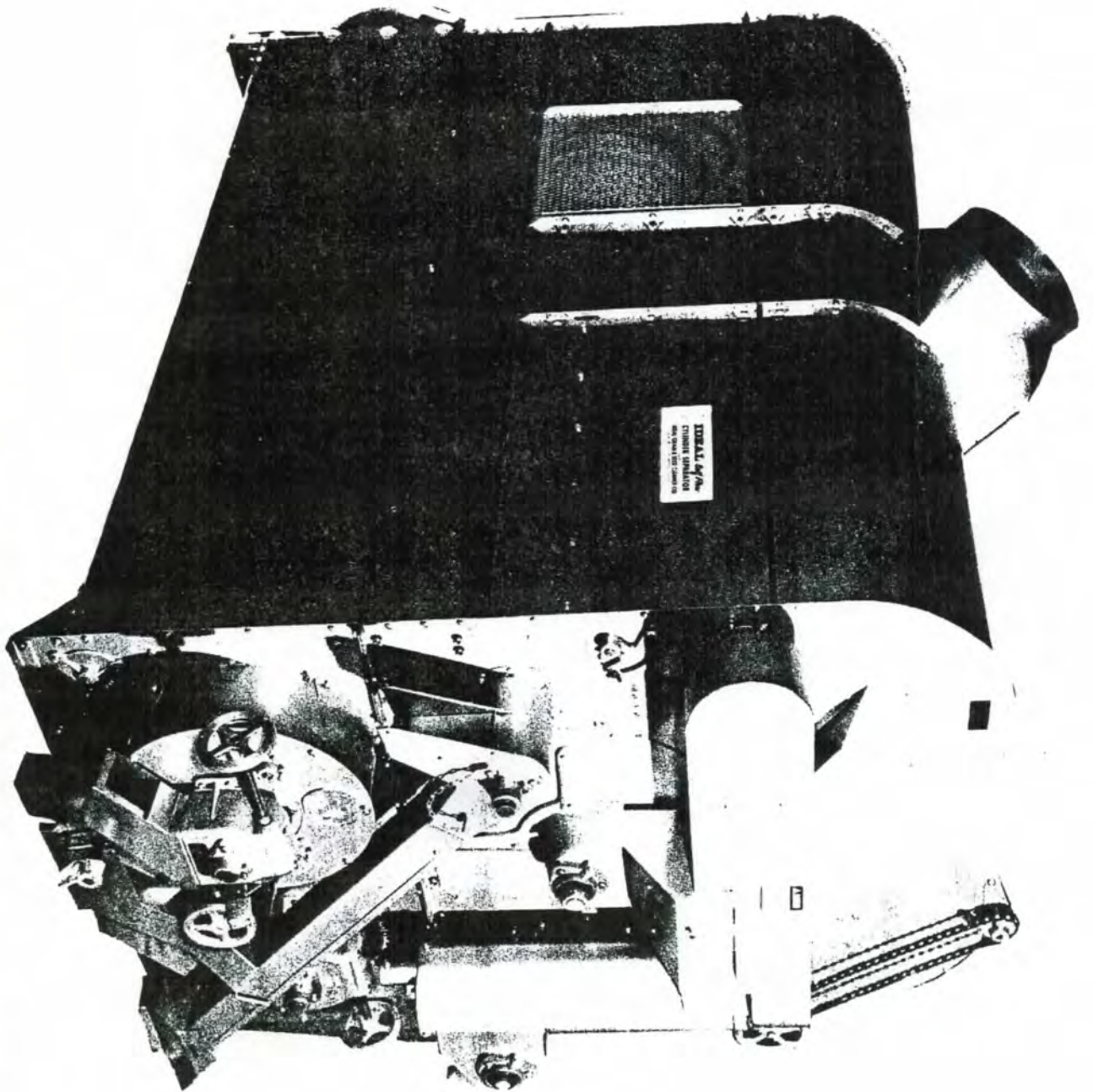


Ideal SF4 Indent Cleaner



Carlton Rust
Producers

INTRODUCTION

The IDEAL SELF FLOW CYLINDER SEPARATOR is a basic cylinder machine which is designed to clean grain and seed and make separations by length only. The exclusive tapered indent cylinder allows product to flow through the machine for continuous running. A variety of indent cylinder sizes combined with control flexibility and the capability of combining two or more machines in various height and width combinations allows the processing of many types of product and capacities.

Consult your sales literature or contact your local sales representative to help you with any cleaning, grading or separating problems. Our Seed Laboratory offers a sample testing service at no obligation or price to you. Send grain and seed samples or written inquiries to:

IDEAL GRAIN AND SEED CLEANER COMPANY
85 Second Avenue S.E.
New Brighton, Minnesota 55112

Or call 636-7323, Area Code 612.

USE OF MANUAL

This manual has been prepared especially for use in familiarizing owners and operators with the operation and maintenance of the IDEAL SELF FLOW CYLINDER SEPARATOR. In some instances, the information contained in this manual has been generalized since certain specific information can be determined by only actual experience. For thorough understanding, optimum operation and proper maintenance of the IDEAL, please give all the information in this manual your careful consideration.

The right hand and left hand sides of the machine are determined by viewing the machine from the discharge (front) end. As a further aid to orientation, drawings in this manual are designed by direction arrows or captions as to their position.

Product is choke-fed into feed hopper and is discharged into the rear of the cylinder at (A, Figure 1). The counter-clockwise rotating action and the tapered construction of cylinder (B) cause the movement of product along the inside bottom of cylinder toward the front (discharge) end. The retarder dams up product at the discharge end of the cylinder until a wall is built up of product (C) for the entire length of the cylinder. Thousands of indent pockets (D) in the rotating cylinder pick up the smaller particles such as grain or seeds and are carried over the separating edge (E). Gravity forces the small particles to fall into the trough where a rotating auger moves them to the discharge opening.

SEQUENCE OF OPERATION

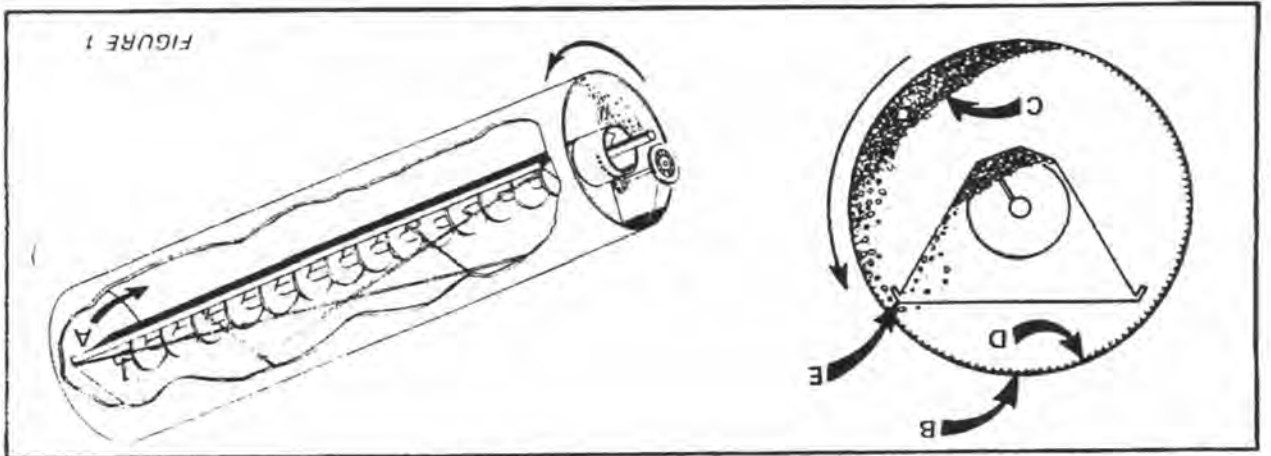


FIGURE 1

OPERATION

If a motor is supplied with your machine, refer to the packing list or motor name plate to identify power requirements. Electrical installation should be made by a qualified electrician, strictly following or exceeding local safety codes. A lockable power switch is recommended to prevent accidental start-up during maintenance.

