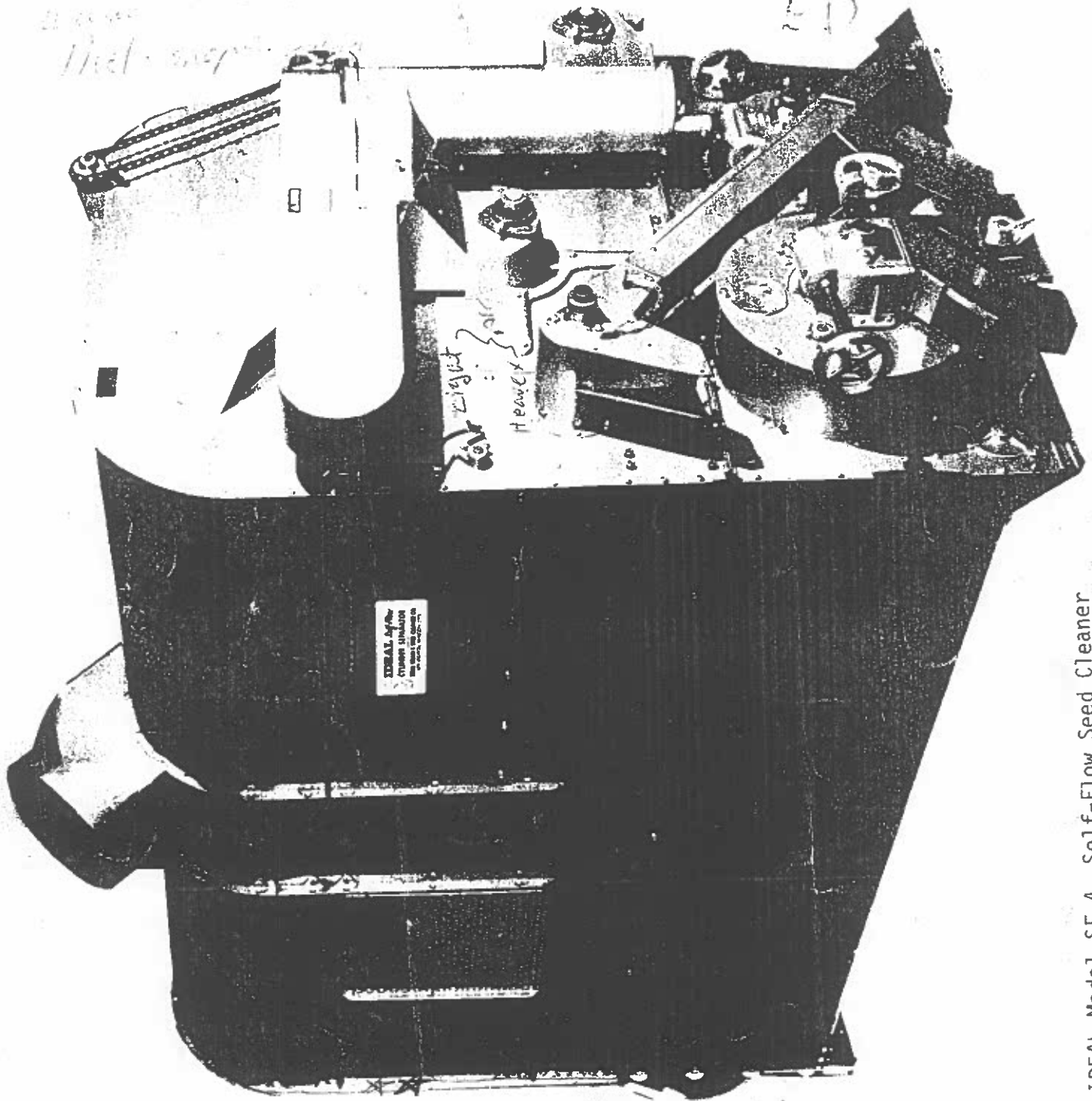


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IDEAL Model SF-4 Self-Flow Seed Cleaner

David Piazzi Birscauth

704-603-2316

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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.

