4. Cut the new packing with an angle (45°). Put tape around the packing before it is cut to prevent the ends from fraying.

5. Push the packing into the packing box seat cut ends first.



6. Repeat this process with three more packings. Check that each is in place before the next is put in. The packings should be rotated by 90° to each other so that the joins are in different places.

7. Replace the gland and tighten the pressure screws so that the packing is formed properly in the packing box seats.

8. Tighten the pressure screws so that only a 7 mm gap remains between and packing box seat and the gland. Tighten the screws alternately and check that the gap remains even after each turn.

9. Lubricate as required with Food-Grade, Silica thickener, NLGI 2, Synthetic base oil, PTFE Grease.

10. Test run the conveyor with material to make sure that the packing box does not leak. If there is heavy leakage tighten the pressure screws. The packing box should leak somewhat to ensure correct cooling and lubrication.

7.3.4 Replacement of the Gear Reducer Oil

Only change the oil when the unit is at operating temperature.

De-energize the drive unit and secure it to prevent it from being switched back on inadvertently!

 Wait until the gear unit cools down - Danger of burns!

Note: The gear unit must still be warm otherwise the high viscosity of excessively cold oil will make it harder to drain the oil correctly.

1. Place a container underneath the oil drain plug

2. Remove the oil level plug, breather plug/breather valve and oil drain plug.

3. Drain all the oil.

4. Screw in the oil drain plug.

5. Pour in new oil of the same type through the vent hole (if changing the oil type, please first contact our customer service) Do not mix synthetic lubricants.

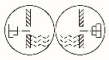
   - Pour in the volume of oil in accordance with the mounting position (see below quantities) or as specified on the nameplate.

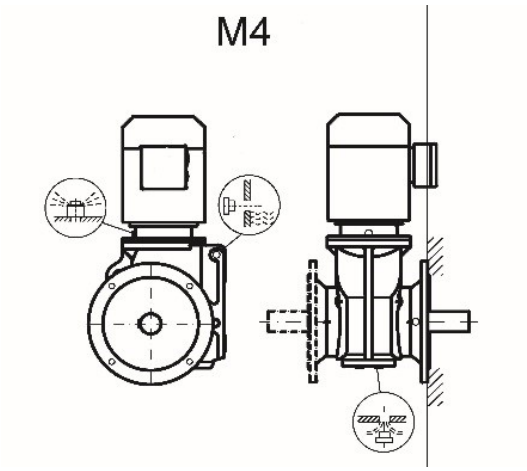
   - Check at the oil level plug.

6. Screw the oil level plug back in

7. Screw in the breather plug/breather valve.

The following table shows which symbols are used in the mounting positions and what they mean:

Symbol	Meaning
	Breather valve
	Oil level plug
	Oil drain plug



Equipment	Mounting Position	Quantity (Gallons)	Oil Supplier
Conveyor SBC-7303	M4-M5A / 5°	1.50	Shell Omala S2G220
Conveyor SBC-7304	M4-M5A / 20°	1.45	Shell Omala S2G220

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Service & Spare Parts

8 Service & Spare Parts

This section provides a detailed spare parts list with diagram(s), and information on how to contact service for support.

8.1 Service Contact Information

JDV Equipment Corporation
104 Fulton Street
Boonton, NJ 07005
(973) 366-6556
www.jdvequipment.com

If the situation is an emergency and you are unable to contact someone via the JDV office phone, please email support@jdvequipment.com.

8.2 Spares List

JDV Conveyors do not normally require an inventory of spare parts as there are no routine parts replacement. However, in severe duty applications or where the conveyors operate continuously, it is suggested that a spare liner be purchased and inventoried for more rapid replacement of this item.

No bearings are supplied as the conveyor has no bearings.

Normal applications requiring a spare liner include:

- 24 hour operation, 7 days per week
- grit conveying
- unusually abrasive sludges
- other highly abrasive applications

Replacement liners and other components may be obtained from JDV.

Allow 4 to 6 weeks for delivery

8.2.1 Recommended Spare Parts List

Conveyor SBC-7303

ITEM	QUANTITY	DESCRIPTION	PART NO.
1	32' - 10"	Shaftless Spiral	1SH8104022
2	8	Trough Liner	1SH8002102
3	1	Drive Assembly	KAZ77DRN100LM4
4	1	Safety Switch	EC107
5	1	Motion Failure Alarm	EC100

Conveyor SBC-7304

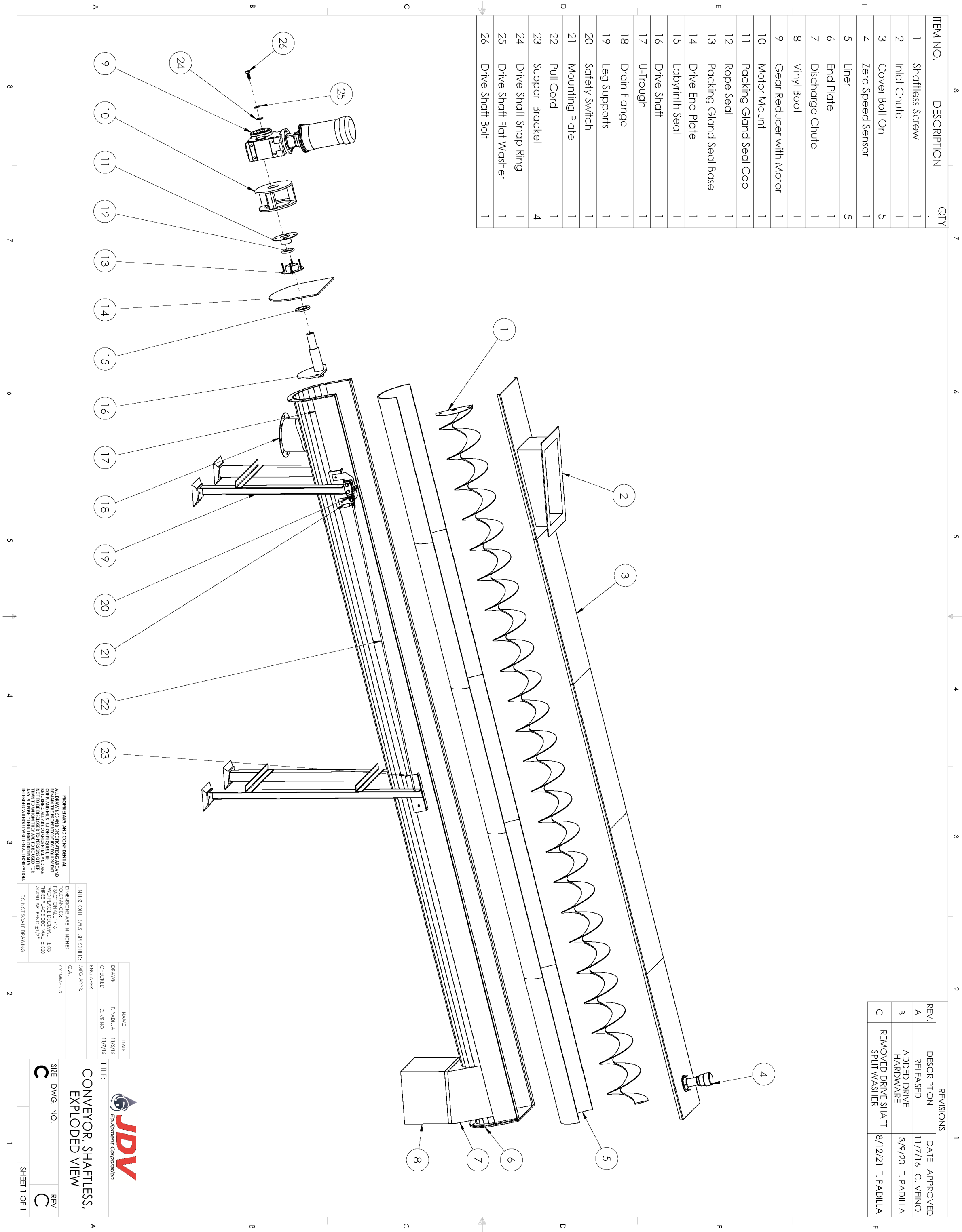
ITEM	QUANTITY	DESCRIPTION	PART NO.
1	16' - 11"	Shaftless Spiral	1SH8104022
2	4	Trough Liner	1SH8002102
3	1	Drive Assembly	KAZ77DRN100LM4
4	1	Safety Switch	EC107
5	1	Motion Failure Alarm	EC100

