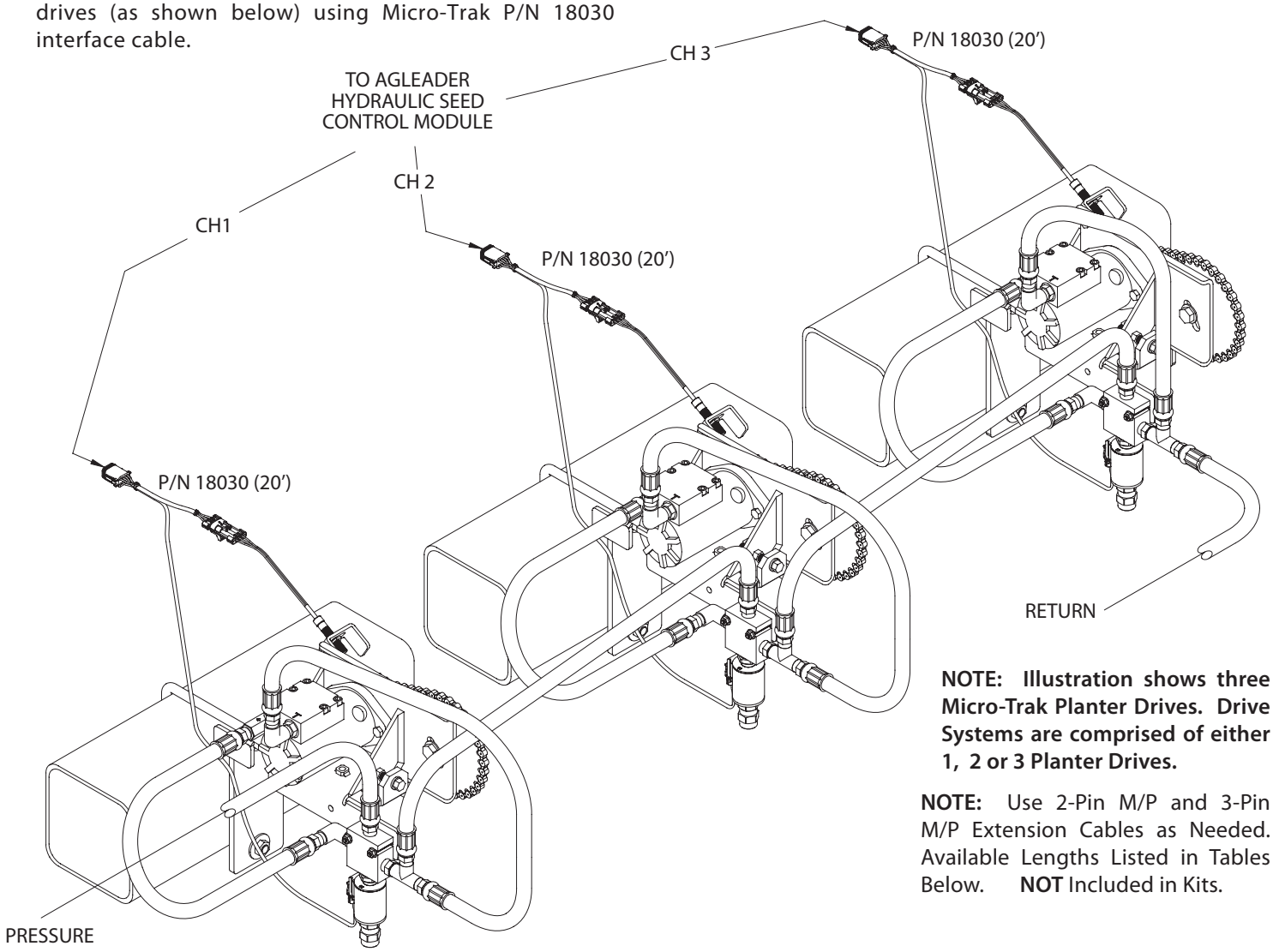
MICRO-TRAK® SYSTEMS, INC.