Larger particles such as weeds and longer seeds which cannot be lifted are built 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.

OPERATING CONTROLS

TROUGH CONTROL - Hand Wheel is moved counter-clockwise to lower the separating edge of the trough and clockwise to raise the edge. As a further aid to the location of the separating edge, pointer is aligned with the edge and increments on decal can be used to record changes in settings.

INSPECTION PORT - Inspection Cover can be pivoted to observe the position of the trough and separating action during operation.

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.

RECOMMENDED CYLINDER ROTATION SPEED

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.

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.

CONTROL ADJUSTMENTS

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.

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

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.

STOPPING AND CLEANOUT

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.

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.

SERVICE

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

CYLINDER REPLACEMENT SHAFT ADJUSTMENT

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.

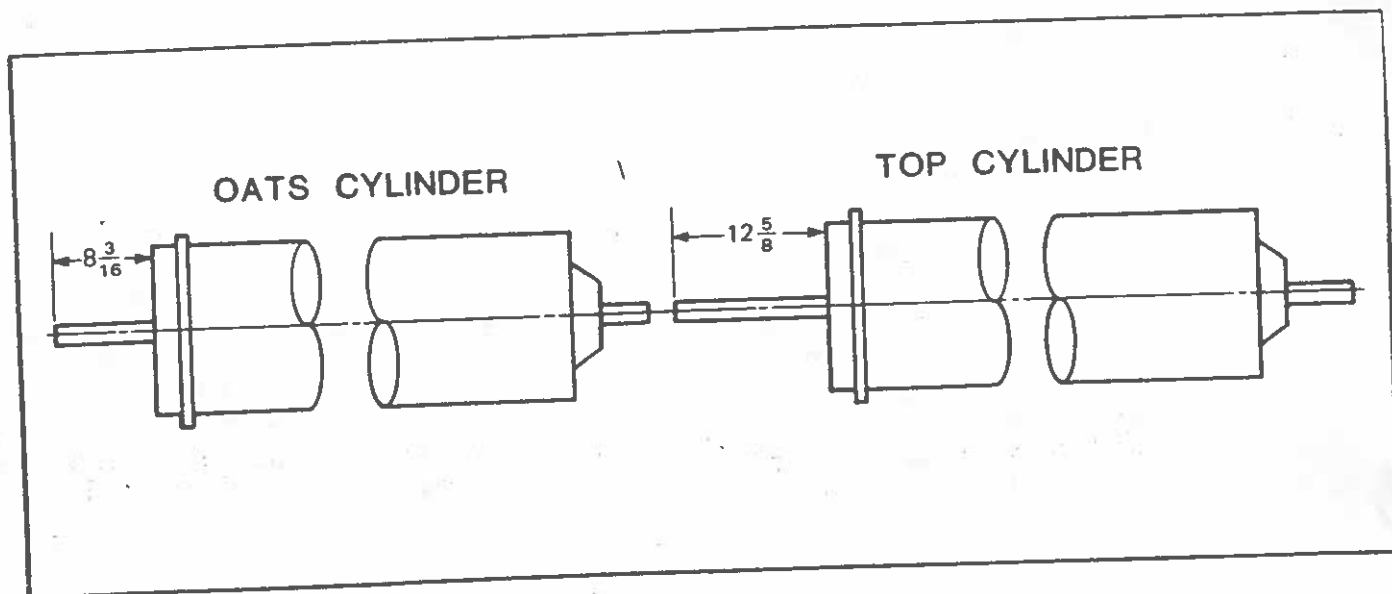


FIGURE 2 - Shaft Positioning

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 scalpings continuously. 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 freeflowing 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 without lifting good grain. The liftings are carried to the settlings 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 rejecting 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 oats and discharged at C3. Oats are discharged at C4.

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 trough, the seed and small grain is conveyed into the inner (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 (C6).

