



### **Zero-Max Seeder Drives**

The following is some general information on the Seeder Drives and their application on Air Carts. We have been manufacturing this unit for 15 years so far, have over 15,000 Seeder Drives in service already, and the product has been virtually trouble-free.

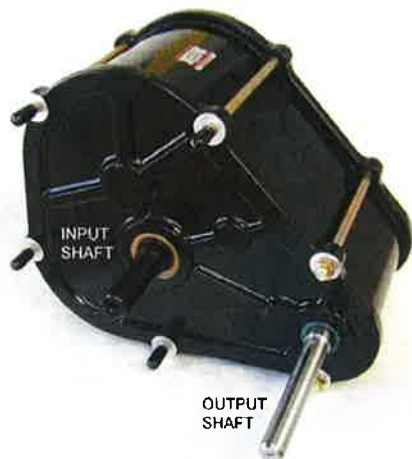
The description and specifications for the variable rate Seeder Drive are:

- 0-300 rpm input speed
- up to a 1:1 ratio of input to output speed
- 200 in-lb torque rating, higher torque capacity units can be built.
- The unit has an aluminum housing, which can be left unfinished, or the customer can paint it to match or contrast to the colors on their Air Cart. The surface finish is conducive to accepting paint

The typical set-up for these Seeder Drive units consists of:

- a step-up ratio chain drive from the ground wheels to the input shaft of the Seeder Drive unit
- an electric clutch on the end of the input shaft to disconnect rotation to the input shaft when towing between fields or for shutting off the Drive at the end of a row
- two or three sprockets on the output shaft to offer different ratios beyond the output of the Seeder Drive unit. The different ratios give versatility for different types of seeds or fertilizers that may be used
- a mechanical or electric actuator for controlling the ratio on the Seeder Drive

As far as the control goes, we have a mechanical screw control design that we have offered as an option. Most of our OEM customers are adding electric linear actuators to the control shaft on the Seeder Drive, and using that to provide a variable rate on-the-go. Most of these applications are currently using a push button in the cab of the tractor to adjust the rate on the Seeder Drive, and some are using GPS feedback to control the rate adjustments.



Attached are a couple of drawings of units we provide to different OEM customers for your reference. These units have the same specifications (0-300 rpm, 200 in-lbs, and a 1:1 ratio), however the basic differences are:

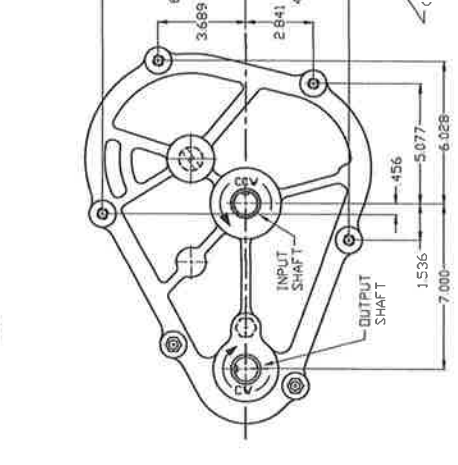
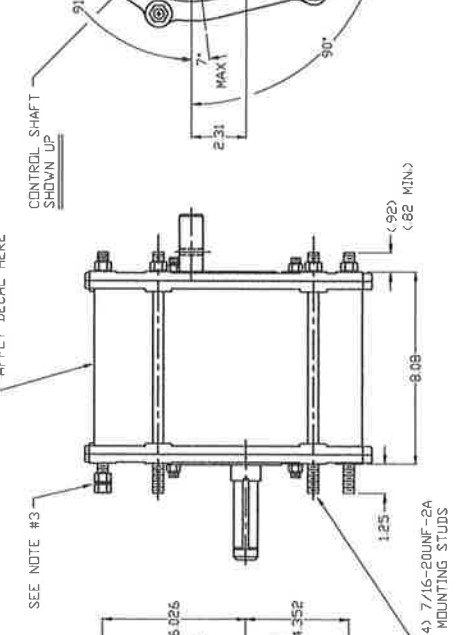
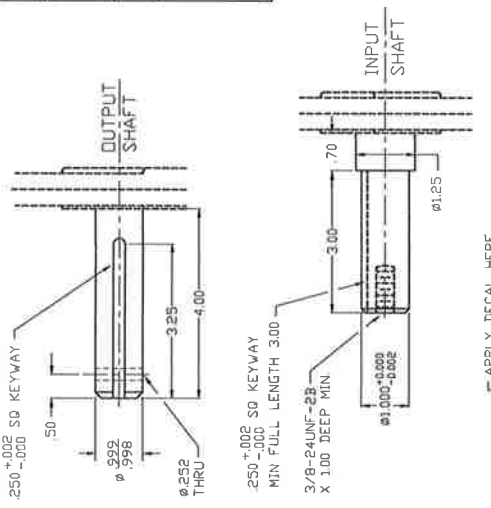
- horizontal vs. vertical mounting. For a vertical mount, the centerline between the input and output shafts is perpendicular to the ground, and you guessed it, for a horizontal mount the centerline between the input and output shafts is parallel to the ground. The reason we make this distinction is for the amount of oil fill in the units and the oil plug location
- output shaft lengths. Depending on how many sprockets you wish to stack up on the output for different ratios, you may want a longer or shorter shaft
- roll pin vs. keyway on the output shaft. Most customers are using sprockets on the output, in which case they use a keywayed output shaft. We do have one customer that gets an output shaft with a cross-drilled hole in it, and they mount a hollow tube over the output shaft and connect the shaft and tube with a roll pin. For their application, they are directing the output straight across the Air Cart to drive an auger
- output shaft rotation of your choosing.