Instructions for Micro-Trak Seed Rate Control Systems

Used with AgLeader INSIGHT, INTEGRA

One, Two and Three Section

1. Use AgLeader System Diagrams and Operator Manual to install system components and harnessing.
2. Connect Hydraulic Seed Control Module to the planter drives (as shown below) using Micro-Trak P/N 18030 interface cable.
3. Enter the calibration values for the control valve and shaft speed sensor as shown in this Instruction Sheet.



NOTE: Illustration shows three Micro-Trak Planter Drives. Drive Systems are comprised of either 1, 2 or 3 Planter Drives.

NOTE: Use 2-Pin M/P and 3-Pin M/P Extension Cables as Needed. Available Lengths Listed in Tables Below. **NOT** Included in Kits.

OPTIONAL 2-PIN CABLES		
P/N 13200	5'	CABLE
P/N 13201	10'	CABLE
P/N 13202	15'	CABLE
P/N 13203	20'	CABLE
P/N 13204	25'	CABLE

OPTIONAL 3-PIN CABLES		
P/N 13205	5'	CABLE
P/N 13206	10'	CABLE
P/N 13207	15'	CABLE
P/N 13208	20'	CABLE
P/N 13209	25'	CABLE
P/N 13419	50'	CABLE

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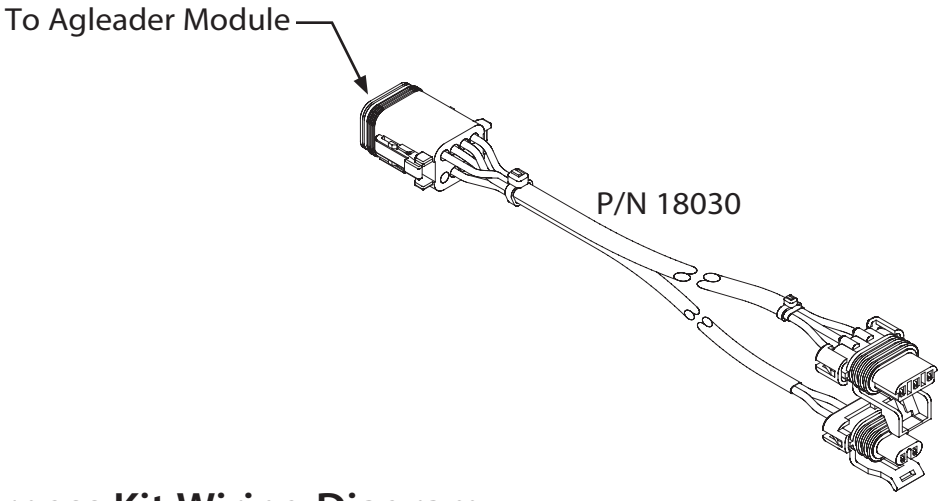
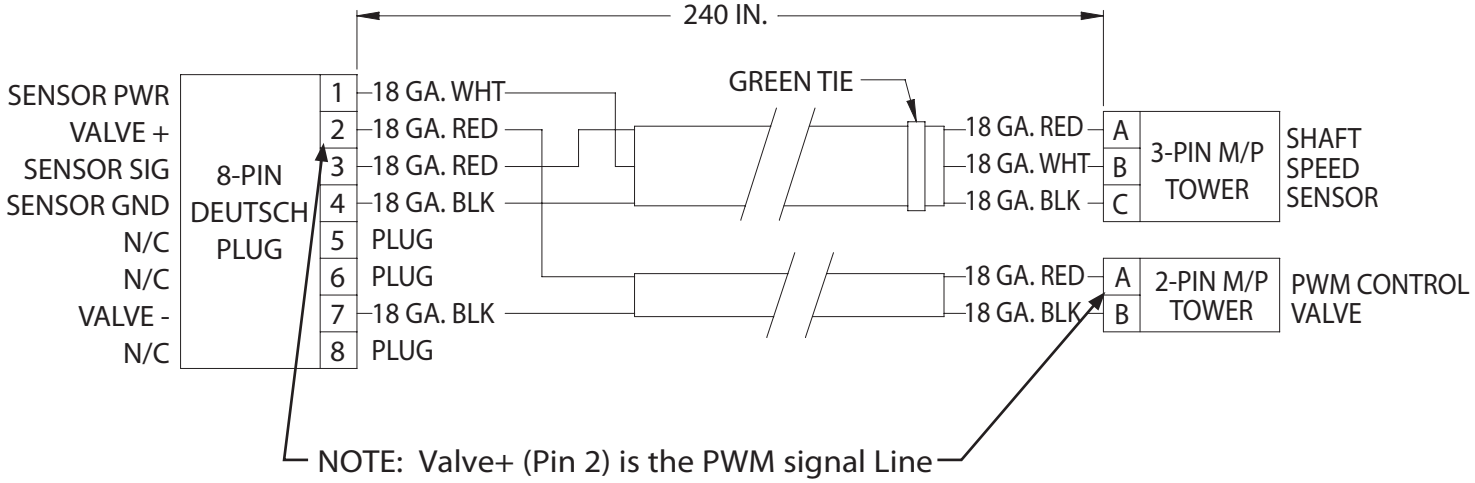