Above list is only for severe duty applications or where the conveyor(s) operate continuously, it is suggested that a spare liner(s) be purchased and inventoried for more rapid replacement of this item.

8.2.2 Spares Provided per Project Specification

ITEM	QUANTITY	DESCRIPTION	PART NO.
1	1	Five (5) Gallons of Gear Oil	N/A

8.3 Spares Diagram



ITEM NO.	DESCRIPTION	QTY.
1	Shaftless Screw	1
2	Inlet Chute	1
3	Cover Bolt On	5
4	Zero Speed Sensor	1
5	Liner	5
6	End Plate	1
7	Discharge Chute	1
8	Vinyl Boot	1
9	Gear Reducer with Motor	1
10	Motor Mount	1
11	Packing Gland Seal Cap	1
12	Rope Seal	1
13	Packing Gland Seal Base	1
14	Drive End Plate	1
15	Labyrinth Seal	1
16	Drive Shaft	1
17	U-Trough	1
18	Drain Flange	1
19	Leg Supports	1
20	Safety Switch	1
21	Mounting Plate	1
22	Pull Cord	1
23	Support Bracket	4
24	Drive Shaft Snap Ring	1
25	Drive Shaft Flat Washer	1
26	Drive Shaft Bolt	1

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
A	RELEASED	11/7/16	C. VEINO
B	ADDED DRIVE HARDWARE	3/9/20	T. PADILLA
C	REMOVED DRIVE SHAFT SPLIT WASHER	8/12/21	T. PADILLA

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Commissioning Data & Certification

9 Commissioning Data & Certification

9.1 Service Forms

9.2 Certificate of Installation

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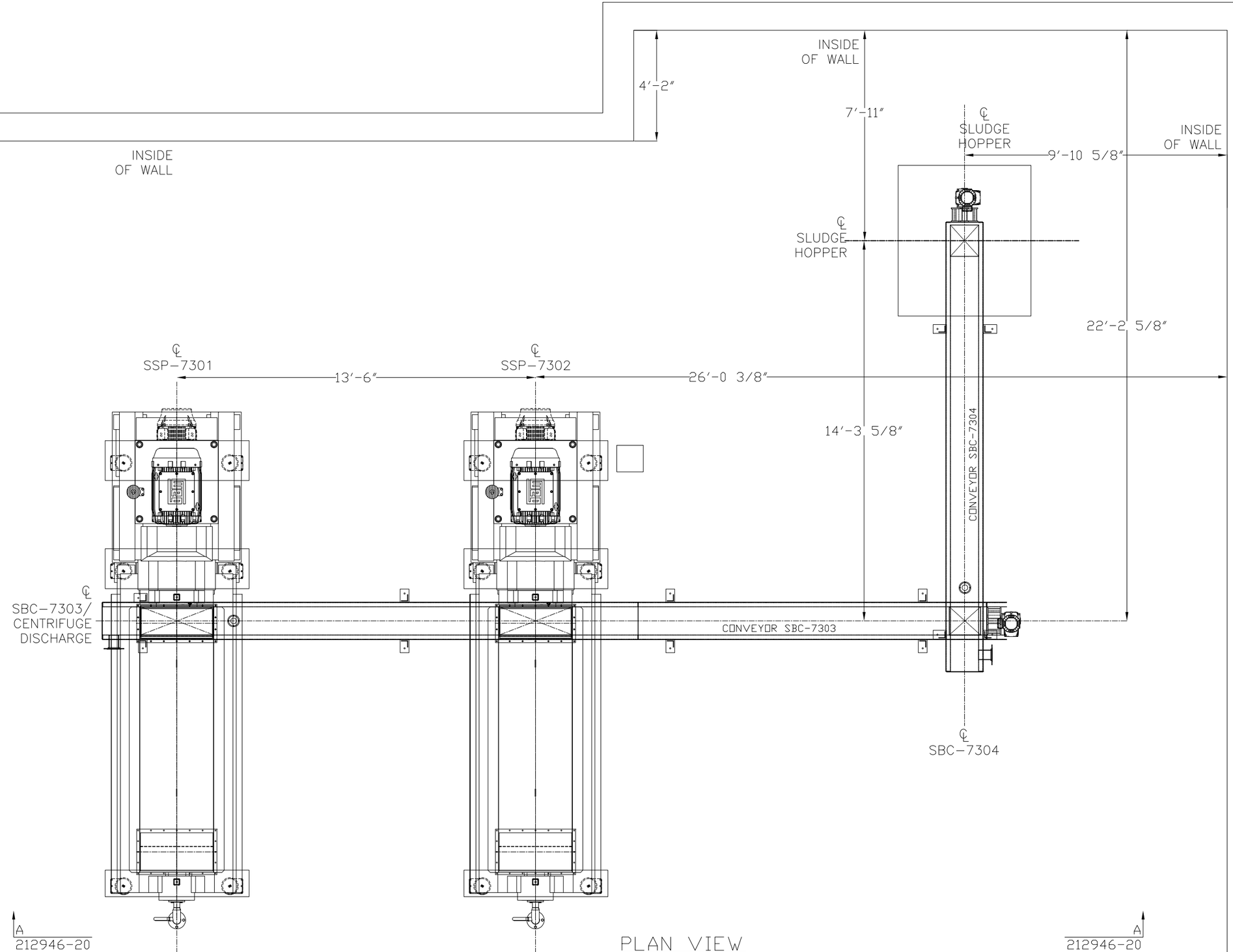
Drawings