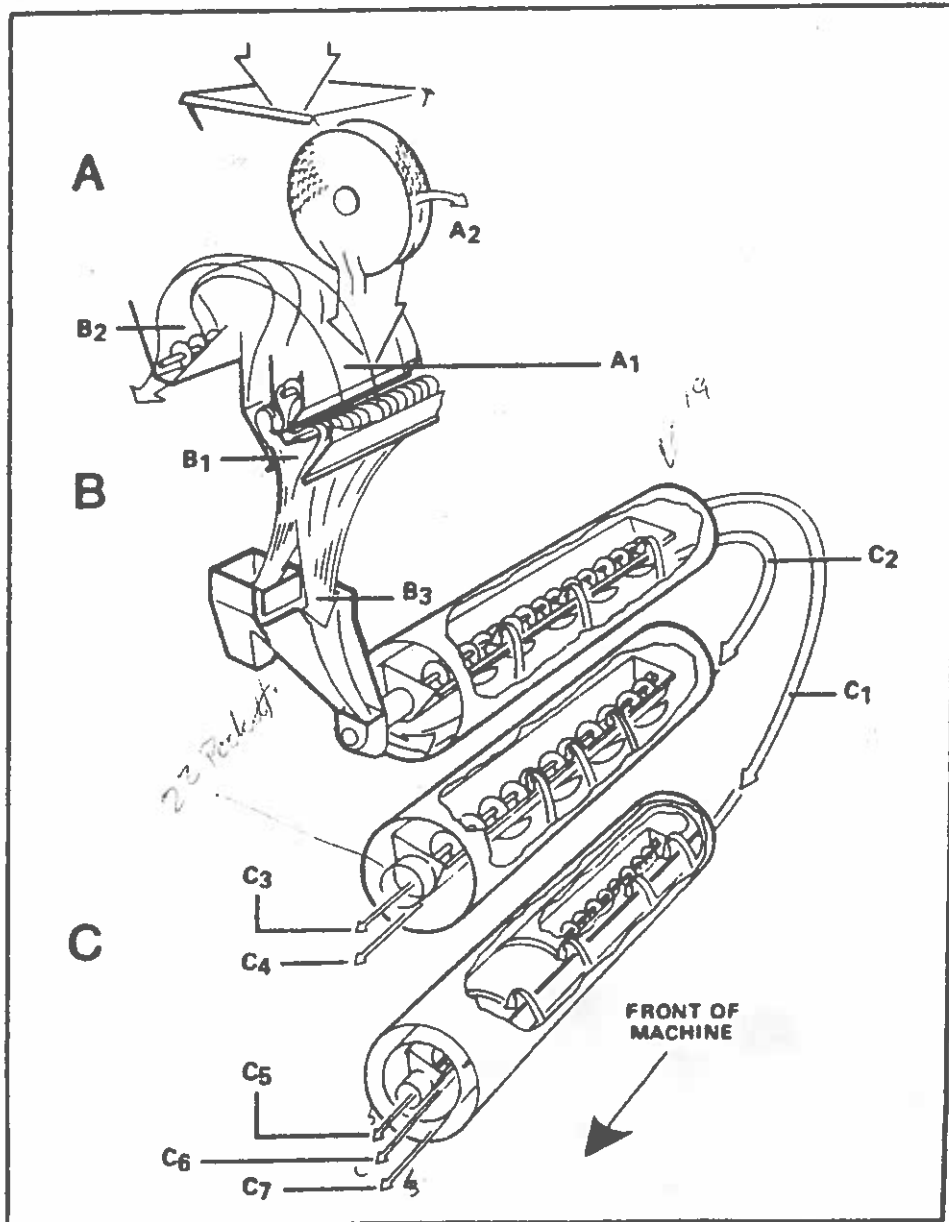