A suitable connection must be provided at the feed hopper to connect to the 5" x 10" opening. The machine operates most efficiently if the product is choked to assure a constant infeed volume and flow.

Machine should be set on a level foundation which is free from as much floor vibration as possible. Adequate clearance around machine should be provided to allow access for service and maintenance. Ideally, one end of the machine should have enough clearance to allow cylinder replacement.

INSTALLATION

CAN-SEED Equipment Ltd.
332 Packham Ave.
Saskatoon, SK S7N 2T1
Ph. (306) 244-2285 FAX (306) 244-4066
1-800-644-8397

CYLINDER SPEEDS. The lower or oat cylinders should revolve at 51 - 52 RPM for best results and maximum capacity. Check speeds by counting revolutions of allen set screw in set collar on shaft in discharge conveyor.

The following chart lists various types of indent cylinders and the range of speeds which are best suited for separation or cleaning. Further Adjustment is made with control settings.

RECOMMENDED CYLINDER ROTATION SPEED

RETARDER CONTROL - Retarder control rod adjusts the position of the retarder and is locked into position with wing nut and eye bolt. An increasing amount of product is held in the cylinder as the retarder is raised. When the retarder is fully lowered, it is in the cleanout position and allows product to flow freely out of the cylinder.
FEED HOPPER SHUT-OFF SLIDE - Product flow may be shut off and regulated by the shut-off slide, located at the rear of the machine. A Thumbscrew has been provided to lock the slide in various positions.
INSPECTION PORT - Inspection Cover can be pivoted to observe the position of the trough and separating action during operation.

OPERATING CONTROLS

Larger particles such as weeds and longer seeds which cannot be lifted up at the retarder where they flow over the retarder and are discharged. The location of the separating edge, the indent size, the speed of the cylinder and the height of the retarder are all factors in determining maximum separating or cleaning performance.

INITIAL START-UP

1. Turn handwheel until top of trough is in a horizontal position. Check position through inspection port and note pointer setting. Setting should be about 3-1/2 or 4.
2. Loosen wing nut on retarder control handle and raise handle until approximately 3" of discharge opening are left. Lock retarder position with wing nut.
3. Check to see that shut-off slide is fully into feed hopper.
4. Supply an adequate volume of product to the feed hopper to allow continuous choke-feeding.
5. Start machine and when cylinder is rotating at recommended speed, open shut-off slide to desired position and lock with thumbscrew.
6. Allow machine to run a few minutes until product is distributed along the bottom of the cylinder and against retarder.

WARNING

MACHINE MUST NOT BE STOPPED UNTIL EMPTY OF PRODUCT BECAUSE START-UP UNDER FULL LOAD COULD DAMAGE DRIVE PARTS.

OPERATIONAL CHECKS

The preceding starting sequence describes the general start-up procedure applicable to all grain products used in the machine. The actual control settings can be determined by experience only and it is recommended that the operator maintain a record of control settings for various products as an aid for future operations. When the machine is shipped from the factory all separating cylinders are coated with a rust inhibitor. After the machine has been in operation for four or five hours, the inner surfaces of the cylinder will become smoothly polished which changes the operating characteristics. Therefore, it will probably be necessary to readjust control settings to obtain maximum results.

1. Shut off product supply at inlet hopper by moving shut-off slide to the fully in position.
2. Move trough to the dump position (pointer in "D" position on calibration decal).
3. Push retarder control handle down to allow maximum retarder opening.
4. Run machine a few minutes until machine empties and then shut off power to the drive motor.
5. Clean out by hand any foreign material that might be held or imbedded in the retarder. This material might cause undue wear to the cylinder or retarder.

STOPPING AND CLEANOUT

The machine may be used for grading or cleaning. For a grading operation, clean or aspirated grain which is supplied to the feed hopper is separated more efficiently.

NOTE: When changing control settings, wait a few minutes to observe effects of control changes.

When short material is present in long material being discharged over the retarder it is necessary to raise the retarder slightly. When long material is being carried into the trough, the retarder could be set too high and should be lowered slightly.

NOTE: When changing control settings, wait a few minutes to observe effects of control changes.

After the machine has been running with product for a few minutes, sample small grain by inserting a small hand scoop into opening of discharge head and large grain which is discharging over the retarder.

If too much large grain is being lifted into trough, move pointer to a higher number thereby raising the leading or separating edge of the trough. If the output of small grain is too small, lower separating edge of the trough by using a smaller setting. Ideally, the height of separation edge should be set so that small grain is lifted just over the edge before dropping into the trough.

When short material is present in long material being discharged over the retarder it is necessary to raise the retarder slightly. When long material is being carried into the trough, the retarder could be set too high and should be lowered slightly.

CONTROL ADJUSTMENTS

Lubricate roller chain with a good grade commercial chain lubricant or with SAE 10W oil. Brush a liberal amount on the chain to assure adequate lubrication of all internal chain pivot points. Chain may be lubricated by removing rear machine side cover.

The machine has been prelubricated before leaving the factory. For moderate temperature operation, use only a high quality, medium pressure bearing grease for all bearings. For sub-zero temperature operation, use light pressure grease for all bearings. Sealmaster® bearings should be lubricated according to the manufacturer's recommendations. A general rule would be to lubricate these bearings with 4 to 5 shots of good quality grease from a hand gun at least every 200 hours of running time and more often when the machine is running in extremely dirty conditions or high temperature.

LUBRICATION

After the first week of operation, check set screws on all bearings, sprockets and pulleys for tightness. Inspect the entire machine for loose bolts or nuts and tighten if necessary. Recheck tightness occasionally.

Grain and dust accumulations should be cleaned from the area daily or at the end of each shift. Excessive accumulations of dirt, especially on shafts, bearings and controls can lead to operational difficulties. Foreign material such as pieces of metal, glass, etc., which have accumulated behind the retarder should be removed daily or at the end of each shift.

SCHEDULED MAINTENANCE

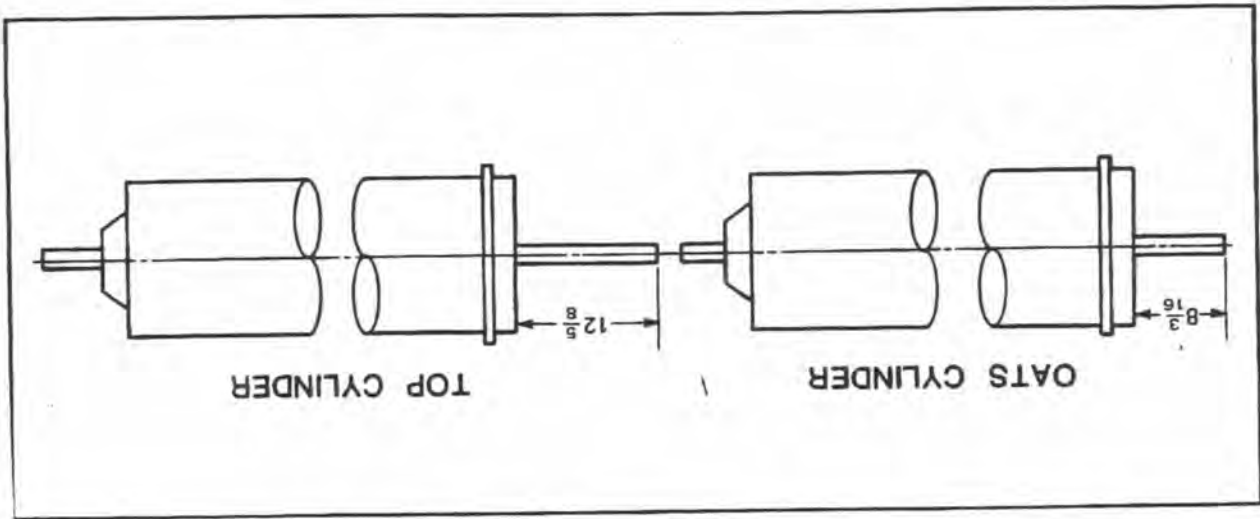
Do not perform any maintenance on the machine while it is running. Always be sure power switch is turned off and, if possible, locked in an off position.