10 Drawings

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1		06/08/2022



PLAN VIEW

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

WWW.JDVEQUIPMENT.COM

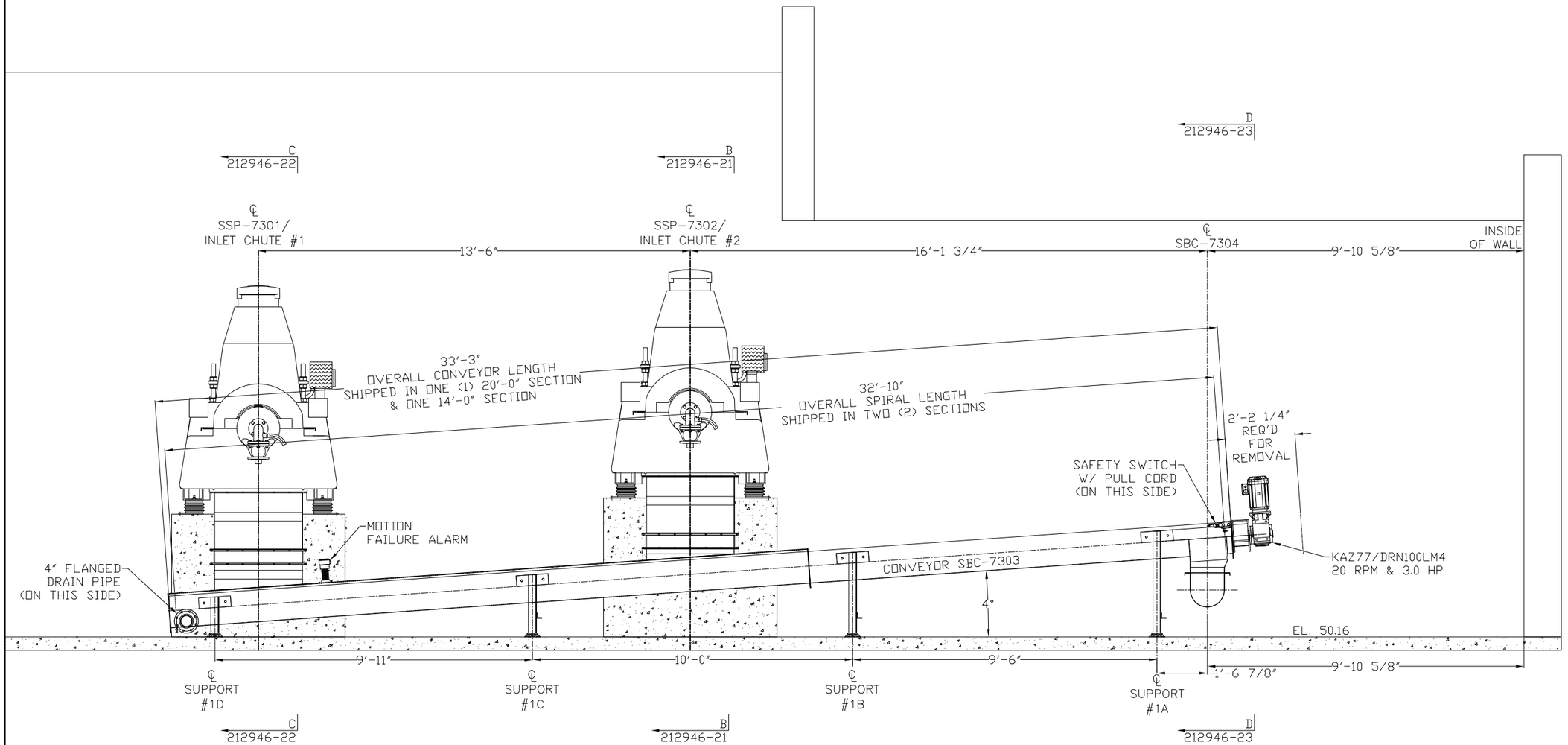
TITLE:
SHAFTLESS SCREW CONVEYOR
PLAN VIEW

DO NOT SCALE DRAWING

PROJ. NO. : 212946 | MODEL: U320

SIZE	DWG. NO.	REV
B	212946-10	0

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022



SECTION A-A

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

WWW.JDVEQUIPMENT.COM

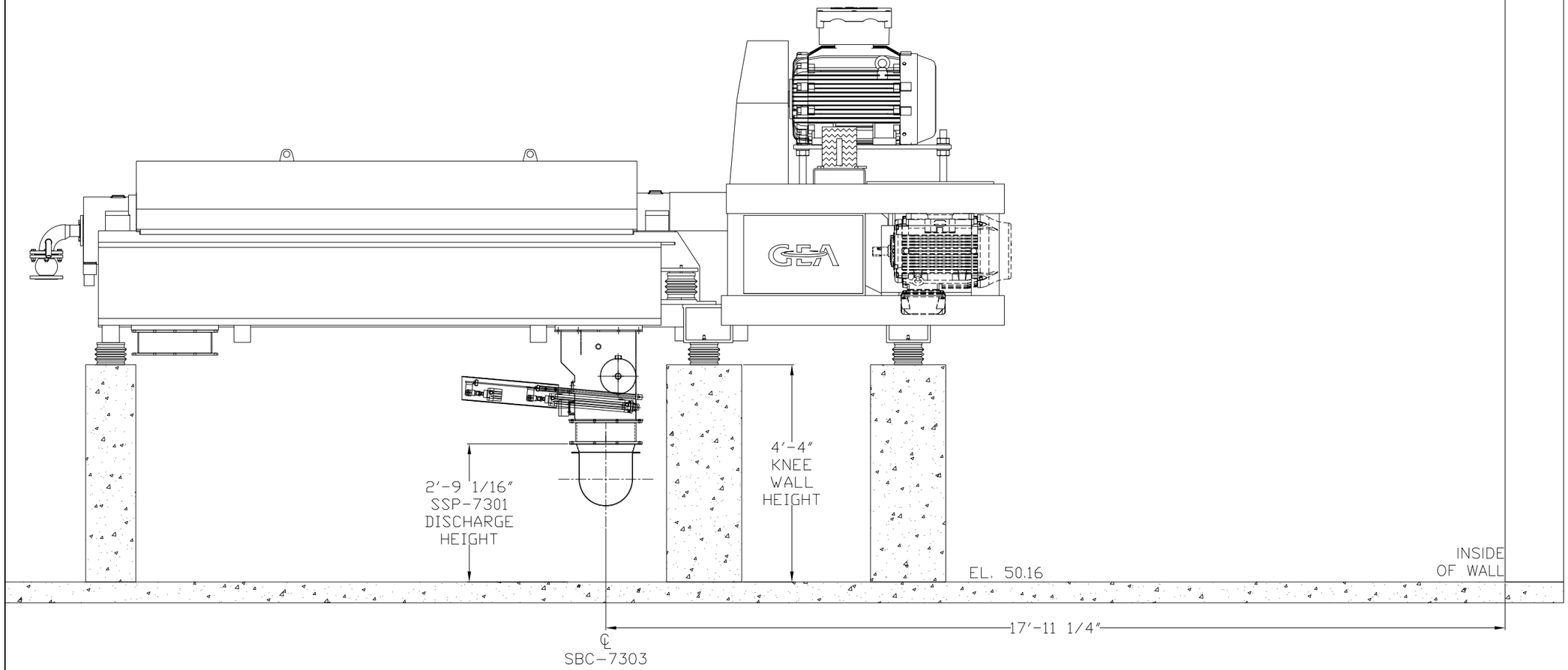
TITLE:
SHAFTLESS SCREW CONVEYOR
SECTION A-A VIEW