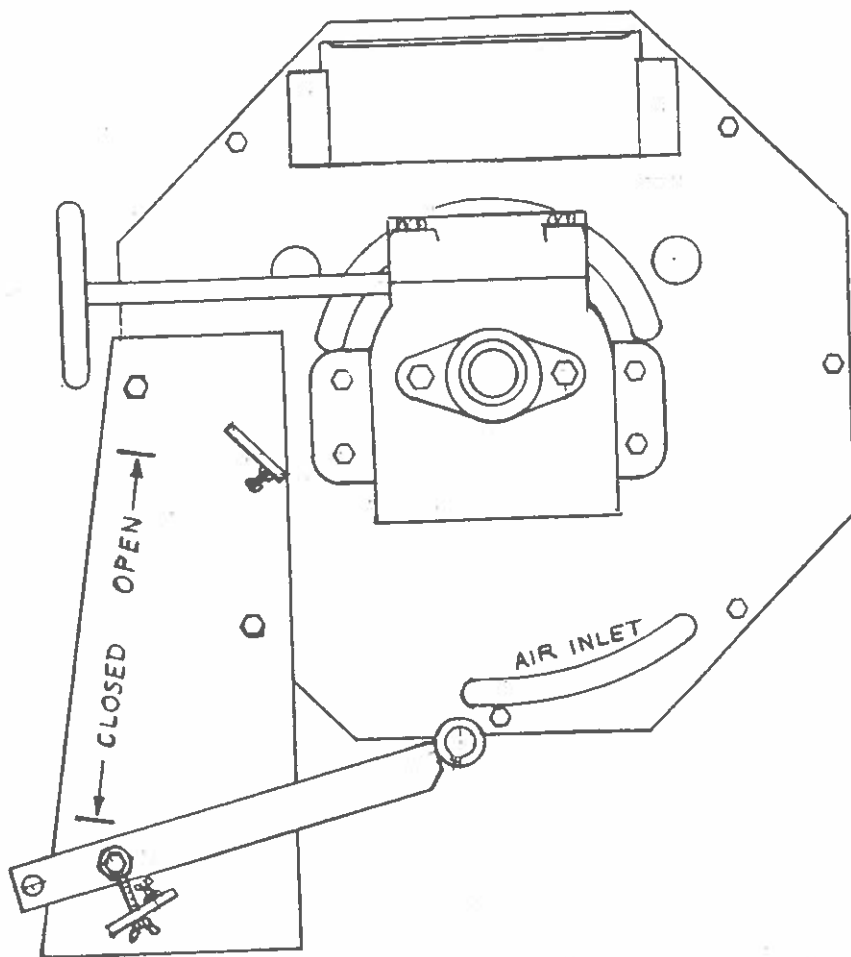


