

TABLE OF CONTENTS

WARRANTY

SPECIFICATIONS

SECTION I

Introduction.....

Location.....

Air Discharge.....

Field Wiring.....

SECTION II

How to Change Eccentric Shaft.....

Parts Lists.....

SECTION III

Choosing the Right Screens.....

Placing Screens in Cleaner.....

Product Discharge.....

Trial Run.....

General Maintenance.....

MACHINE SPECIFICATIONS

PRELUDE GRAIN-SEED CLEANER WITH AIR

No. of Screens in Cleaner.....	5
Screen Size.....	54 X 26"
Extreme Height.....	91-1/4"
Extreme Length.....	99"
Extreme Width.....	78-1/8."
Length on Floor.....	73-3/8"
Width on Floor.....	69-1/2"
Height Where Seed Enters.....	67"
CFM Requirements - 1900 RPM (TOP FAN).....	6000
CFM Requirements - 1600 RPM (TOP FAN).....	4300
CFM Requirements - 1200 RPM (TOP FAN).....	2800
Shipping Weight	3800

Approximate Capacities (Bu. Per Hr.)*

A.	Seeds & Grass.....	100
B.	Seed Grain.....	175
C.	Beans & Wheat.....	300
D.	Scalping	600

Horse Power Requirements:

A.	Main Fan.....	10 Hp, 3 Phase, 230/460 Volt, 60 Hz, 1800 RPM
A.	Main Fan.....	10 Hp, 1 Phase, 230 Volt, 60 Hz, 1800 RPM
A.	Main Fan.....	10 Hp, 3 Phase, 200/380 Volt, 50 Hz, 1500 RPM
B	Electronic Mechanical ..	1/2 Hp, 180 Volt, Dc
	Vibratory Hopper	(1 Phase, 220 Volt, 60 Hz, Input)
B	Electronic Mechanical ..	1/2 Hp, 230 Volt, Ac
	Vibratory Hopper	(3 Phase, 230 Volt, 60 Hz, Input)
C.	Eccentric	2 HP, 3 Phase, 230/460 Volt, 60 Hz, 1800 RPM
C.	Eccentric	2 HP, 3 Phase, 200/380 Volt, 50 Hz, 1500 RPM
C.	Eccentric	2 HP, 1 Phase, 230 Volt, 60 Hz, 1800 RPM

* All Capacities will vary depending on variety of grains/seeds cleaned, amount of foreign material removal and moisture content.

INTRODUCTION

We cannot possibly answer all questions about the operation of CLIPPER CLEANERS in this manual. We will try to give you basic information on the installation of your cleaner, various adjustments for greater efficiency and a list of screen suggestions for top performance from your cleaner.

There is nothing complex about the operation of a good seed or grain cleaner. The operator has to familiarize himself with the machine and take time to study the shapes and characteristics of the different commodities to be cleaned.

A commodity is cleaned to separate the good, marketable product from all impurities. From a mechanical point of view poor cleaning is in most cases, caused by lack of proper screens, improper use of screens or faulty regulation of the cleaner.

Perforations in the top screen should be just large enough to let the commodity being cleaned fall through readily and small enough to scalp off foreign material such as sticks, stems, chaff and larger seeds, or grain other than the product being cleaned. For most commodities a round hole top screen is recommended.

After the round hole top screen has removed the objectionable foreign material larger than the commodity being cleaned, the perforations of the lower two screens go to work. The bottom screens remove foreign material smaller than the product being cleaned. Any immature kernels, sand, dirt, or small weed seeds drop through the bottom two screen and the good commodity passes over the bottom two screens. For most commodities, an oblong sifting bottom screen is recommended.

Multiple screen cleaners permit normal top and bottom separations, plus additional separations by shape. Screen recommendations for cleaning grain and seed are furnished with this manual.

The purpose of air separations is to remove all possible light material without waste of good grain or seed, and to control dust. Detailed instructions for regulating and controlling the air separations are given in this manual.