As for price and delivery, we will quote you once we determine which unit or combination of features from the various units you want. Price will depend on the quantity you purchase, and delivery will depend on our workload and parts availability at the time of order, but is likely to be in the 4-6 week range. We will get you a firm quote once we determine the exact unit.

Again, thank you for your interest. We look forward to talking with you further.

# NOTES

- 1 DRIVE LUBRICATED WITH 6.5 PINTS (3.07L) VALVOLINE ALL-CLIMATE MOTOR OIL SAE 5W-30 EC API SERVICE SM/SL
- 2 CONTROL SHAFT ARC IS 98° FROM ZERO TO MAXIMUM
- 3 PACK WITH EACH DRIVE (8) HEX NUTS #D565900 (8) WASHERS #1001802 DR. MOUNTING KIT, NUTS-WASHERS D573000



HORIZONTAL MOUNTING W/CONTROL SHAFT UP

**ZERO-MAX**  
 MOTION CONTROL PRODUCTS  
 13200 SIXTH AVENUE NORTH  
 MINNEAPOLIS, MINNESOTA 55441-5509  
 PH. 763-546-4300 / FAX 763-546-8260  
 TOLL FREE IN U.S. 1-800-533-1731

TOLERANCES UNLESS NOTED		REV		ECC		BY		REMARKS		APP		DATE	
2	PLACE DEC	±	±	±	±	±	±	TITLE	SEEDER DRIVE ASSY				
DRAWN BY TOM F		DATE		5-1-08									
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SCALE		INCH		MM									
		A						DRAWING NUMBER					