DO NOT SCALE DRAWING

PROJ. NO. : 212946 | MODEL: U320

SIZE	DWG. NO.	REV
B	212946-20	0

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022



SECTION B-B

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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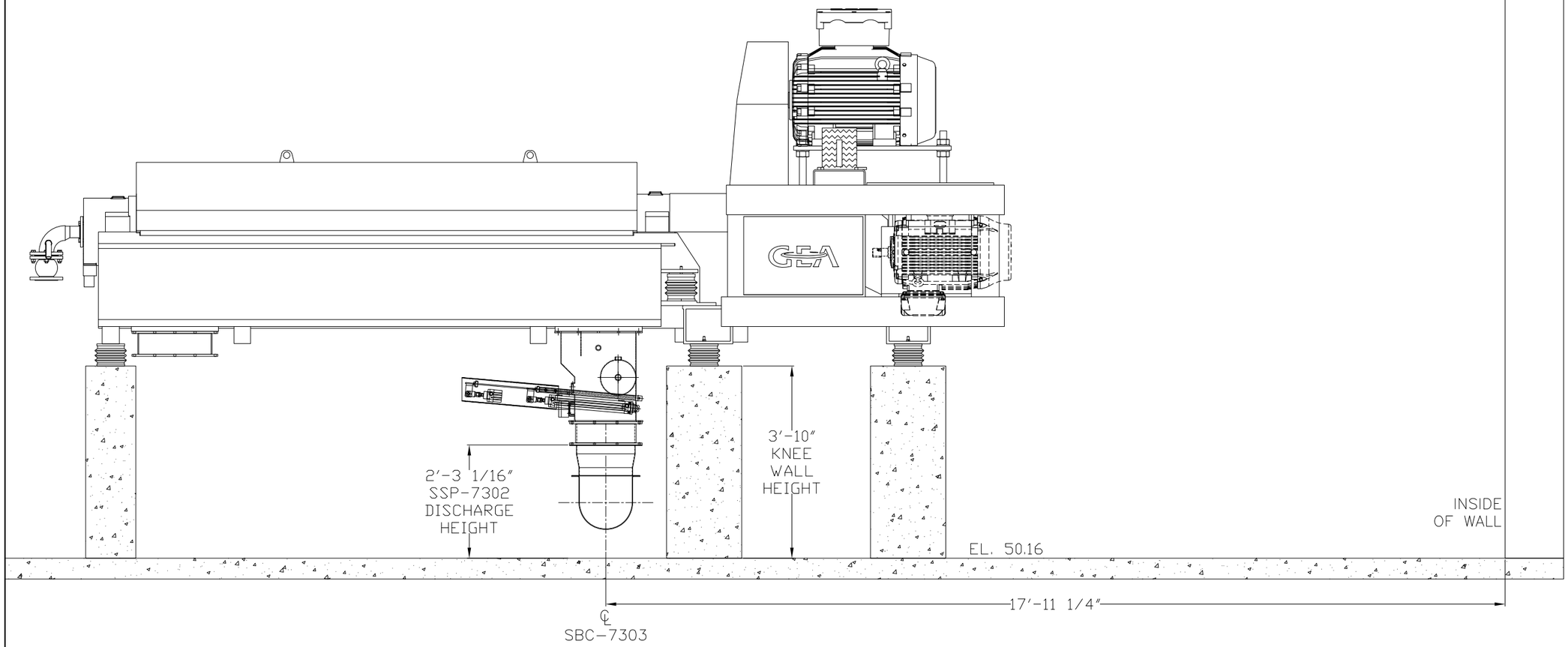
TITLE:
SHAFTLESS SCREW CONVEYOR
SECTION B-B VIEW

DO NOT SCALE DRAWING

PROJ. NO. : 212946 | MODEL: U320

SIZE	DWG. NO.	REV
B	212946-21	0

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022



SECTION C-C

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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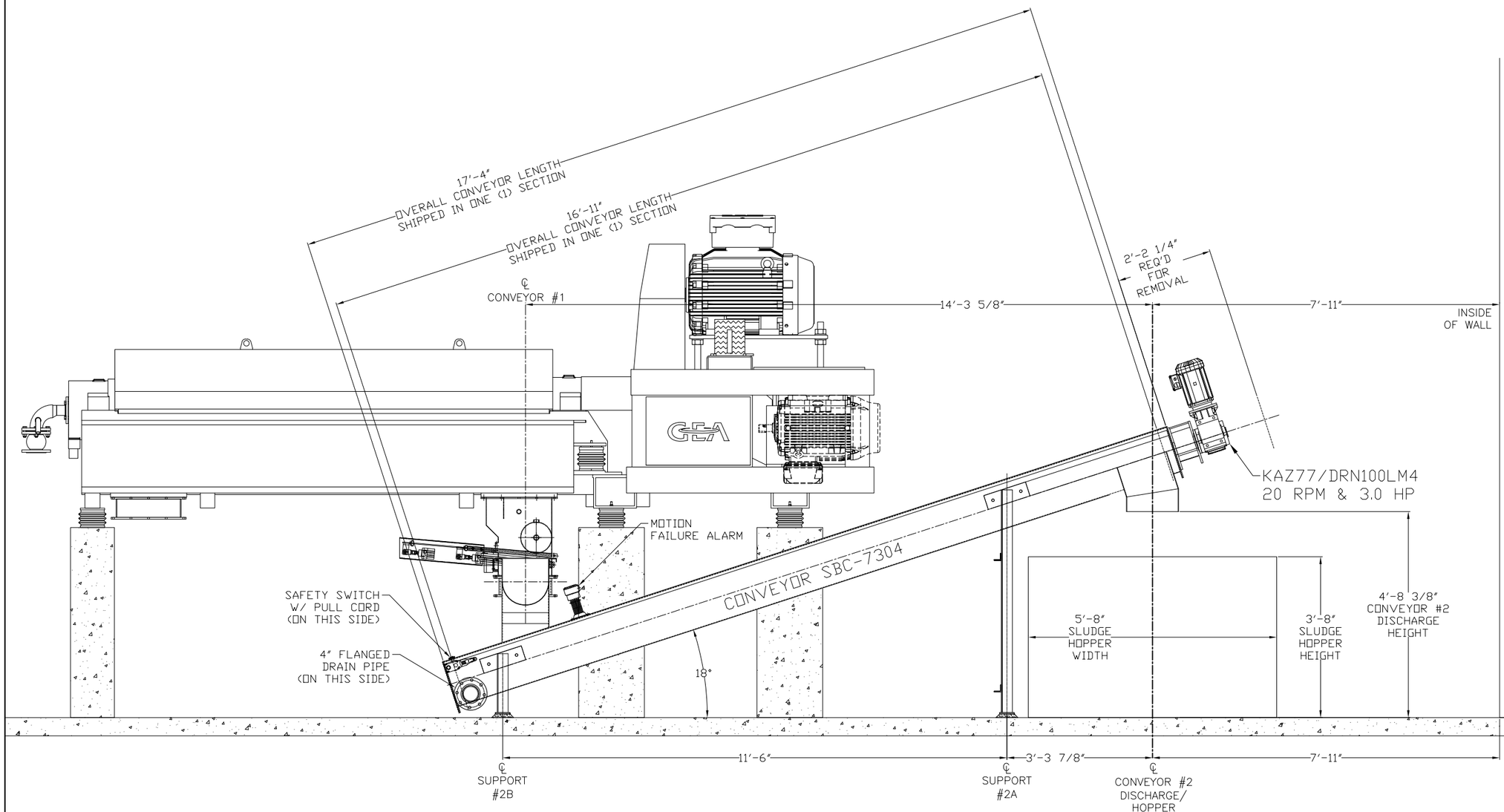
TITLE:
SHAFTLESS SCREW CONVEYOR
SECTION C-C VIEW