LOCATION

Careful consideration must be given to selecting the proper location for the cleaner or the best results in efficiency and convenience cannot be expected. All models should be fastened to a solid, level floor or foundation. **THE ENTIRE BASE OF THE MACHINE SHOULD BE SUPPORTED. 3/4-8 grade 5 bolts are recommended. If an exiting machine is being replaced, in almost all cases the exiting mounting stand will not be built heavy enough to support the new machine being installed.**

The cleaner should be placed with the fan discharge opening facing, and a short distance away from an outside wall. Screens are inserted and withdrawn at the front of the cleaner. Allow clearance for the operator to make screen changes. The largest single piece screen is 54" x 26 ". Allow room around the cleaner for the operator to make adjustments and service the machine. Do not install spouting in a position that will interfere with the controls or maintenance. Eventually worn parts must be replaced so allow room to pull all shafts and spouts.

The cleaned grain discharges from the under side of the cleaner, so it should be placed on a floor with a pit or basement underneath so that an elevator with its receiving spout three or four feet below the floor can be used to raise the grain. If the elevator cannot be carried below the floor, and there is sufficient headroom, the cleaner may be placed on a solid platform high enough above the floor to allow the grain to flow into the elevator or sacking spout. Screenings and air lifting's discharge from built-in spouts in the cleaner. Provision must be made to handle this material.

The Cleaner hopper is a feeder mechanism - not a storage bin. Cleaners work best when equipped with a surge bin above the hopper to provide a steady supply of the commodity to the hopper. The grain supply to the surge hopper may be by spout from bins located on the floor above or by means of an elevator from a sink or dump hopper on the same level or lower than the cleaner. Spouts must have a fall of at least seven feet in ten to provide free flow and should be carried directly at an angle instead of making right angle jogs. **The feed hopper works best when it is feed across the width of the hopper inlet opening. If a full width feed cannot be used, a inverted y transition with a 24" distance between the spouts is the second best style. This would drop the product to each side of the hopper**

AIR DISCHARGE

Improper air trunking installation from the cleaner and into the collector causes up to 90% of the difficulties in conjunction with improper air movement. Sharp turns, improper junctions, poor connections and poor collection equipment will all contribute to air deficiency in a cleaner. Improper air clearance also results in a very dirty, dusty plant operation. The Prelude back fan develops sufficient velocity so that cyclone-type collectors or dust houses can be used to settle the dust and chaff from the air discharge of the cleaner. The following are a few of the common errors found in plants and how each can be avoided or corrected.

Refrain from installing elbows which have a sharp change of direction. Backpressures are created at such points. In most cases, light chaff will be dropped into the pipe and finally plug the entire run. A rule of thumb used at our plant is that the inside radius of the elbow would be **at least two and one half times the recommended** diameter of the air pipe.

CFM Requirements - 1900 RPM.....	6000	18" Diameter Pipe
CFM Requirements - 1600 RPM.....	4300	17" Diameter Pipe
CFM Requirements - 1200 RPM.....	2800	14" Diameter Pipe

The final source of trouble is the cyclone itself. If it is either too large or too small, or isn't designed properly, or has a cap over the pipe discharging from the top of it, or in some other way causes back pressure or pressure drop, or turbulence that interferes with the cocooning action of the air inside the collector, the cleaner air system or the collector system may not function properly.

DUST COLLECTOR

INFORMATION TO AID IN SPECIFYING

THE AIR ROTATION DIRECTION IS SPECIFIED, AS VIEWED LOOKING DOWN FROM ABOVE.

COLLECTOR:

<u>(ROTATION)</u>	<u>CLOCKWISE (ROTATION)</u>	<u>COUNTER</u>	<u>CLOCKWISE</u>
	<u>Figure "A"</u>		<u>Figure "B"</u>

NOTE: Order using terms - clockwise and counter clockwise - only.

When planning an installation:

1. Avoid sharp bends and compound curves as they reduce the velocity and encourage backpressure.
2. Install the cyclone as near to the cleaner as possible to eliminate length of air travel and extra cost for excess ducting.

Figure "C"
(Correct)

Figure "D"
(Incorrect)

DO NOT CHANGE DIRECTION OF AIR TRAVEL.

FIELD WIRING INSTRUCTIONS

GENERAL

Cleaner drives and variable controls are available for NEC Class II, Division I, Group G or Class II, Division II, Group G applications. For additional drive installation instructions, see the manual section for field wiring.