WARNING

To assure continued satisfactory operation of the machine, it will be necessary to perform the periodic maintenance described in this section. The recommended service intervals are based on 40 hours a week of machine running time. If running time is more than 40 hours a week, maintenance should be scheduled accordingly.

MAINTENANCE

FIGURE 2 - Shaft Positioning



When replacing upper and center cylinders, it is necessary to position the plain ends of shafts from ends of cylinders according to the dimensions shown in figure 2. Tighten set screws securely.

CYLINDER REPLACEMENT SHAFT ADJUSTMENT

Your local Ideal distributor is trained to service this machine and assist you with any service, operation or adjustment problems that you may have.

SERVICE

Friction rollers which have needle type bearings should be greased every 40 hours of running time.
 Apply light oil to all control pivot points periodically.

CAN-SEED Equipment Ltd.
332 Packham Ave.
Saskatoon, SK S7N 2T1
Ph. (306) 244-2285 FAX (306) 244-4066
1-800-644-8397

When ordering cylinders, please specify INDENT SIZE in addition to part number, description and quantity desired. For ease of installation, it is recommended that a new cylinder be purchased complete with end and ring because these parts are difficult to install correctly in the field. The intake cone assembly or ring sprocket should be ordered separately if required.

CYLINDER ORDERING INFORMATION

4. Specify any special shipping instructions.
3. Please furnish the part number, description and quantity desired for each part ordered as shown in the following list. Do not show the item number.
2. Always specify the model and serial number of the machine when ordering replacement parts. This information is shown on the machine serial plate which is located on the front end plate.

Ideal Grain and Seed Cleaner Company
85 Second Avenue S.E.
New Brighton, Minnesota 55112
Phone (612) 636-7323

1. Order repair parts from your local Ideal distributor or the home office:

PARTS ORDERING INFORMATION

The following pages illustrate and list all repair parts for the Ideal Self Flow Length Grader. Common hardware items such as nuts, bolts, washers, etc. are not listed. It is advisable to obtain these items from your local source.

REPAIR PARTS

OPERATION

SEQUENCE OF OPERATION

The following paragraphs trace the product flow from the inlet feed hopper to the discharge spouts. See Fig. 3.

SCALPING (Section A, Figure 3)

Grain products are introduced to the machine through the feed hopper into the scalper. The product passes through the scalper disc perforations to the aspirator (A1) while trash material which is too large to pass through the scalper perforations is ejected from the scalper cone (A2). Pressure on the scalper arm ejects the scalping continuous. If a large object jams the scalper, a slip clutch on the scalper shaft prevents damage to the drive parts and can be heard to alert the operator.

ASPIRATION (Section B, Figure 3)

Grain from the scalper is moved through the aspirator section (B) by a conveyor and is released in a free-flowing curtain on to the splitter bar (B1). The splitter bar divides the product flow into two uniform curtains so that the double air stream can lift the light screenings and dust with-out lifting good grain. The lightings are carried to the set-tings chamber (B2) and are conveyed to a discharge spout

on the front of the machine. The aspirated grain (B3) moves via the return trough conveyor and elevator conveyor to a dividing spout. An equal amount of grain then passes to each of the upper cylinders.

CYLINDER SEPARATION (Section C, Figure 3)

Aspirated grain moves through the upper (splitting) cylinders and the first cylinder separations are made by lifting the seed, small and medium grain into the trough and re-jecting the longer grain. The smaller grain is spouted (C1) to the lower (double) cylinders and longer grain to the center (oats) cylinders (C2).

The large grain in the center (oats) cylinders is lifted from the front of the machine. The aspirated grain (B3) moves via the return trough conveyor and elevator conveyor to a dividing spout. An equal amount of grain then passes to each of the upper cylinders.

The outer section of the lower cylinder lifts the weed seed, broken kernels and small grain into the outer trough and discharges the medium grain (C7). From the outer (seed) cylinder where the weed seeds and broken kernels are lifted into the inner trough and are then discharged (C5). Small grain is discharged from the seed cylinder (C5).