Harness Kit Wiring Diagram



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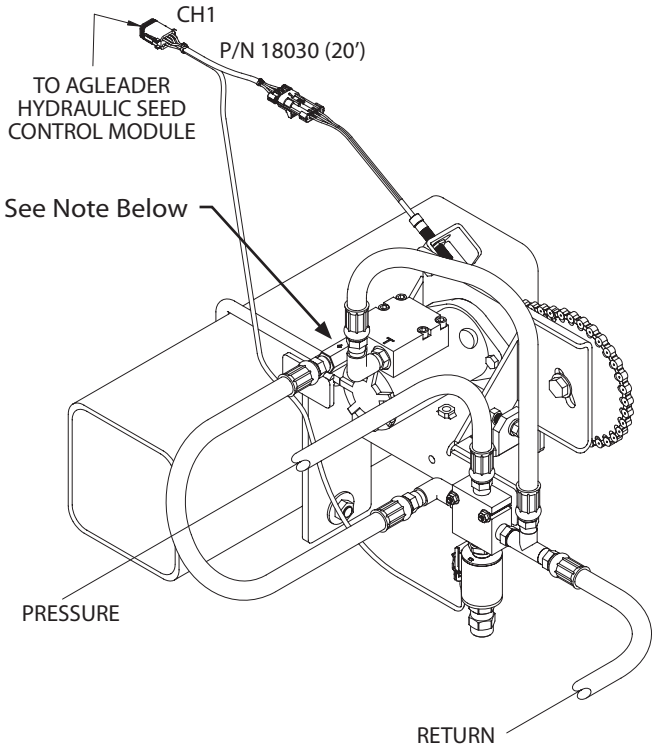
Instructions for Micro-Trak Seed Rate Control Systems