USED ON

FINISH

MATERIAL

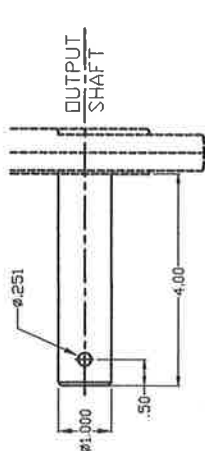
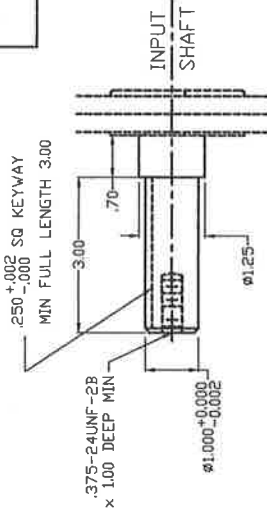
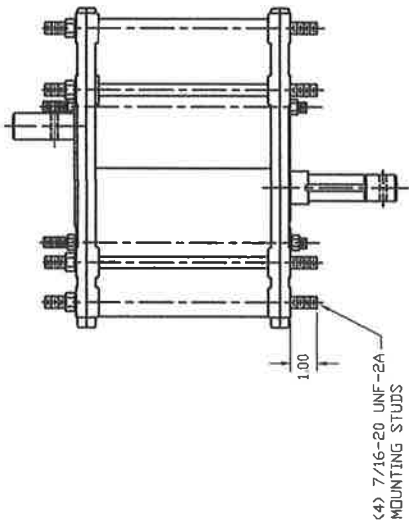
THIRD ANGLE PROJECTION



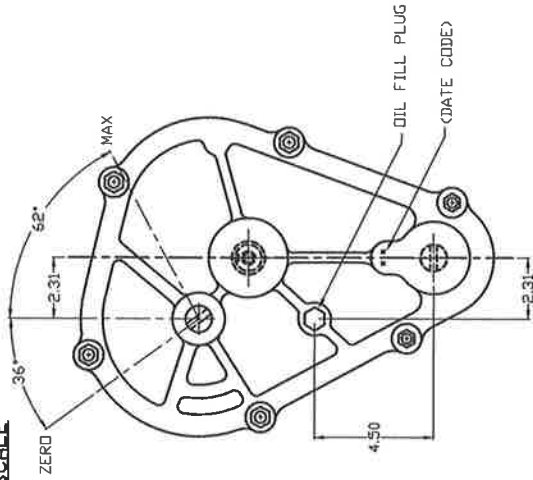
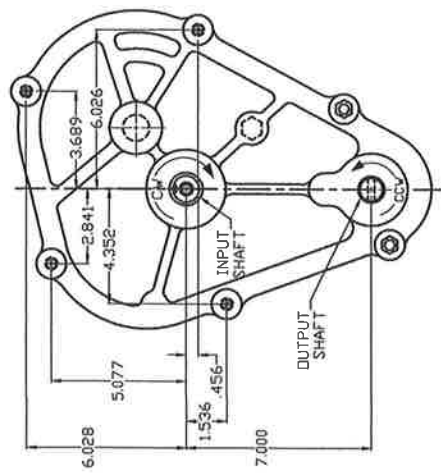
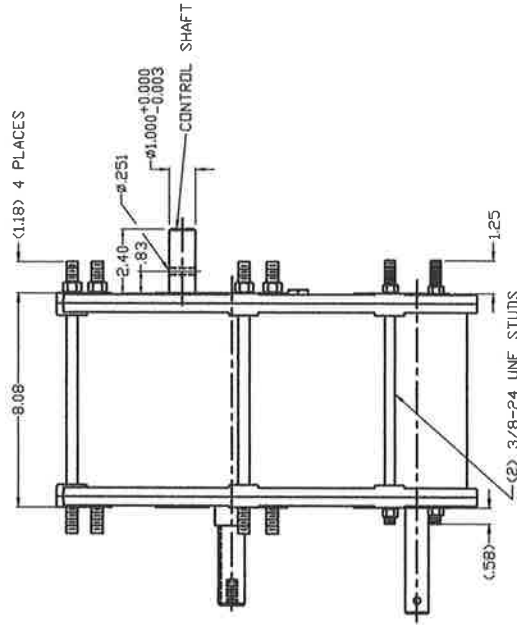
FILE NAME

# NOTES

- 1 REMOVE ALL BURRS AND SHARP EDGES
- 2 CONTROL SHAFT ARC IS 98° FROM ZERO TO MAXIMUM
- 3 135 INCH-LBS. IS THE SEATING TORQUE FOR THE (4) 7/16-20 HEX. NUTS
- 4 DRIVE LUBRICATED WITH 6.5 PINTS (104 OZ.) 5W-30 OIL