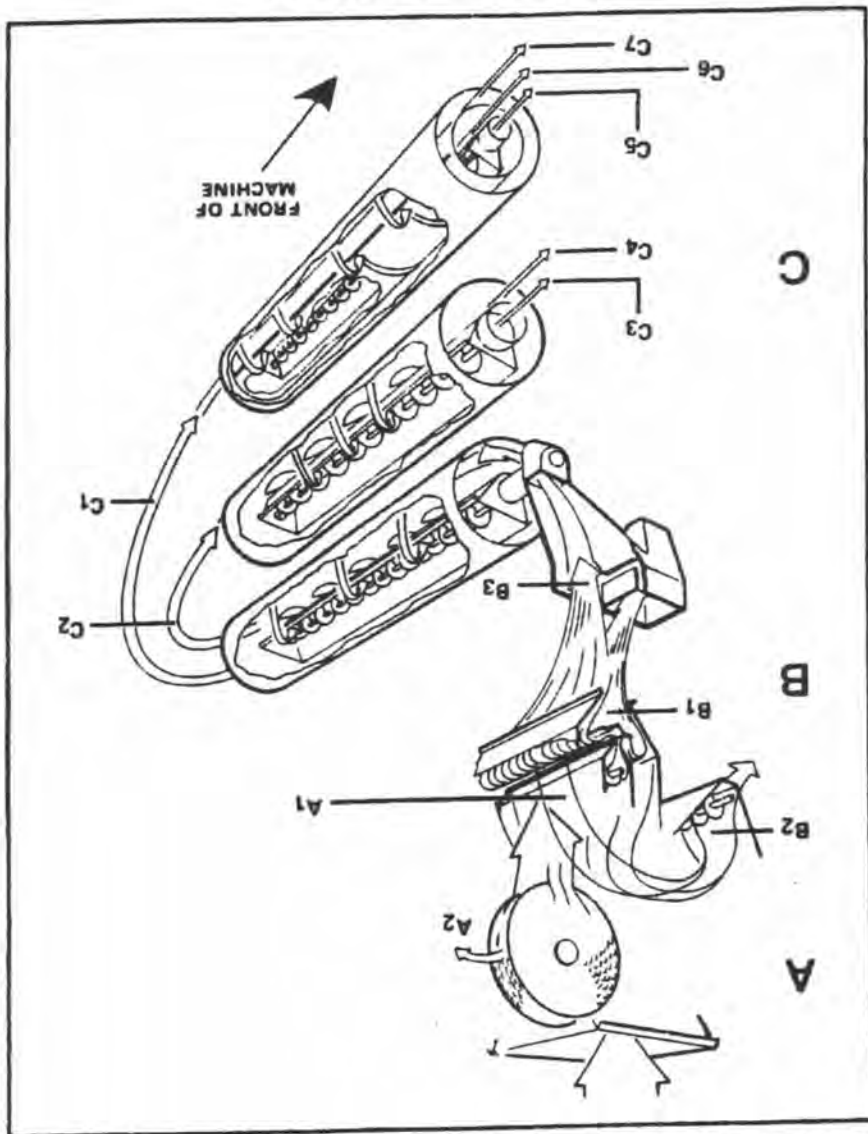
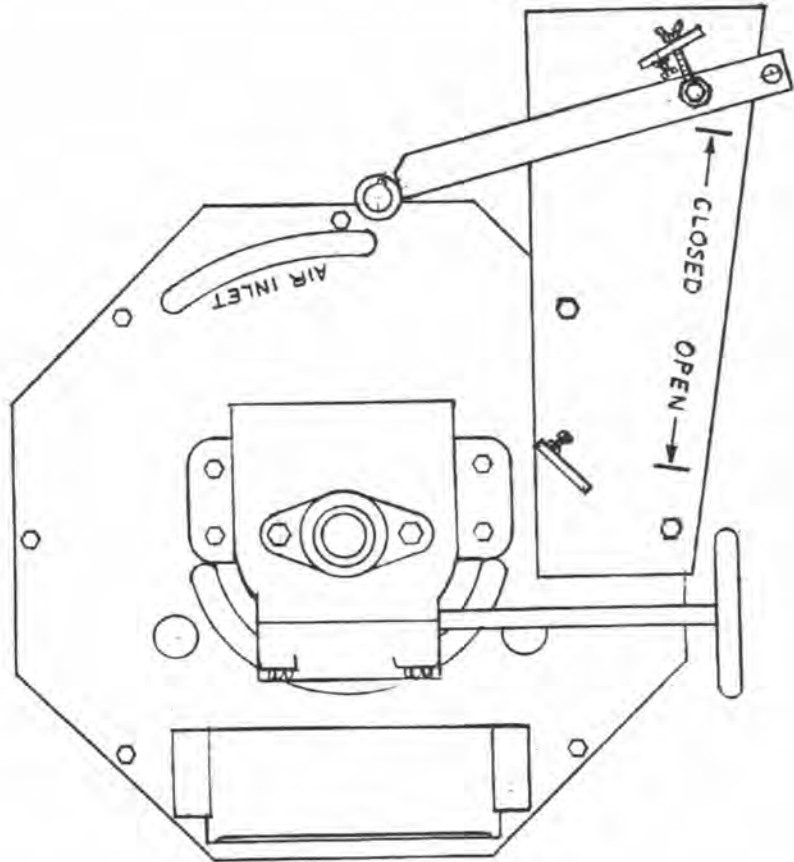
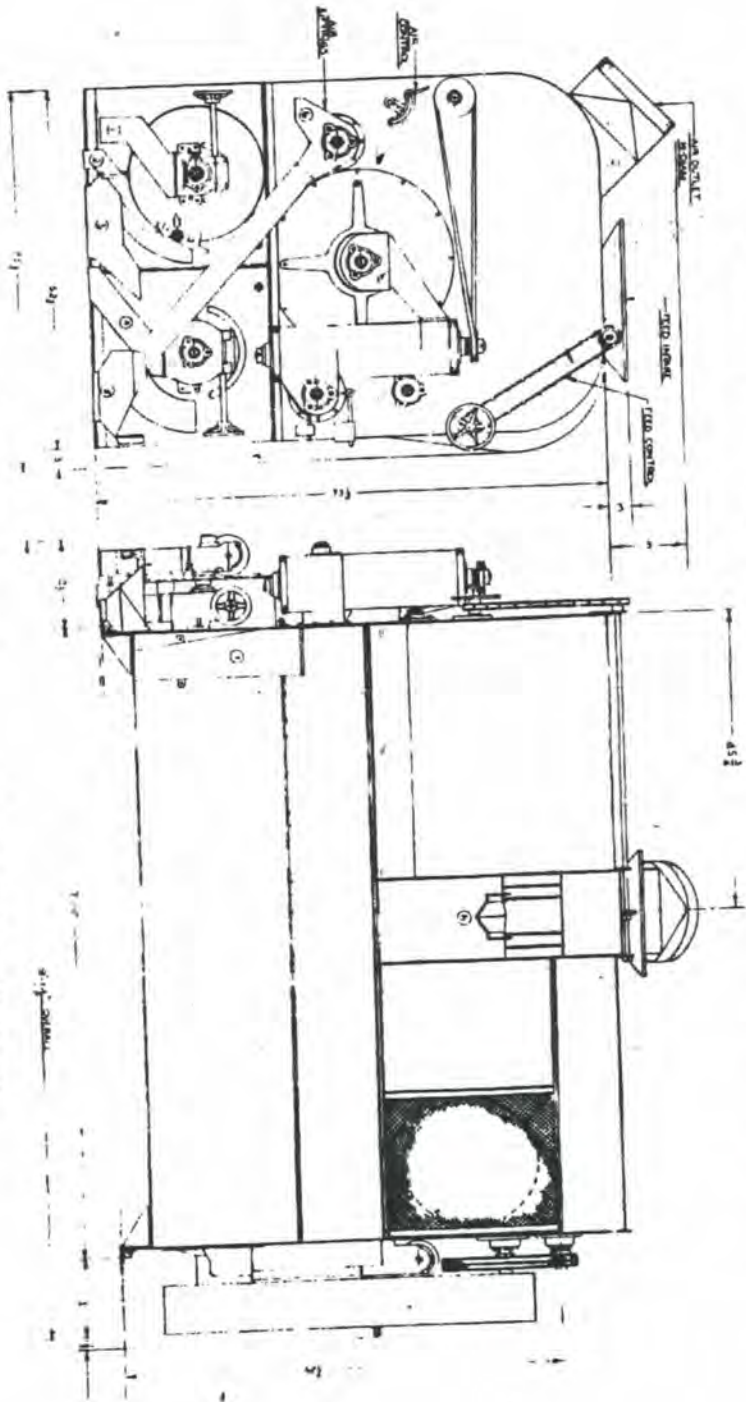


FIGURE 3 -- Sequence of Operation

- This machine incorporates new features which makes better cleanout of machine possible, to achieve this, the following steps are recommended:
- (1) Shut off feed to machine.
 - (2) Attach spring on retarder weight for inner cylinder to hook, also remove retarders from all cylinders.
 - (3) After 3 or 4 minutes rotate all troughs to dump position then return to #4 to 5.
 - (4) Rotate outer trough, handwheel clockwise until stopped.
 - (5) In the illustration above the arm is in closed position, during cleanout the arm should be in open position and returned to close position when cleanout is completed.
 - (6) Apply several blast of air into areas designated as air inlet. This section of machine has air inlets on both ends.
- All of the above steps should be done while machine is running, but extreme caution must be exercised while performing cleanout procedure to prevent injury.