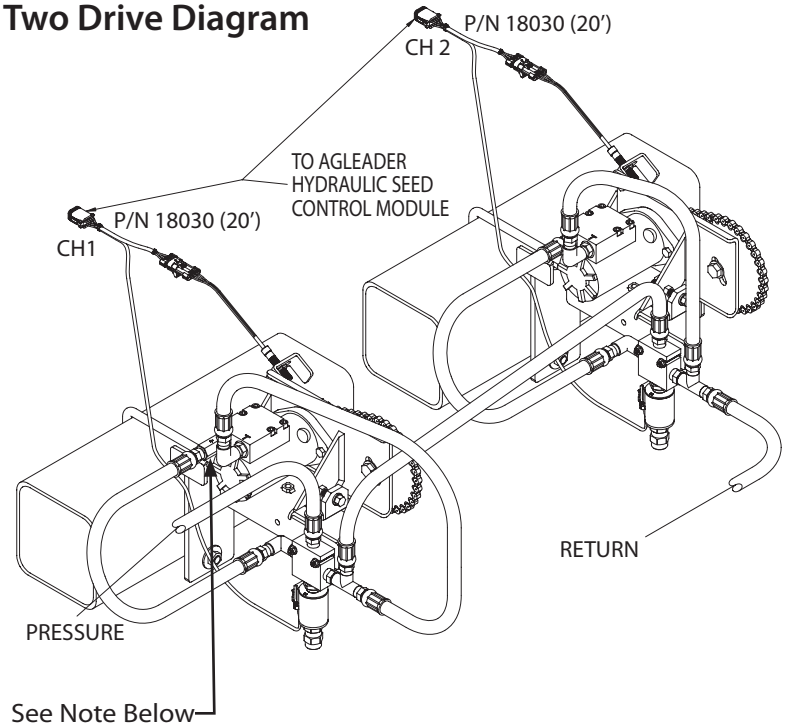
Used with AgLeader INSIGHT, INTEGRA

One, Two and Three Section

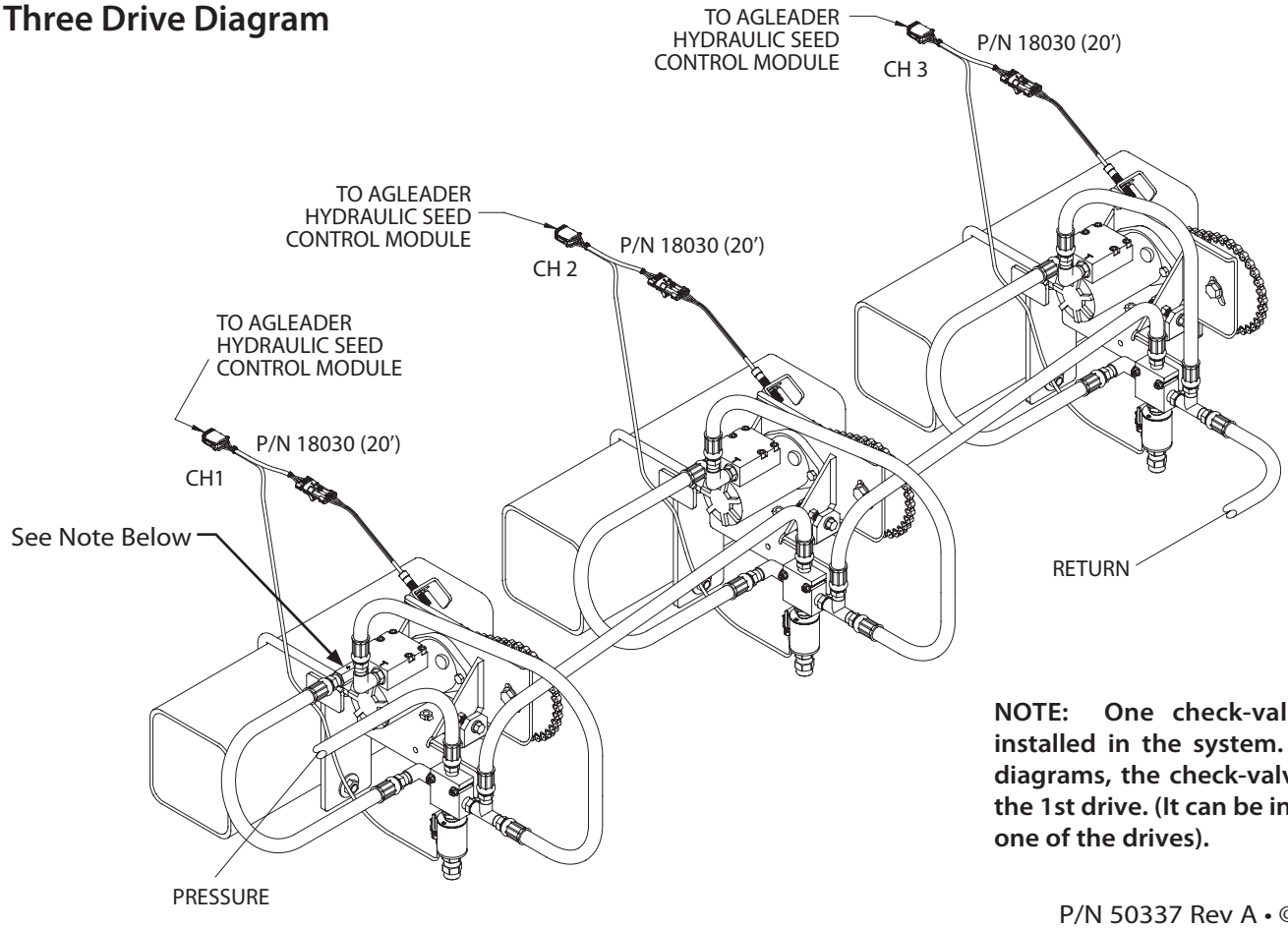
Single Drive Diagram



Two Drive Diagram



Three Drive Diagram



NOTE: One check-valve should be installed in the system. In the above diagrams, the check-valve is shown on the 1st drive. (It can be installed on ANY one of the drives).

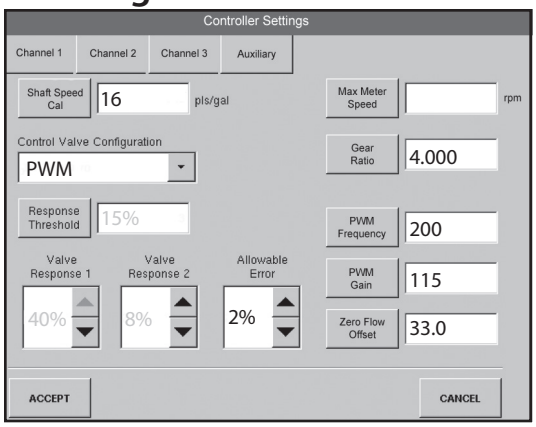
Instructions for Micro-Trak Seed Rate Control Systems

Used with AgLeader INSIGHT, INTEGRA

One, Two and Three Section

Ag Leader INSIGHT, INTEGRA
Hydraulic Seed Control Settings

Ag Leader INSIGHT



Hydraulic Controller Settings - Micro-Trak ProPlant Drive	
Control Valve Configuration	PWM
PWM Frequency	200
PWM Gain	115
Zero Flow Offset	33.0
Gear Ratio	4.000
Pulses/Rev.	16

GLOSSARY OF TERMS (From Ag Leader INSIGHT Manual)

Setting Name	Setting Description
Shaft Speed Cal	Calibration number representing the pulses that equal one revolution of the hydraulic motor. **Enter 16 pls/gal.**
Control Valve Configuration	Setting determines the type of control valve being used for the hydraulic motor. **This must be set to PWM.**
Allowable Error	Determines the percent of error that is allowed prior to the product control system making any flow rate changes.
Max Meter Speed	Setting determines the maximum RPM of the seed meter.