FIGURE 3 - Sequence of Operation



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 #4½ 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.

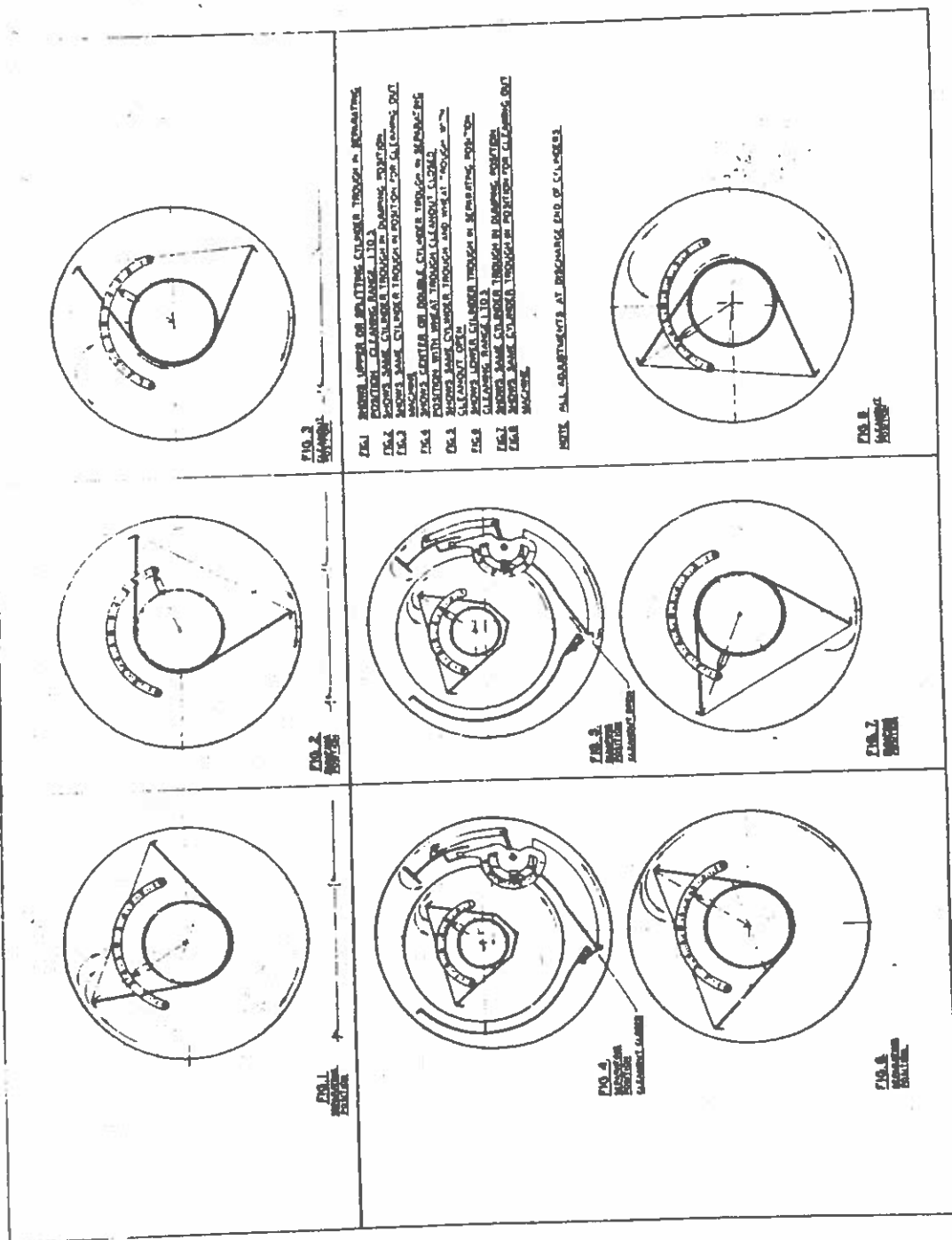
All of the above steps should be done while machine is running, but extreme caution must be exercised while performing cleanout procedure to prevent injury.

GENERAL TROUGH SETTINGS

UPPER
CYLINDER

DOUBLE
CYLINDER

LOWER SINGLE
CYLINDER



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 Settling Conveyor
8	3W512	Pressure Door Weld.	39	3878	#2 Countershaft
	3W513	Pressure Door Latch	40	A506	Sealmaster bearing 1-5/16"
	B562	Weight		B7.4 P.D. x 1-5/16"B,	Sheave 1 gr.
9	A335	Bearing Assm. (oilite)	42	3731	Air Damper Bar
10	C108	Bearing Housing	44	3729	Damper
11	2462	Felt Washer (2 required)	45	A201	Upper Cylinder Assembly
12	4149	Thrust Bearing Spacer	46	A345	Upper Trough Assembly
13	4150	Vellunoid Gasket	47	3W487	Upper Conveyor Weld.
14	15711	Bearing Assembly	48	3W488	Distributor Conveyor
15	C109	Bearing Housing	49	3W486	Return Conveyor
16	A342	Oat Cyl. Discharge Head	52	3W490	Spreader Door Weld.
17	A335	Bearing Assy.	53	3W489	Split Bar Weld.
18	465	Set Collar	54	B48	Air Control Indicator
19	A332	Friction Roller only	55	C85	Sprocket Feed Control
20	552	Retarder	56	7041-80	Chain Steel 80P
21	A202	Lower Cylinder Assembly	57		Scalper Assembly
22	A206	Trough Assembly, Lower	58	B562	Spreader Weight
23	3W111	Lower Cylinder Conveyor	59	3W491	Scalper Box Weld.
24	A139	Wool Band Assembly	60	C12	Bearing Holder, A113 Assy.
27	359	Extension Head Plate	61	3W492	Bay-Pass Weld.
28	A319	Retarder			
29	A341	Discharge Head Assembly			
30	A208	Seed Trough Assembly			