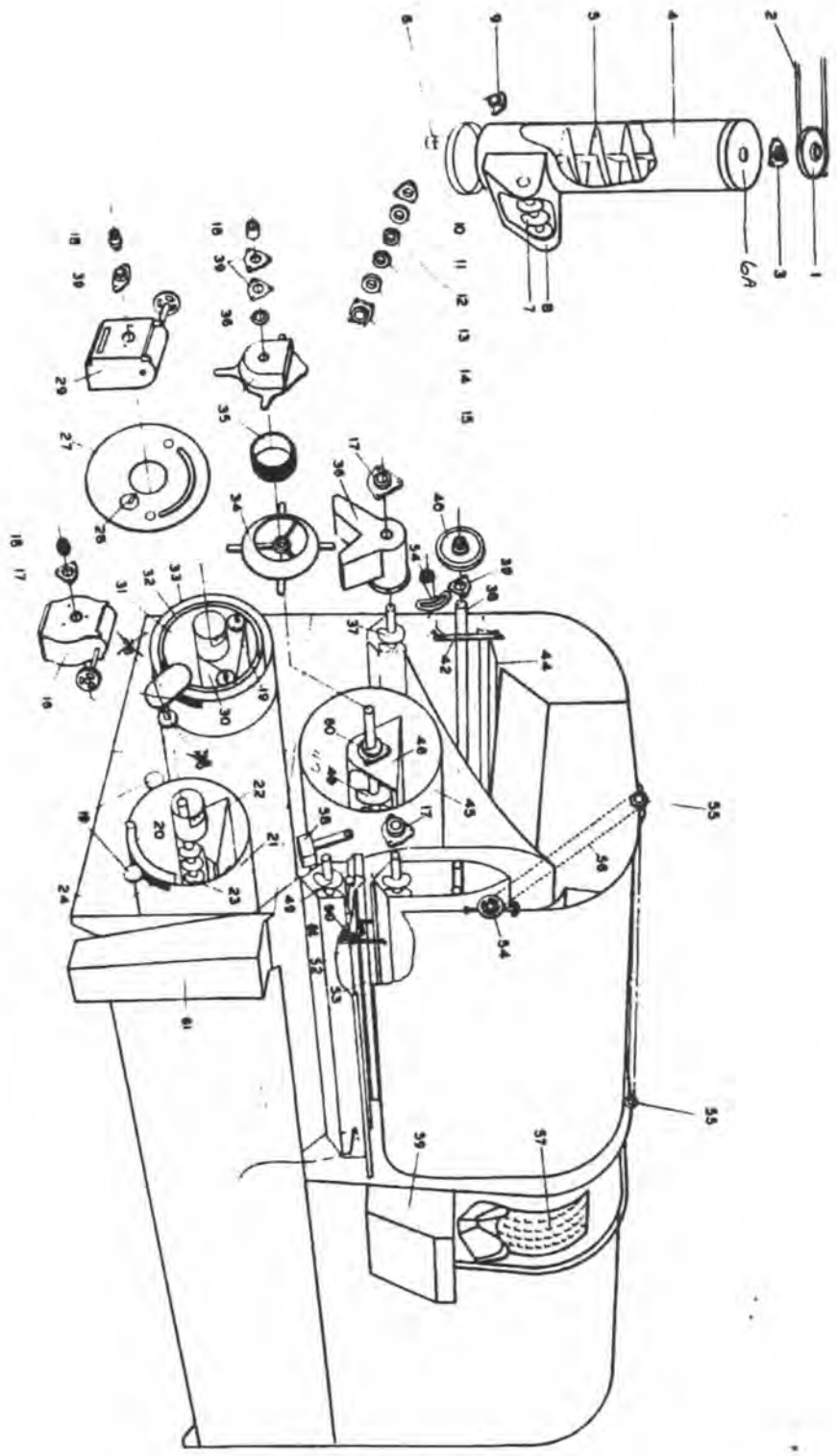
Grain Discharge Spouting & Installation Diagram



- | | |
|---|---|
| <p>1 Weed, seeds, cross broken grain discharge spout.</p> <p>2 Small grains discharge</p> <p>3 Medium length grain discharge (medium wheat, barley, paddy, etc.)</p> <p>4 Large grain discharge (large wheat, barley, paddy, etc.)</p> <p>5 Large grain (oats or screenings) Discharge spouting</p> | <p>6 Air liftings discharge (chaff, biewing, some small cross-broken seed)</p> <p>7 Aspirated grain discharge (when length grading is not required)</p> <p>8 Scalping receiving box (trash: sticks, stones, etc.)</p> <p>9 Air discharge to collector</p> |
|---|---|