NEC CLASS II, DIVISION II, GROUP G INSTALLATION

The motors and drive controls supplied with the cleaner meet the requirements of the National Cod for this type of installation. The customer power and field wiring requirements are shown on the wiring drawing. All field wiring and electrical components must adhere to the NEC and/or local electrical code requirements, and are not the responsibility of the manufacturer.

The following instructions apply to CLIPPER Conquest cleaner installations where National Electric Code requirements of Class II, Division II, Group G (TEFC motors, NEMA 4 enclosures) apply.

The cleaners with their respective motors, motor controllers and operator variable control panels have been factory tested and adjusted. No further adjustment of the DC motor controller should be required at the installation site. The installer should refer to wiring drawing (TEFC) for wiring (shown in dashed lines) and power requirements (disconnects, motor starter/relay. All field wiring and electrical components must adhere to the NEC and/or local electrical code requirements, and are not the responsibility of A. T. Ferrell Company hereafter referred to as the manufacturer.

All control line wiring should be run in separate conduit

Low voltage wiring between DC or AC motor controllers, operator stations or RPM pickup leads must not be combined with high voltage power wiring in common conduits. Movement of factory installed electrical components can affect warranty.

CLEANER DRIVES 60 HZ THREE PHASE

Main Fan Motor 60 Hz

The main fan drive consists of a 10 HP, 1800 RPM, 230/460 Volt, 3 Phase, 60 Hertz, TEFC motor and drive. Wiring and motor controls are not supplied by A. T. Ferrell Company (See wiring drawing)

Fixed Speed Eccentric Drive

The eccentric drive consists of a 2 HP, 1800 RPM, 230/460 Volt, 3 Phase, 60 Hz, T E F C motor and drive . Wiring is not supplied by A. T. Ferrell Company (see wiring drawing).

CLEANER DRIVES 60 HZ SINGLE PHASE

Main Fan Motor 60 Hz

The main fan drive consists of a 10 HP, 1800 RPM, 230 Volt, 1 Phase, 60 Hertz, TEFC motor and drive. Wiring and motor controls are not supplied by A. T. Ferrell Company (See wiring drawing)

Fixed Speed Eccentric Drive

The eccentric drive consists of a 2 HP, 1800 RPM, 230 Volt, 1 Phase, 60 Hz, T E F C motor and drive . Wiring is not supplied by A. T. Ferrell Company (see wiring drawing).

CLEANER DRIVES 50 Hz

Main Fan Motor 50 Hz

The main fan drive consists of a 10 HP, 1500 RPM, 200/380 Volt, 3 Phase, 50 Hertz, TEFC motor and drive. Wiring and motor controls are not supplied by A. T. Ferrell Company (See wiring drawing)

Fixed Speed Eccentric Drive

The eccentric drive consists of a 2 HP, 1500 RPM, 200/380 Volt, 3 Phase, 50 Hz, T E F C motor and drive . Wiring is not supplied by A. T. Ferrell Company (see wiring drawing).

SECTION II

HOW TO CHANGE ECCENTRIC SHAFT AND OR ECCENTRIC ASSEMBLIES

1. Record location of all parts including shaft and eccentric assemblies.

NOTE-----

NOTE-----

NOTE-----

2. Remove drive pulley and belt.

3. Remove bolts fastening pitman arm to shoes (RECORD LENGTH FIRST).

NOTE-----

NOTE-----

NOTE-----

4. Unscrew pitman arms from eccentric assembly

5. Remove bolts from outer and center bearings. Loosen lock collars.

6. Shaft with attached bearings can be removed from either side.

7. Remove keys, file set screw burrs, and oil shaft lightly.

8. Assemble by reversing above steps.

SECTION III

CHOOSING THE RIGHT SCREEN

The top-scalping screen is ordinarily chosen with an opening large enough to quickly drop through the good commodity and direct the "overs" or scalpings off the screen end. The sifting or finishing screens are selected with an opening that is just small enough to hold up the commodity and drop through the "fines".