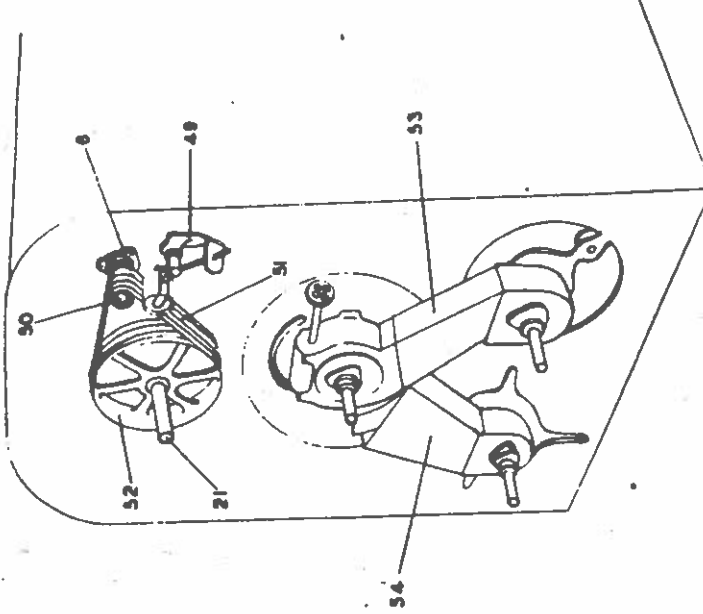


FIGURE	PART	DESCRIPTION
1	7010-1	Sprocket 20T, 5/8P
2	7010-18	Sprocket 15T, 5/8P
3	A137	Chain Tightener Assy.
4	A7009-76	C64 Bracket
5	30482	318 Wood Block
6	A505	Roller Chain 76P, 5/8P
7	3901	Fan Shaft
8	A7009-94	Sealmaster Bearing 1-11/16"
9	7010-19	Fan Wheel 12"x15" CW
10	7010-5	Roller Chain 94P,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

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.
		C63 Bracket
	318	Wood Block
47	3W495	Square to Round
48	C79	Spacer
49	A349	Fan Belt Idler
50	4.2 P.D.	3 gr. Sheave, 1-11/16"B
51	B71	V Belt
52	18.4 P.D.	3 gr. Sheave 1-11/16"B
53	3W496	Small Grain Return Spout
54	3W497	Large Grain Return Spout

CHAIN GUARD DRIVE

<u>FIGURE</u>	<u>PART</u>	<u>DESCRIPTION</u>
1	C5	Intake Cone, Tapped
2	A7010-134	Roller Chain 134P, 3/4P
3	3678	#1 Countershaft
4	C3	Ring Sockets 69T, 3/4P
5 -----	C2 -----	Trunnion Track
6	A140	Chain Tightener Assembly C63 Bracket 318 Wood Block 348 Filler
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 C64 Bracket 318 Wood Block
16	3W498	Chain Guard Case
17	A152	Chain Tightener Assembly C65 Bracket 318 Wood Block
18	C4	Ring Sprocket 65T, 3/4P

<u>FIGURE</u>	<u>PART</u>	<u>DESCRIPTION</u>
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