DO NOT SCALE DRAWING

PROJ. NO. : 212946 | MODEL: U320

SIZE	DWG. NO.	REV
B	212946-22	0

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022



SECTION D-D

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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TITLE:
SHAFTLESS SCREW CONVEYOR
SECTION D-D VIEW

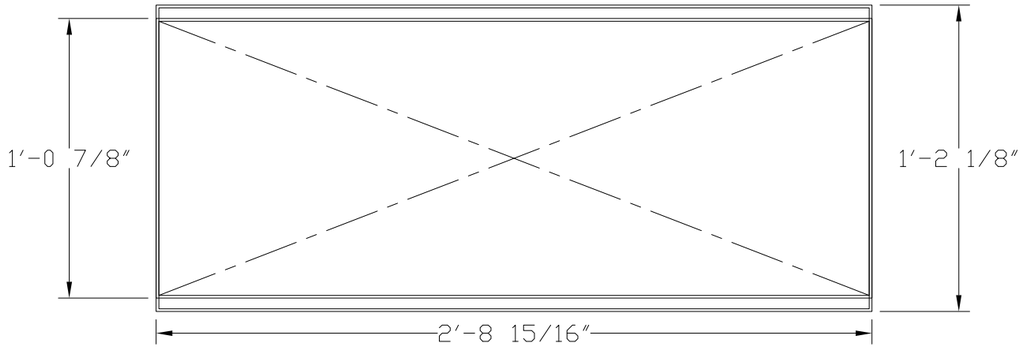
DO NOT SCALE DRAWING

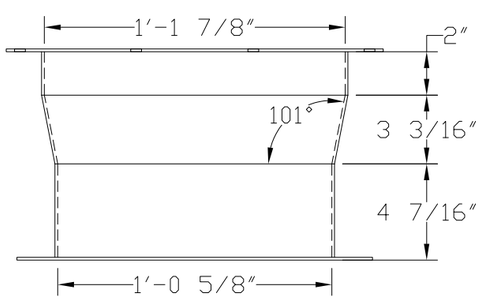
PROJ. NO. : 212946 | MODEL: U320

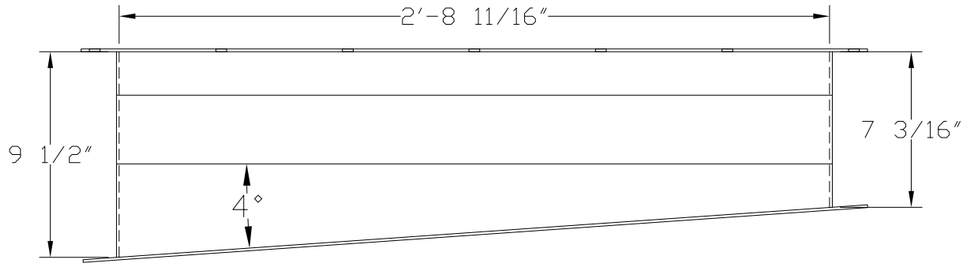
SIZE	DWG. NO.	REV
B	212946-23	0

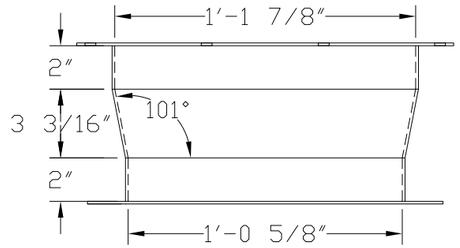
REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022

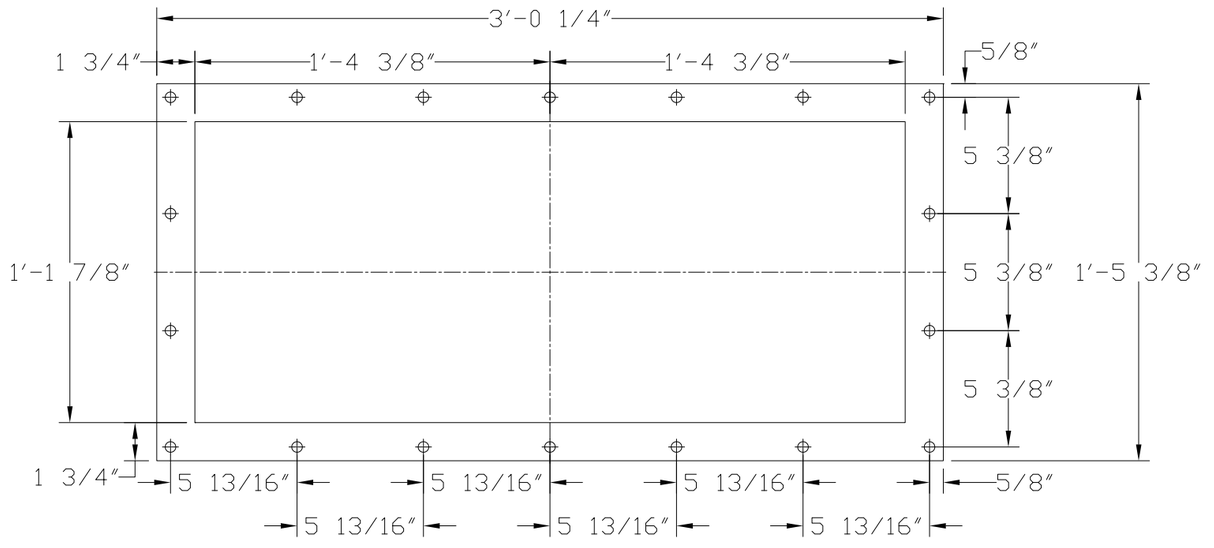
INLET CHUTE #1 DETAIL	
TYPE:	STANDARD
MATERIAL:	304 SS
THICKNESS:	1/8"
TOTAL QTY:	ONE (1)











FLANGE DETAIL

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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TITLE:
SHAFTLESS SCREW CONVEYOR
INLET CHUTE #1 DETAIL