UPRIGHT CONVEYOR - A360

FRONT VIEW - SF-4 - DISCHARGE END

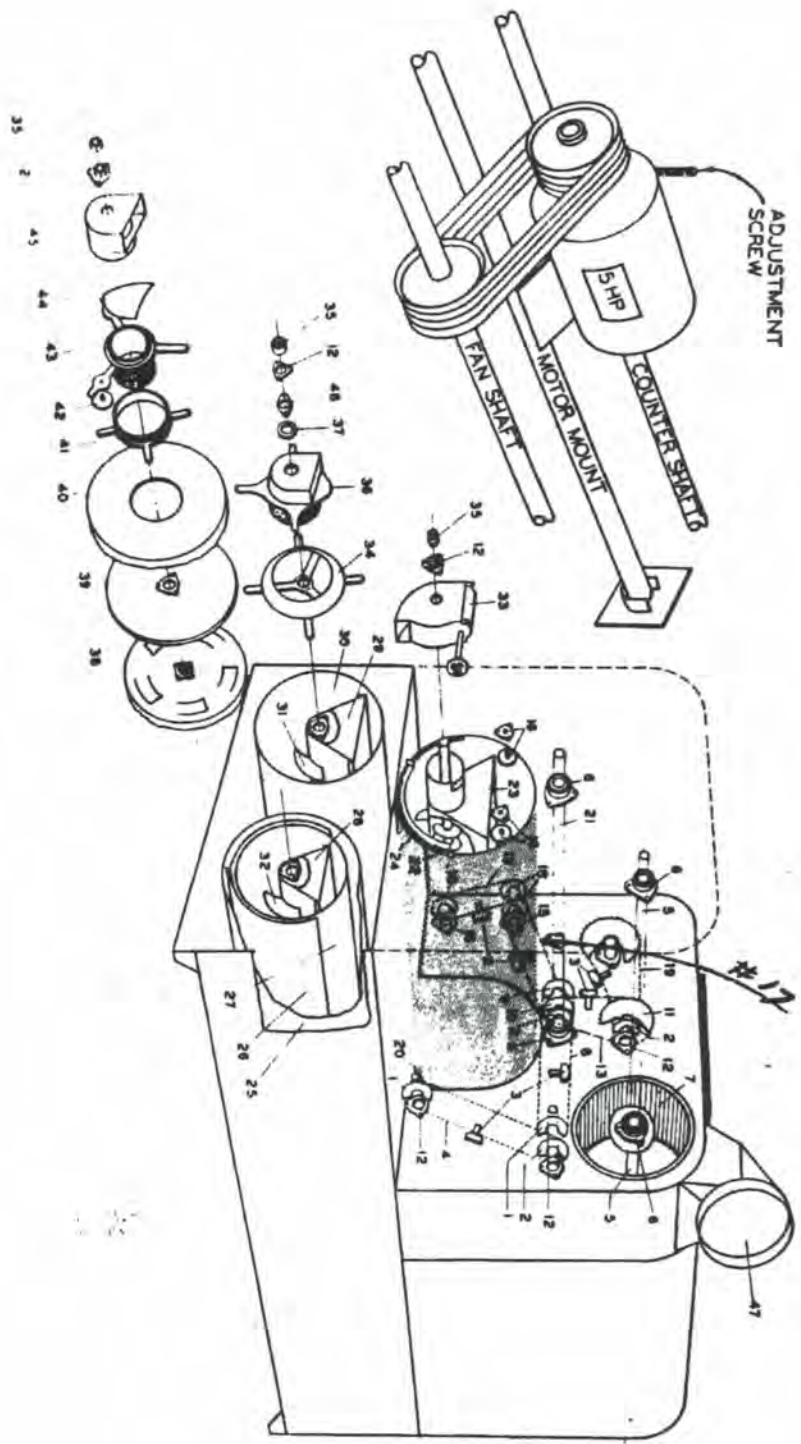


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PARTS LIST

FIGURE	PART	DESCRIPTION	FIGURE	PART	DESCRIPTION
1	A7002-14	Adj. Sheave 1 groove	31	A204	Seed Cylinder Assembly
2	B90	V Belt	32	A347	Outer Trough Assembly
3	A506	Sealmaster Bearing 1-5/16"B	33	A203	Outer Cylinder Assembly
4	3W484	Elev. Case Weld.	34	C5-1	Intake Cone
5	3W485	Upright Conveyor Weld.	35	C18	Intake Casting
6	3W511	Bottom Case Weld.	36	336	Wool Strip only
6A	3W510	Top Cover Weld.	37	3W455	Settlings Discharge Spout
7	3W486	Return Conveyor	38	3W318	Air Settlings Conveyor
8	3W512	Pressure Door Weld.	39	3878	#2 Countershaft
	3W513	Pressure Door Latch	40	A506	Sealmaster bearing 1-5/16"
	B562	Weight	42	3731	Air Damper Bar
9	A335	Bearing Assm. (oilite)	44	3729	Damper
10	C108	Bearing Housing	45	A201	Upper Cylinder Assembly
11	2462	Felt Washer (2 required)	46	A345	Upper Trough Assembly
12	4149	Thrust Bearing Spacer	47	3W487	Upper Conveyor Weld.
13	4150	Veilunoid Gasket	48	3W488	Distributor Conveyor
14	15711	Bearing Assembly	49	3W486	Return Conveyor
15	C109	Bearing Housing	52	3W490	Spreader Door Weld.
16	A342	Oat Cyl. Discharge Head	53	3W489	Split Bar Weld.
17	A335	Bearing Assy.	54	B48	Air Control Indicator
18	465	Set Collar	55	C85	Sprocket Feed Control
19	A332	Friction Roller only	56	7041-80	Chain Steel 80P
20	552	Retarder	57		Scalper Assembly
21	A202	Lower Cylinder Assembly	58	B562	Spreader Weight
22	A206	Trough Assembly, Lower	59	3W491	Scalper Box Weld.
23	3W111	Lower Cylinder Conveyor	60	C12	Bearing Holder, A113 Assy.
24	A139	Wool Band Assembly	61	3W492	Bay-Pass Weld.
27	359	Extension Head Plate			
28	A319	Retarder			
29	A341	Discharge Head Assembly			
30	A208	Seed Trough Assembly			

REAR VIEW - SF-4
Inside Machine End Plates



PARTS LIST

FIGURE	PART	DESCRIPTION
1	7010-1	Sprocket 20T, 5/8P
2	7010-18	Sprocket 15T, 5/8P
3	A137	Chain Tightener Assy. C64 Bracket 318 Wood Block Roller Chain 76P, 5/8P
4	A7009-76	Fan Shaft
5	30482	Sealmaster Bearing 1-11/16"
6	A505	Fan Wheel 12"x15" CW
7	3901	Roller Chain 94P, 5/8
8	A7009-94	Sprocket 20T, 5/8P
9	7010-19	Sprocket 15T, 5/8P
10	7010-5	Sprocket 50T, 5/8P, 1-5/16"
11	C55	Sealmaster Bearing 1-5/16"
12	A506	Roller Chain 61P, 5/8P
13	A7009-61	Clutch Sprocket 60T, 3/4P
14	C31	Bearing assembly
15	A335	Friction Roller
16	A332	Roller Chain 86P, 5/8P
17	A7009-86	Sprocket 16T, 5/8P
18	7010-20	Roller Chain 94P, 5/8P
19	A7009-94	Settling Conveyor
20	3W493	#1 Countershaft
21	3678	Upper Cylinder Conveyor
22	3W487	Upper Trough Assy.
23	A345	Retarder
24	635	Wool Band Assy.
25	A139	Cylinder Assembly, Outer
26	A203	Outer Trough Assy.
27	A347	Seed Cylinder Assy.
28	A204	Seed Trough Assy.
29	A208	Lower Trough Assy.
30	A206	Lower Cylinder Assy.
31	A202	Grain Line Blade
32	C39	Grain Line Blade
33	C34	Discharge Head, upper
34	A344	Intake Cone, tapped
35	C5-1	Set Collar
36	465	Intake Casting
37	C18	Wool Strip only
38	336	Washer, Felt
39	2212	Seed Cylinder Hub
40	C17	Outer Trough End Plate
	425	Outer Cylinder End Plate
	424	

Rear View
Outside Machine End Pie

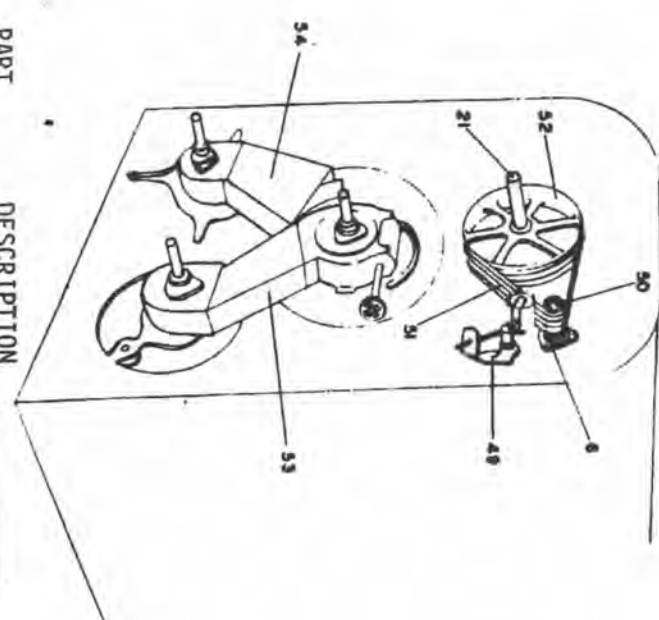
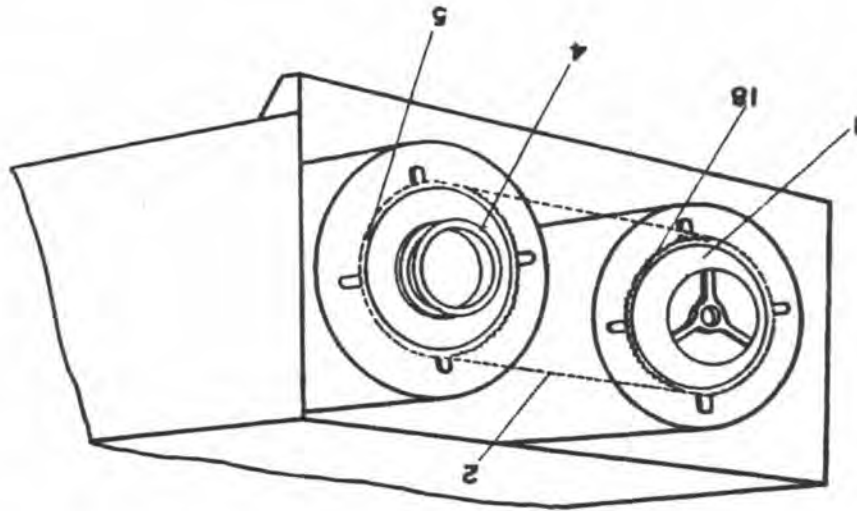
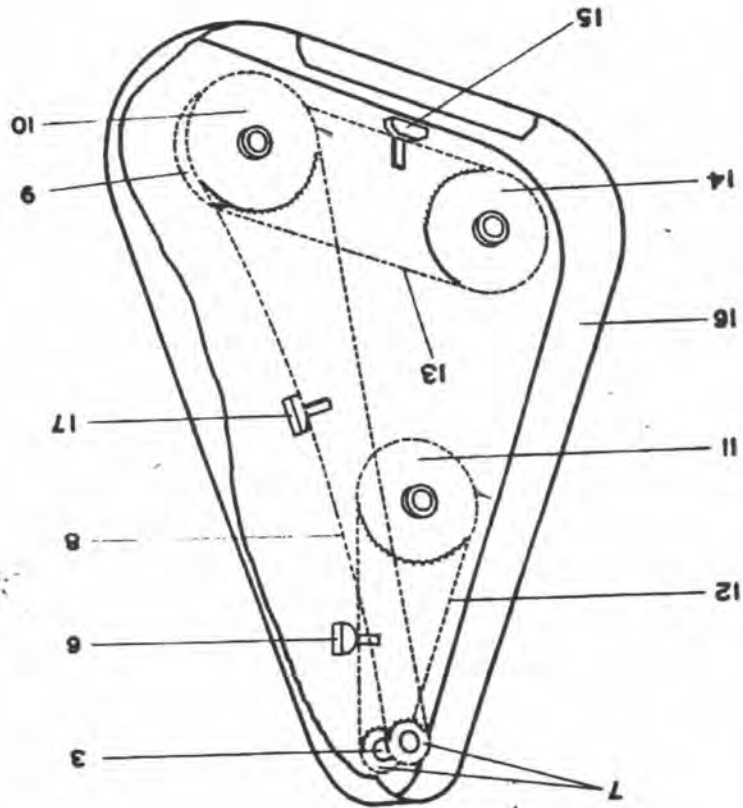