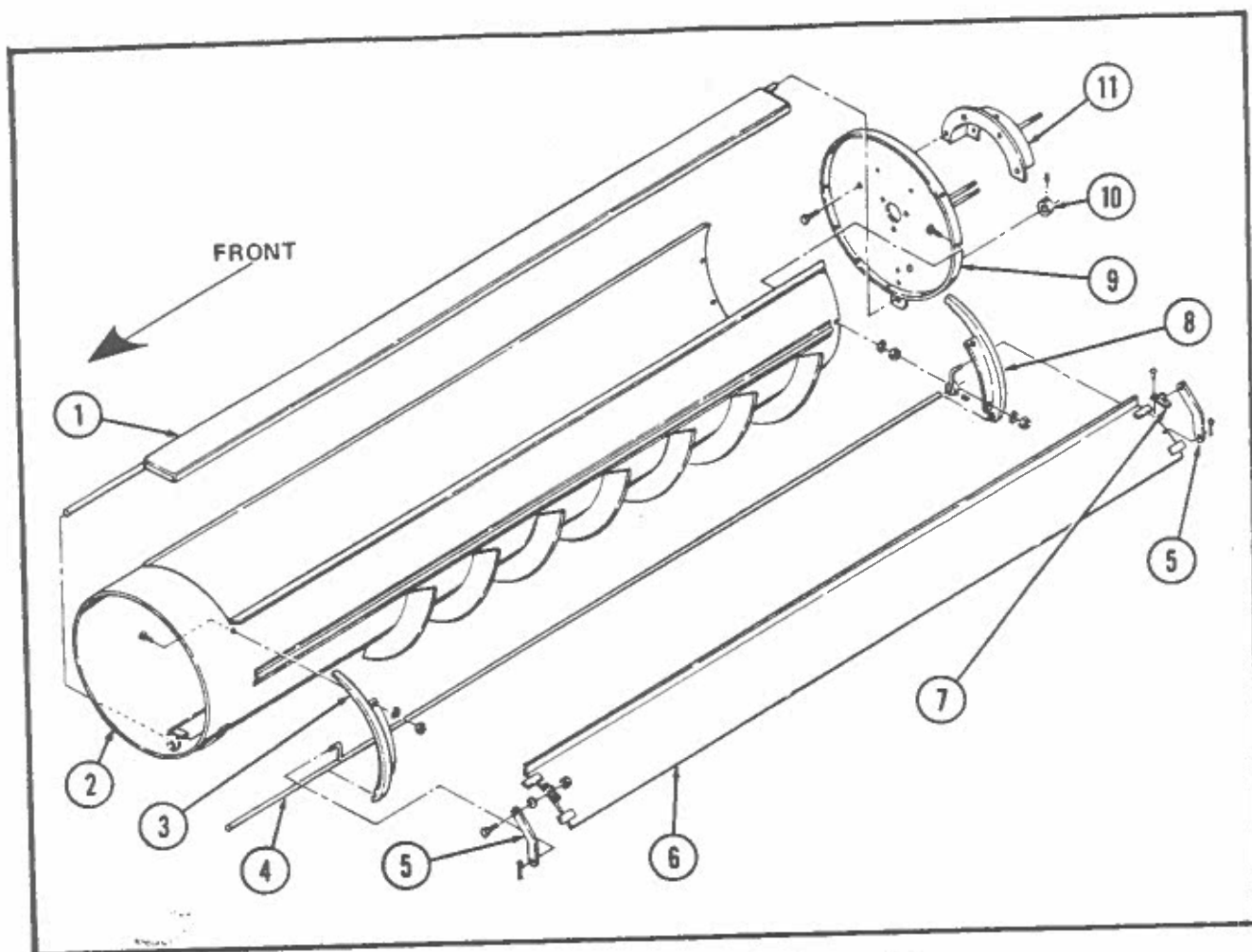


FIGURE 8 — Outer Trough Assembly

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

<u>FIGURE</u>	<u>PART</u>	<u>DISCHARGE</u>
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)
Top Upright Elevator	1 groove, B7.4 P.D. x 1-5/16"B
Fan Shaft Rear	3 groove, 4.2 P.D., 1-11/16"B
Asp. Stub Shaft	3 groove, 18.4 P.D., 1-11/16"B

V BELTS

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