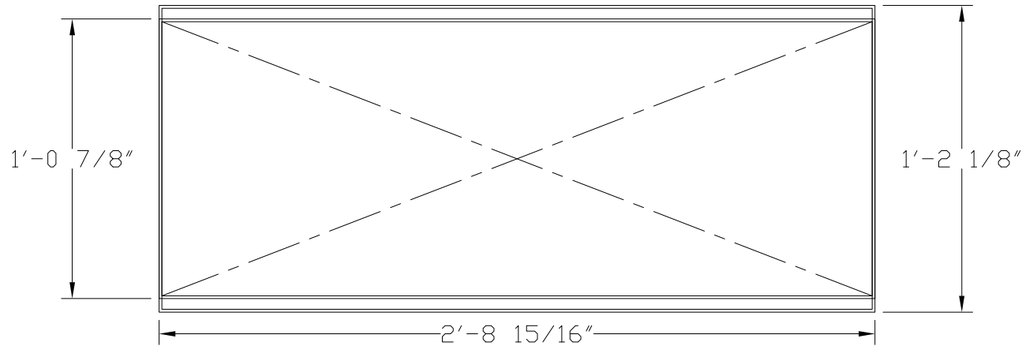
DO NOT SCALE DRAWING

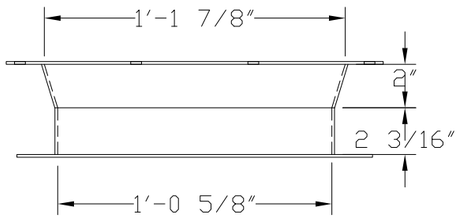
PROJ. NO. : 212946 | MODEL:U320

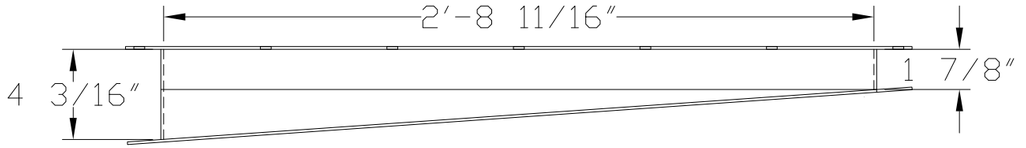
SIZE	DWG. NO.	REV
B	212946-30	0

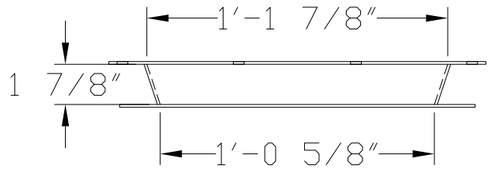
REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022

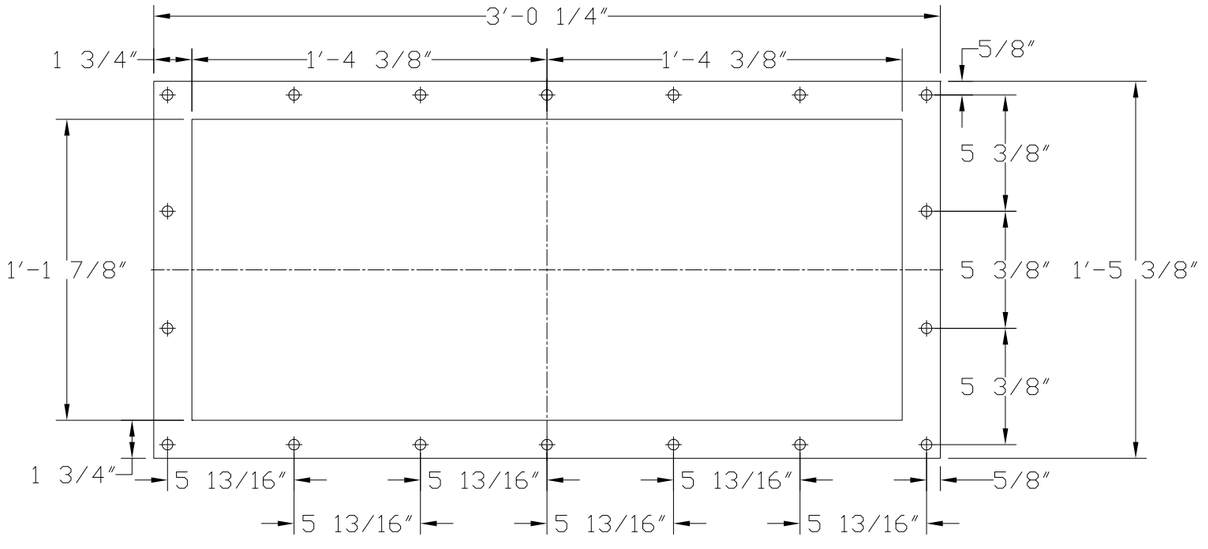
INLET CHUTE #2 DETAIL	
TYPE:	STANDARD
MATERIAL:	304 SS
THICKNESS:	$\frac{1}{8}$"
TOTAL QTY:	ONE (1)











FLANGE DETAIL

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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TITLE:
SHAFTLESS SCREW CONVEYOR
INLET CHUTE #2 DETAIL