### SHAFT DETAILS NOT TO SCALE



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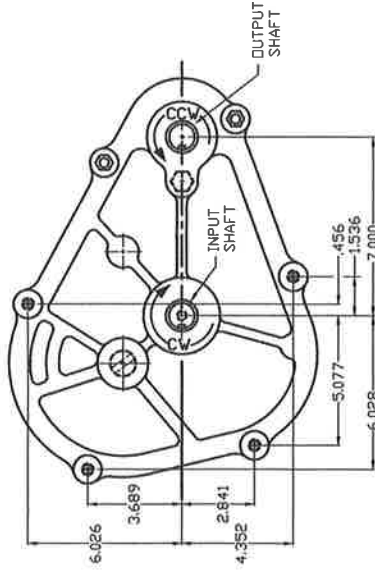
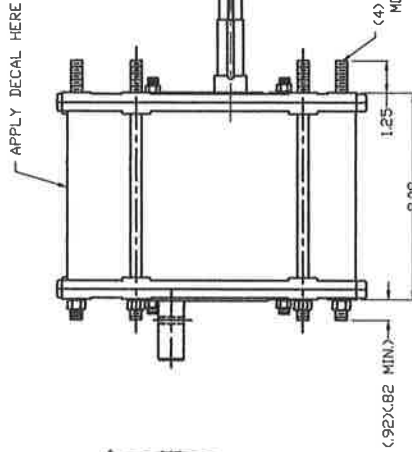
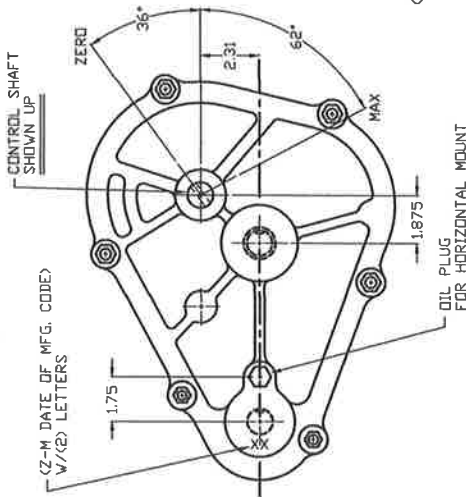
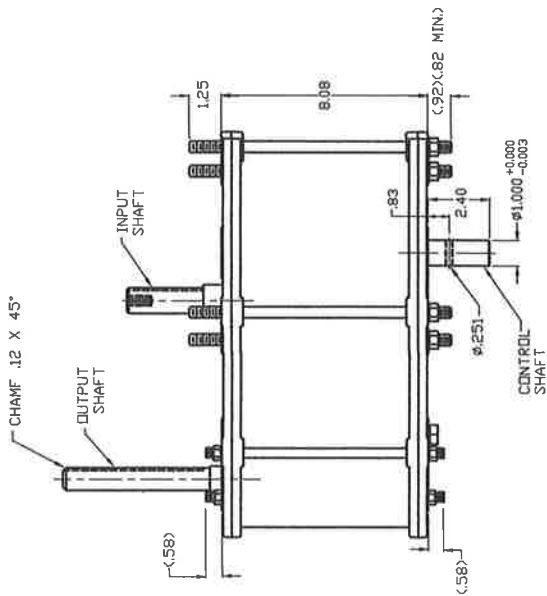
TOLERANCES UNLESS NOTED

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±	±	±
DRAWN BY TOM F	DATE 12-15-05	
APPROVED SZ	DATE 12-15-05	
SCALE	INCH	MM

REV	ECD	BY	REMARKS	APP	DATE
TITLE					
SEEDER DRIVE ASS'Y					
DRAWING NUMBER					
A					

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TOLERANCES UNLESS NOTED

2 PLACE DEC	3 PLACE DEC	ANGULAR
±	±	±
DRAWN BY TOM F	DATE	10-21-08
APPROVED SZ	DATE	10-22-08
SCALE	INCH	MM

REV	ECD	BY	REMARKS	APP	DATE
TITLE					
SEEDER DRIVE ASS'Y					
DRAWING NUMBER					
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