When selecting screens for any kind of seed or grain, it is always necessary to take into consideration the condition of the commodity and the foreign material (FM) mixed with it. It is frequently necessary to use screens that will remove a small percentage of the good commodity with the foreign material in order to make the end product marketable.

It is advisable to have an assortment of our hand testing screens. By testing a handful of grain or seed before cleaning, you can determine in advance the exact perforation size of mesh to use and what separation can be made with the screens, and also what will have to be done by the air. You can also determine what benefit would be derived from recirculating any part of the stock, which cannot be improved by any change in setting in the original run.

If you do not have the proper screens to clean a particular lot, send us a six-ounce sample and we will make a screen selection for you. Send your samples to: A T Ferrell Seed Laboratory, 1440 South Adams Street, Bluffton, Indiana 46714.

PLACING SCREENS IN CLEANER

When removing blanks and splitters for the first time it is advisable for you to mark each part with the location of where the part came out of the machine. For example " top screen, back 9 "blank"

Screens may be withdrawn or replaced from the front of the cleaner by removing the top shoe spout and releasing the screen hooks. The screens slide in the screenways and are removed one section at a time. A screen puller is used to reach the inner screen sections. A screen puller is used to reach the inner screen sections. Insert the flat tab of the screen puller between the screen and the ball tray with the rod part of the puller sticking up. Turn screen puller 90 degrees. This expands the gap between the screen and ball tray so that the rod part of the puller and be inserted behind the screen cross stick. Once the rod has been inserted behind the cross stick turn the puller back 90 degrees so the rod part of the puller is facing up again and pull out screen. Screens should be cleaned before storing.

When placing screens, ball trays and blanks back into the machine after cleanup, its best to start on the bottom set of screens in each shoe. When replacing the screen sections slide each section into the screen way but do not slide completely into the screen way. Leave the end of each section out slightly beyond the end of the screen way so that the next section can be placed with the lip in the correct downward or overlapping position.

PLACING SCREENS IN CLEANER CONT.

After all of the screen sections and accessory pieces have been correctly positioned, slide them back as far as possible against the screen stops and secure with the screen hooks. The lips on all screens will always be facing down hill and should be lipped over the next screen.

Then slid the ball trays into the ball tray rails below that screen set. This will keep the balls in place in the ball trays. The ball trays containing five balls per compartment do not have to be removed for screen changes on current model cleaners. The balls should be checked periodically for wear. If the ball diameters are less than 1-5/16 inches, or have lost some of their bounce they should be replaced.

PRODUCT DISCHARGES

Before operating this equipment be sure that all discharges are properly spouted so that all material is efficiently transported from the machine.

The PRELUDE REFERENCE ILLUSTRATION shows each of the product discharges. The discharges are as follows:

1. Scalping Discharges: There is one scalping discharge included (item 1) on the shoe.
2. Siftings Discharges: There are two siftings discharges included (item 2 and 3) on the shoe.
3. Air Discharges: There is one air setting calibrated gate control and two air bleeder doors for each of the air separations aspirations (items 11 and 9 for front and items 12 and 10 for back). All air lifting's trash discharges out of one spout (item 4) All air discharges from one air duct located at the back of the machine (item 5).
4. Clean Grain Discharge: The good product is discharged through the bottom of the machine (item 6).

TRIAL RUN

WARNING!

Do not attempt to install, connect power to operate or service this machine without proper instruction and until you have been thoroughly trained in its use by your employer.

THE FOLLOWING ARE GENERAL GUIDELINES ONLY. YOUR SETTINGS WILL PROBABLY VARY FROM THESE

With the proper screens in place and a supply of commodity to be cleaned in the storage bin hopper above the cleaner, you are now ready to make an initial run to get the correct regulations of the feed, shoe shake and air separations.