DO NOT SCALE DRAWING

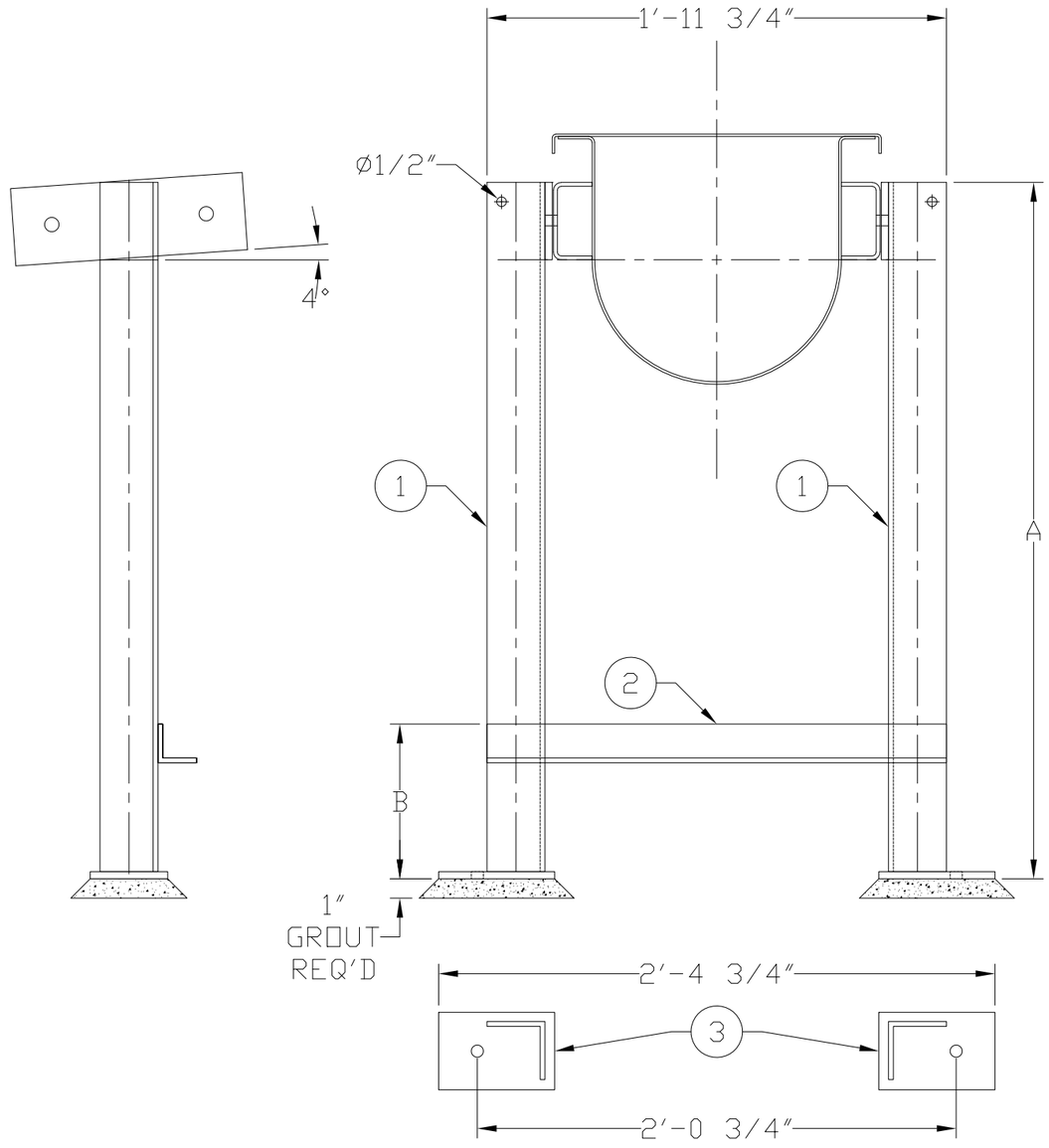
PROJ. NO. : 212946 | MODEL: U320

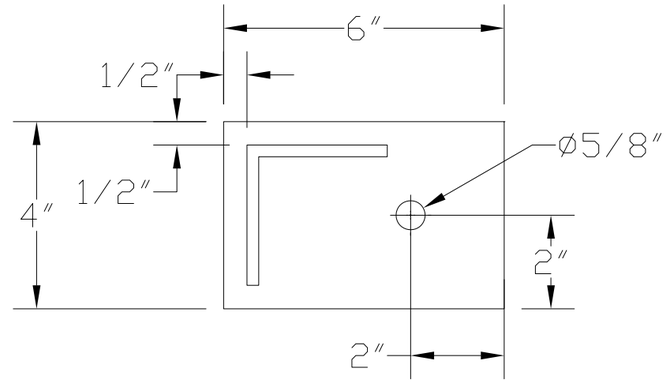
SIZE	DWG. NO.	REV
B	212946-31	0

SUPPORT DIMENSIONS			
QTY	SUPPORT #	DIM A	DIM B
1	1A	3′-2 9/16″	8″
1	1B	2′-6 5/8″	8″
1	1C	1′-10 1/4″	8″

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022

1. VERTICAL LEGS - 3″X3″X1/4″ 304 SS
2. HORIZONTAL CROSS MEMBERS - 2″X2″X1/4″ 304 SS
3. BASE PLATE - 3/8″ 304 SS





3. BASE PLATE DETAIL

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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TITLE:
SHAFTLESS SCREW CONVEYOR SUPPORT DETAIL