Gear Ratio	Ratio of the revolutions of the hydraulic drive motor to turn the seed meter one revolution. **Typically set to 4.000. (see note below)**
PWM Frequency	The frequency that the PWM control valve is pulsed at. **This must be set at 200.**
PWM Gain	Determines how aggressively the control valve responds when making rate change adjustments. The higher the value the more aggressive the system response is. **A setting of 115 is a good starting value.**
Zero Flow Offset	Represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero Flow Offset valve can cause the product control system to not properly control low rates. **This should be set at 33.0** *NOTE: If set too low, there may be a noticeable delay before motor starts to turn.*

NOTE: The Micro-Trak planter drive has a ratio of 4.0 from the 1st to 2nd stage. If the user drives the third stage with a 1:1 ratio, then the total gear ration would be 4.0. If the third stage is not 1:1, then a different value of ratio needs to be calculated. (See example on following page).

NOTE: For additional glossary terms refer to your Ag Leader INSIGHT System Manual.

The value for Driven or Drive Sprocket refers to the number of teeth on the sprocket.

To calculate Ratio for a single stage chain drive, use the following equation:

(Driven Sprocket ÷ Drive Sprocket)

EXAMPLE: 32 ÷ 16 = 2.000

This means the Drive Sprocket will need to make 2 complete revolutions in order for the Driven Sprocket to make 1 revolution.