Please refer to the REFERENCE ILLUSTRATION to reference the following numbers. With the internal gate inside the inlet hopper closed (8) start the main fan (5) and eccentric (7), drive. Open the false air valve doors (9 and 10) on the air trunk to a 6 inch wide opening. Set both the front (11) and back (12) air valve controls in the center holes. The eccentric (7) shaft speed is already set at the factory At eccentric speeds below 360 RPM screen blinding (plugging) may occur due to the decrease in ball movement under the screen decks. At eccentric speeds above 420 RPM ball transfer may occur due to the increase in ball movement under the screen decks. **NEVER RUN THE ECCENTRIC SHAFT SPEED ABOVE 420 RPM**

ITEM NUMBER 1 - MECHANICAL VIBRATORY INLET HOPPER - VARIABLE SPEED

Open the internal hopper gate. Start the hopper drive. Increase the hopper speed until about 1/2 to 3/4 of the top screen in the top shoe is covered. If the hopper speed must be increased to near its highest speed return this speed to half the maximum and open the hopper gate by moving the outside handle a couple of holes. Variations to this will occur if you are trying to run a close tolerance between seed size and hole size of screen.

ITEM NUMBER 1 - MECHANICAL VIBRATORY INLET HOPPER - FIXED

Open the hopper gate until 3/4 of the top screen is covered and the desired capacity is achieved. Variations to this will occur if you are trying to run a close tolerance between seed size and hole size of screen.

AIR SETTINGS

Take a sample of the product coming out of the settling chamber discharge (Item 4). The front air is set properly when a very small amount of good-looking seed is present in this discharge. This seed usually will be the lightest of the good seed. If there is an excess amount of good seed, close the front (11) air valve at the hopper end of the machine until there are only a few good seeds in the settling chamber discharge. Please wait 10 seconds for the adjusted setting to be discharged out the discharge (Item 4). If there are no good looking seeds in the discharge, open the front (11) air valve until a small amount of good seed appears in the settling chamber discharge. If you can't pull good seed out of the discharge close the front (9) false air valve door or doors to 4 inches and repeat above procedure. Repeat this procedure for the back (12) settling chamber except you will be working with the backset of doors (Item 10) and value (Item 12). After setting the back air some small adjustment may be required to the front valve to get optimum performance. The goal is to have the side (9 & 10) false air valve doors opened as wide as possible to keep the front (11) air and the back (12) air from affecting each other when adjustment is required. When the feed rate from the inlet hopper(8) is increased or decreased the air must be readjusted.

GENERAL MAINTENANCE

Be sure all shaft and eccentric bearings are properly lubricated with a good grade of pressure grease . For cleaners operating in extreme seasonal ambient temperatures the type of grease used should take into account the seasonal temperature changes. The cleaner should be lubricated at regular intervals depending on the location of the bearing.

Eccentric shaft and top fan shaft bearings

Bearings should be lubricated after every 250 hours of operation. One or two pumps on a **standard hand pump grease** gun is sufficient. High pressure air operated grease guns are not recommended

DATES:-----

Motor shaft bearings

Bearings should be lubricated once every year of operation. One pump on a **standard hand pump grease** gun is sufficient. High pressure air operated grease guns are not recommended

DATES:-----

Hopper drive shaft

Bearings should be lubricated after every 100 hours of operation. One pump on a **standard hand pump grease** gun is sufficient. High pressure air operated grease guns are not recommended

DATES:-----

WARNING!

Periodic attention **MUST BE GIVEN** to tighten all bolts and screws. Check weekly for the first few months of operation. **DO NOT OVER-TIGHTEN.**

WARNING!

Do not attempt to work on, clean or service this equipment or open or remove any protective cover, guard, grate or maintenance panel until the **power** has been **turned off** and **locked** out and the machine has come to a **complete stop.**

ITEM NUMBER 1 - ROLL FEED INLET HOPPER - VARIABLE SPEED

Start the hopper drive. Open the hopper gate to 4 on the hopper gate control. Increase the hopper speed until about 1/2 to 3/4 of the top screen in the top shoe is covered. If the hopper speed must be increased to near its highest speed return this speed to half the maximum and open the hopper gate a couple of turns. Variations to this will occur if you are trying to run a close tolerance between seed size and hole size of screen.

ITEM NUMBER 1 - ROLL FEED INLET HOPPER - FIXED SPEED

Start the hopper drive. Open the hopper gate until 1/2 to 3/4 of the top screen is covered. Variations to this will occur if you are trying to run a close tolerance between seed size and hole size of screen.