DO NOT SCALE DRAWING

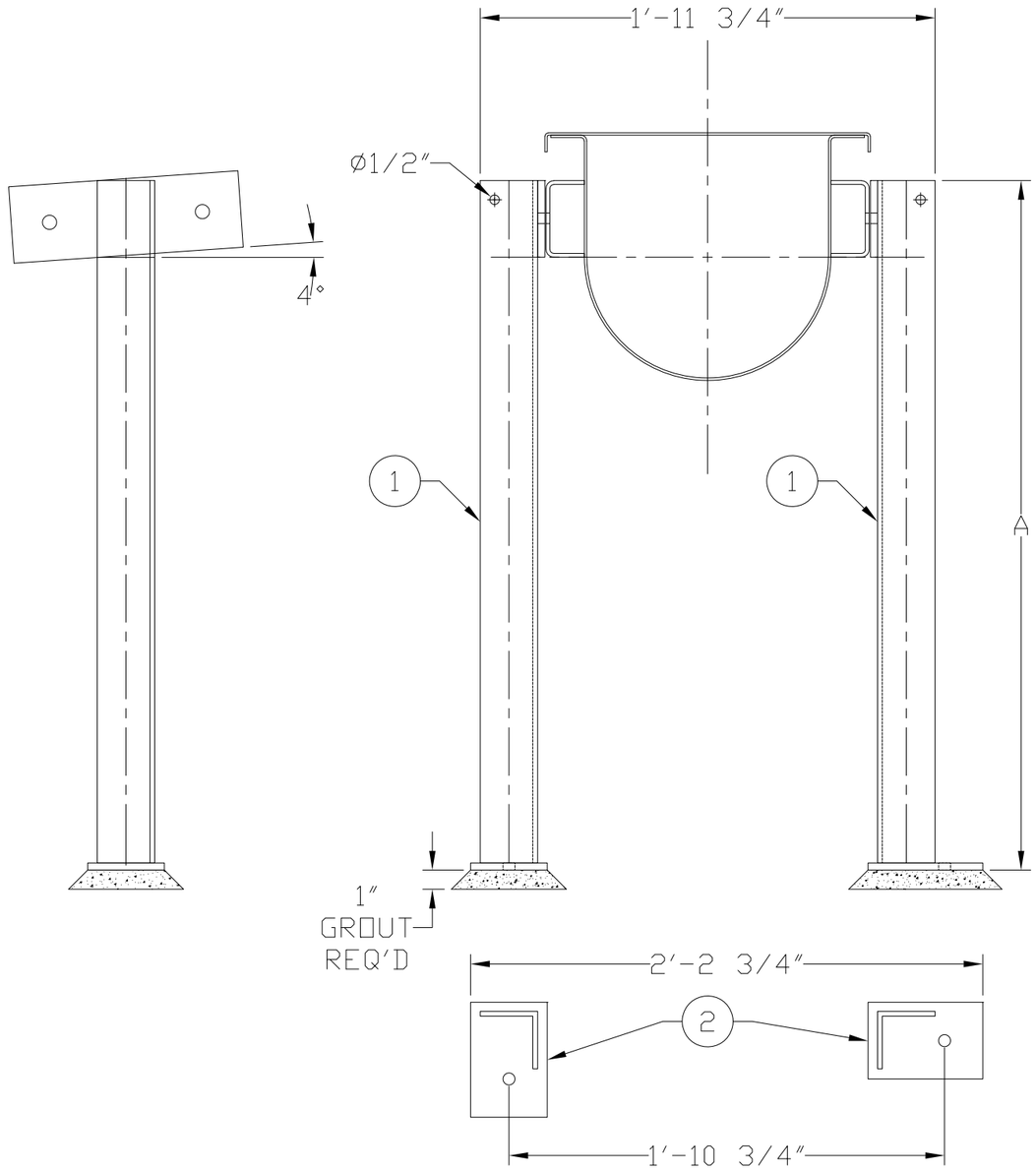
PROJ. NO. : 212946 | MODEL: U320

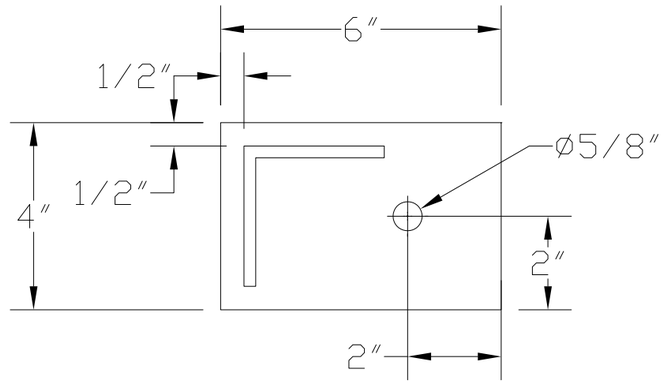
SIZE	DWG. NO.	REV
B	212946-40	0

SUPPORT DIMENSIONS		
QTY	SUPPORT #	DIM A
1	1D	1′-1 7/8″

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022

1. VERTICAL LEGS - 3″X3″X1/4″ 304 SS
2. BASE PLATE - 3/8″ 304 SS





2. BASE PLATE DETAIL

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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TITLE:
SHAFTLESS SCREW CONVEYOR SUPPORT DETAIL

DO NOT SCALE DRAWING

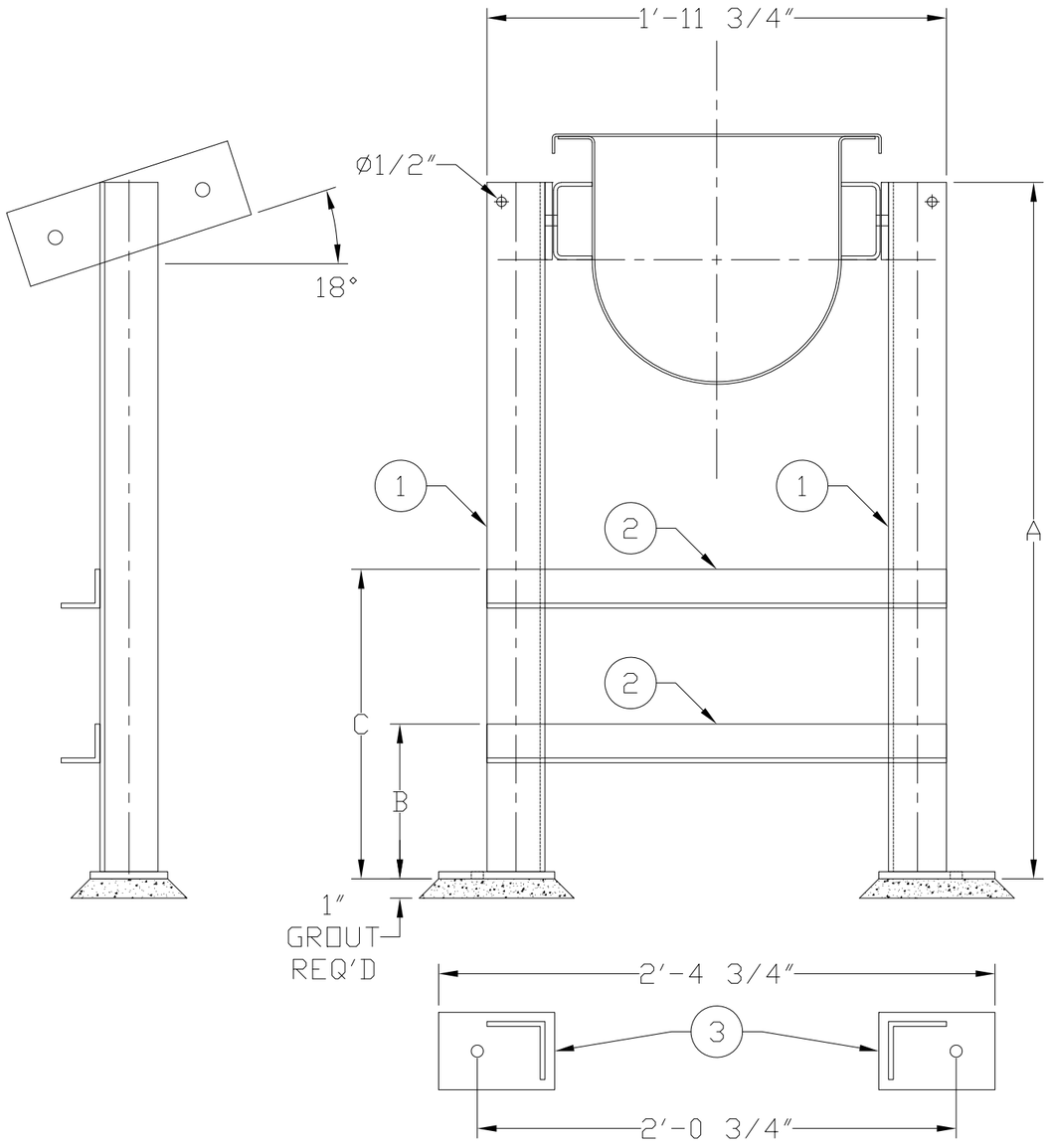
PROJ. NO. : 212946 | MODEL: U320

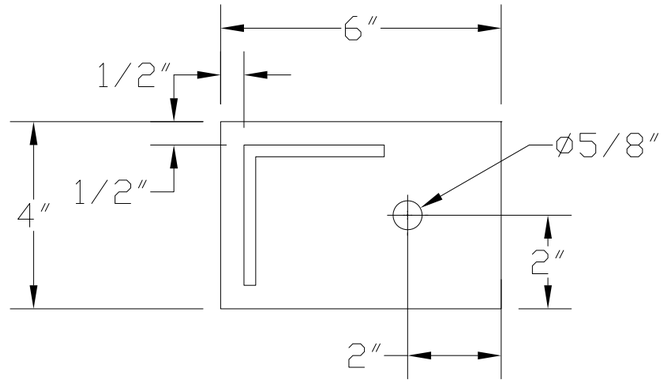
SIZE	DWG. NO.	REV
B	212946-41	0

SUPPORT DIMENSIONS				
QTY	SUPPORT #	DIM A	DIM B	DIM C
1	2A	5′-1 5/16″	8″	3′-8″″
1	2B	1′-4 1/2″	N/A	N/A

REVISION HISTORY		
REV.	DESCRIPTION	DATE
0	ORIGINAL SUBMISSION	05/16/2022
1	RESUBMITTED FOR APPROVAL	06/08/2022

1. VERTICAL LEGS - 3″X3″X1/4″ 304 SS
2. HORIZONTAL CROSS MEMBERS - 2″X2″X1/4″ 304 SS
3. BASE PLATE - 3/8″ 304 SS





3. BASE PLATE DETAIL

JDV EQUIPMENT CORPORATION

	NAME	DATE
DRAWN	KC	05/12/2022
CHECKED	RM	05/16/2022
CUST. APPR.		
SPECIAL REQ.		

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TITLE:
SHAFTLESS SCREW CONVEYOR SUPPORT DETAIL

DO NOT SCALE DRAWING

PROJ. NO. : 212946 | MODEL: U320

SIZE	DWG. NO.	REV
B	212946-42	0