FIGURE	PART	DESCRIPTION
41	C2	Trunnion Track
42	A77	Trunnion Roller
43	C49	Trunnion Spider
44	337	Wool Strip only
45	C88	Filler
46	3W494	Return Hopper
	A136	Chain Tightener Assy.
47	3W495	C63 Bracket
48	C79	318 Wood Block
49	A349	Square to Round
50	4.2 P.D.	Spacer
51	B71	Fan Belt Idler
52	18.4 P.D.	3 gr. Sheave, 1-11/16"B
53	3W496	V Belt
54	3W497	3 gr. Sheave 1-11/16"B Small Grain Return Spout Large Grain Return Spout



Inner Drive



Chain Guard Drive
Outer Drive

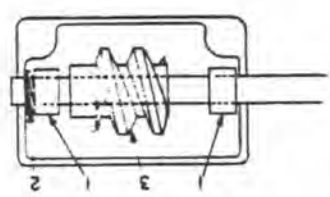
CHAIN GUARD DRIVE

FIGURE	PART	DESCRIPTION
1	C5	Intake Cone, Tapped
2	A7010-134	Roller Chain 134P, 3/4P
3	3678	#1 Countershaft
4	C3	Ring Sprockets 69T, 3/4P
5	C2	Trunnion Track
6	A140	Chain Tightener Assembly
7	7002-8	Sprocket 15T, 3/4P, 1-11/16" B
8	A7010-152	Roller Chain 152P, 3/4P
9	C15	Sprocket 41T, 3/4P, 1-5/16" B
10	C51-52	Sprocket 60T, 3/4P
11	C4-54	Sprocket 3/4P, 1-5/16" B
12	A7010-88	Roller Chain 88P, 3/4P
13	A7010-112	Roller Chain 112P, 3/4P
14	C14	Sprocket 44T, 3/4P
15	A137	Chain Tightener Assembly
16	3W498	318 Wood Block
17	A152	Chain Tightener Assembly
18	C4	Ring Sprocket 65T, 3/4P

FIGURE	PART	DESCRIPTION
1	7002-13	Sprocket, Feed Gate, 24T, 3/4P, 3/4B
2	A335	Bearing Assembly
3	A160	Scalper Disc Assembly
3A	275	Disc only
3B	276	Reinforcement Disc only
3C	C24	Scalper Hub only
3D	445	Spacer only (12 req.)
4	A215	Backwall Assembly
4A	3W514	Backwall Lock Weld.
4B	3W515	Backwall Spring
4C	3W516	Backwall Weld.
4D	102-1	Wood Bearing
4E	634	Backwall Lining
5	3W517	Scalper Bottom Weld.
6	3W529	Conveyor to Aspirator - Spreader
7	3W518	Scalper Cone
8	3W499	Scalper Bottom Extension
9	277	Feed Gate
10	278	Scalper Hopper Lining
11	630	Feed Gate Filler Strip RH
	631	Feed Gate Filler Strip LH
	632	Feed Gate Guide Strip RH
	633	Feed Gate Guide Strip LH

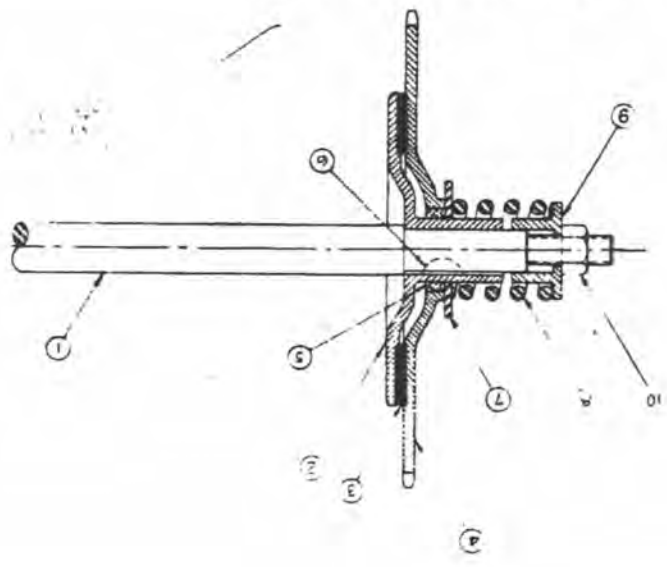
A319 SEED TROUGH RETARDER

FIGURE	PART	DESCRIPTION
1	C47	Weight
2	489	Adjusting Arm
3	A319	Retarder Assembly



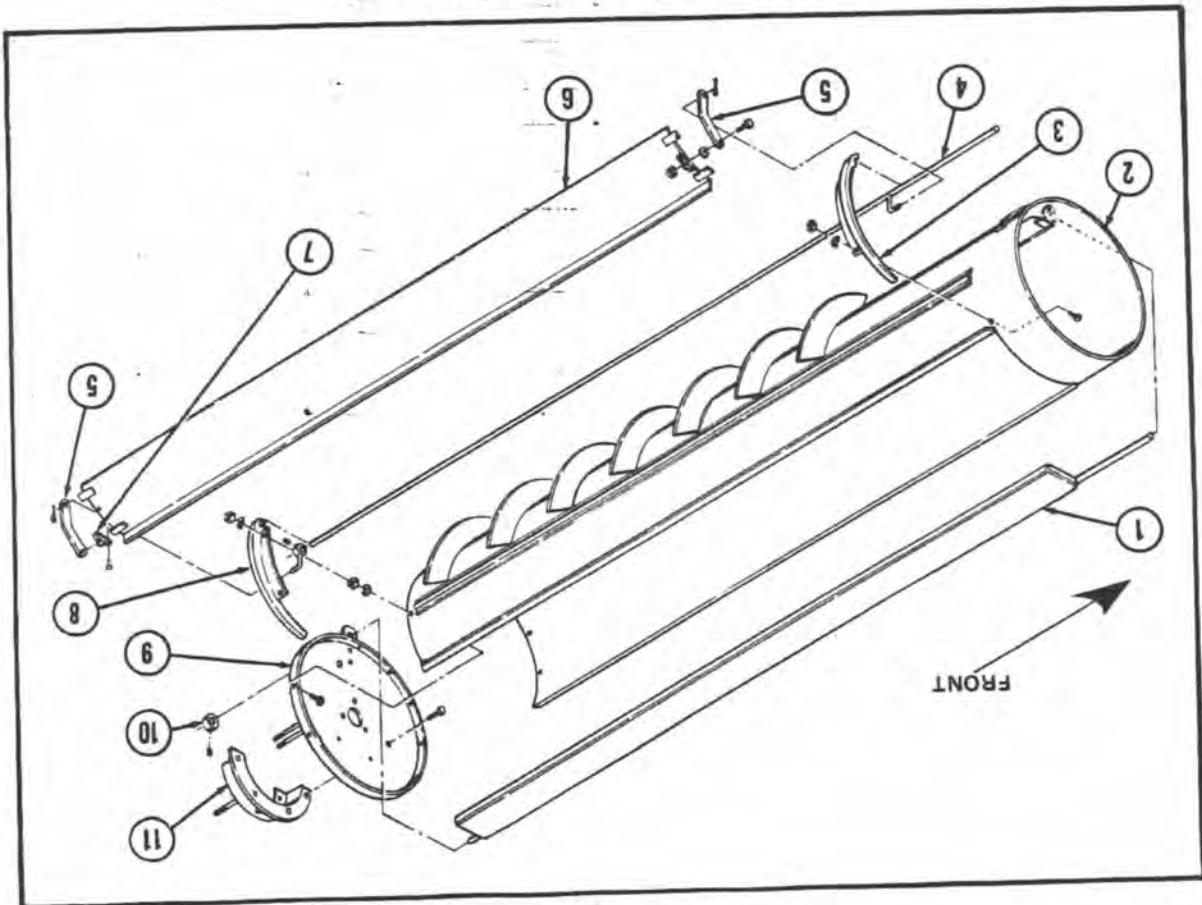
A361 SCALPER CLUTCH PARTS

FIGURE	PART	DESCRIPTION
1	628	Scalper Clutch Shaft
2	C83	Scalper Clutch
3	317	Fiber Disc
4	C31	Clutch Sprocket
5	178	Wood Bearing
7	352	Clutch Spring Washer
8	316	Clutch Spring
9	C100	Spring Collar

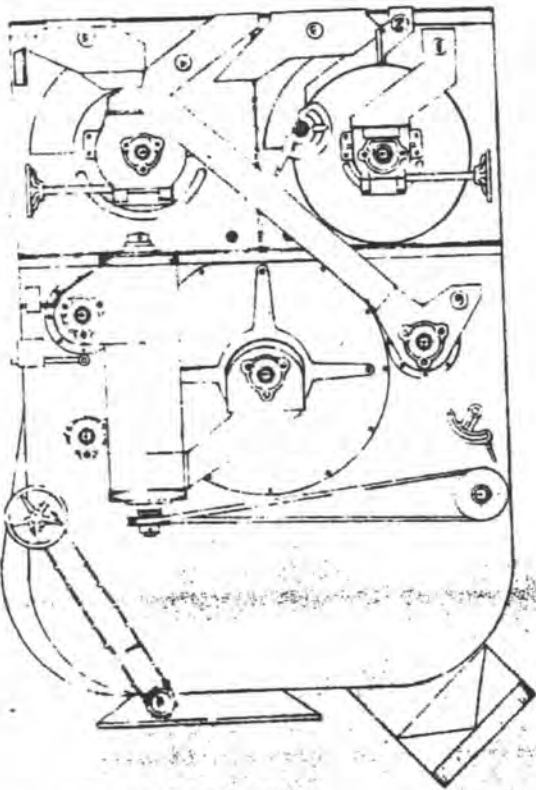
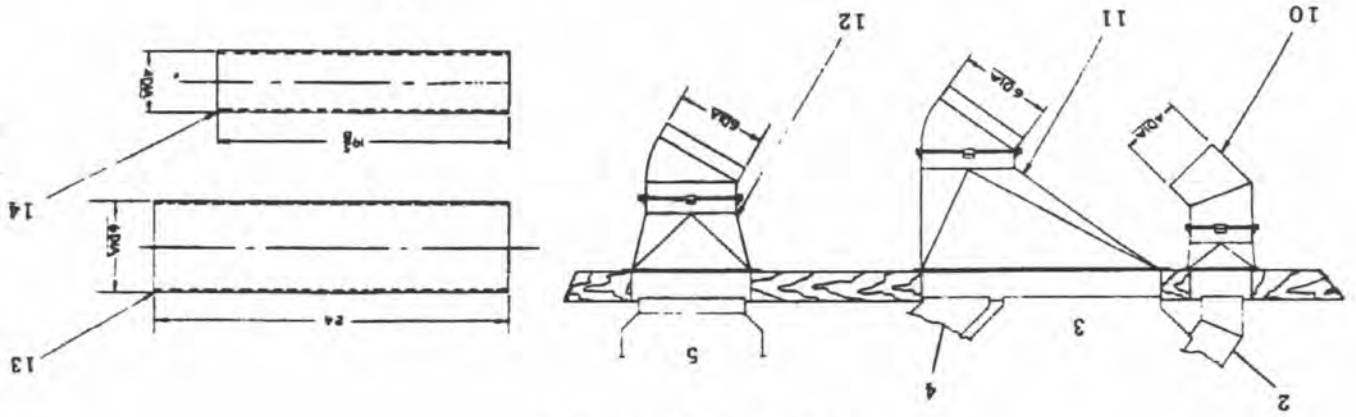


Item	Part No.	Description	Qty.
1	3W569	GATE WELD, Outer Trough	1
2	3W567	OUTER TROUGH	1
3	C98	GUIDE, Wing, Left	1
4	3W106	WING ROD	1
5	400	ARM, Wing	2
6	A210	WING ASSEMBLY	1
7	C97	BRACKET, Wing Arm	2
8	C99	GUIDE, Wing, Right	1
9		END, Outer Trough	1
10	468	SET COLLAR	1
11	C50	TROUGH EXTENSION	1

FIGURE 8 — Outer Trough Assembly

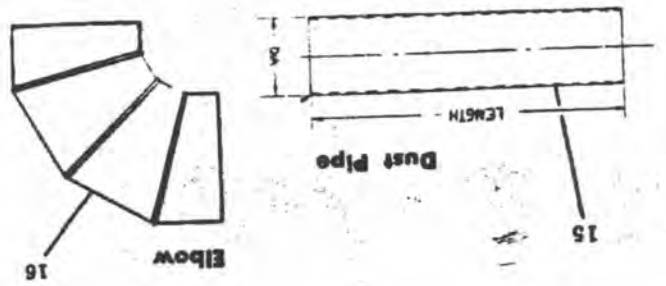


Steel Pit Spouting



Machine Discharge Spouting

Grain and Air Discharge Sheet Metal Spouting and Ducts



Dust Pipe

Elbow

16

15

FIGURE	PART	DISCHARGE
1	3W519	Seed Discharge Spout
2	3W520	Small Grain Discharge Spout
3	3W521	Medium Grain Discharge Spout
4	3W522	Large Grain Discharge Spout
5	3W523	Reject Discharge Spout
6	3W524	Settlings Spout Ext. Weld.
7	3W525	By-Pass Spout Weld.
8	3W526	Scalper Box Weld.
9	3W527	Square to Round
10	3574	Turntable Spout (2)
11	3524	Turntable Spout (1)
12	3523	Small Turn Spout (1)
13	3522A	6" Pipe (6)
14	3522B	4" Pipe (5)
15	7061-3	14" Dustpipe
16	W7005-3	14" Elbows
17	3W528	Elev. Discharge Weld.

MOTOR DRIVE, 5 H.P., 1800 RPM, 3 Phase, Frame 184T

(3)	B50	V Belts
(1)		Motor Sheave 4.4 P.D., 3 gr., 1-1/8" B
(1)		Driven Sheave 8.6 P.D., 3 gr., 1-11/16" B

SHEAVES

Drive to Upright Conveyor		
		1 groove, V Belt "B" Section (7002-14)
		1 groove, B7.4 P.D. x 1-5/16" B
		3 groove, 4.2 P.D., 1-11/16" B
		3 groove, 18.4 P.D., 1-11/16" B
Top Upright Elevator		
		Fan Shaft Rear
		Asp. Stub Shaft

V BELTS

(1)	B90	V Belt, Upright Conveyor
(3)	B71	V Belts, Drive on Chain Guard End