To calculate Ratio for a two stage chain drive, use the following equation:

(First Stage Driven Sprocket ÷ First Stage Drive Sprocket) x (Second Stage Driven Sprocket ÷ Second Stage Drive Sprocket)

EXAMPLE: (32÷ 16) x (28 ÷ 16) = 3.500

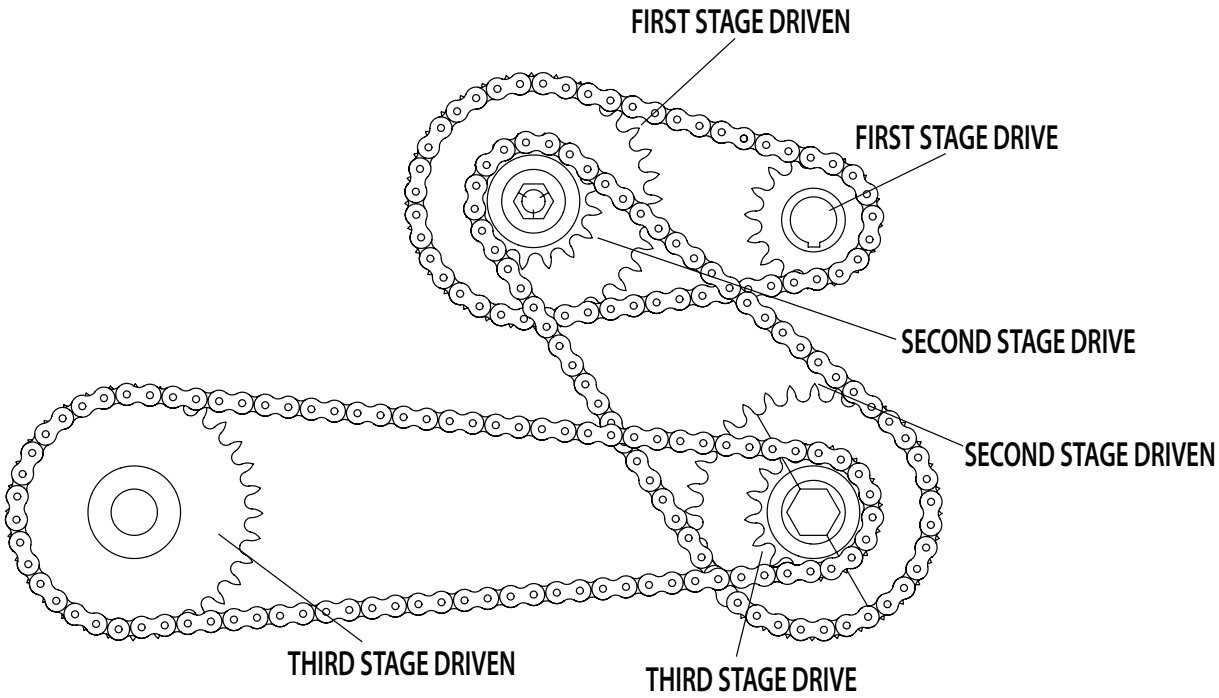
In the above example, the First Stage Drive Sprocket will need to make 3.5 complete revolutions in order for the Second Stage Driven Sprocket to make 1 revolution.

To calculate Ratio for a three stage chain drive; use the following equation:

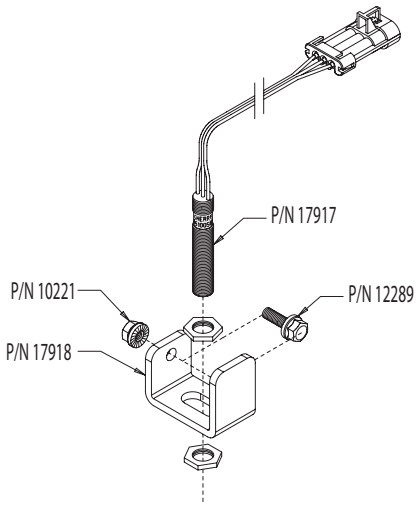
(First Stage Driven Sprocket ÷ First Stage Drive Sprocket) x (Second Stage Driven Sprocket ÷ Second Stage Drive Sprocket) x (Third Stage Driven Sprocket ÷ Third Stage Drive Sprocket)

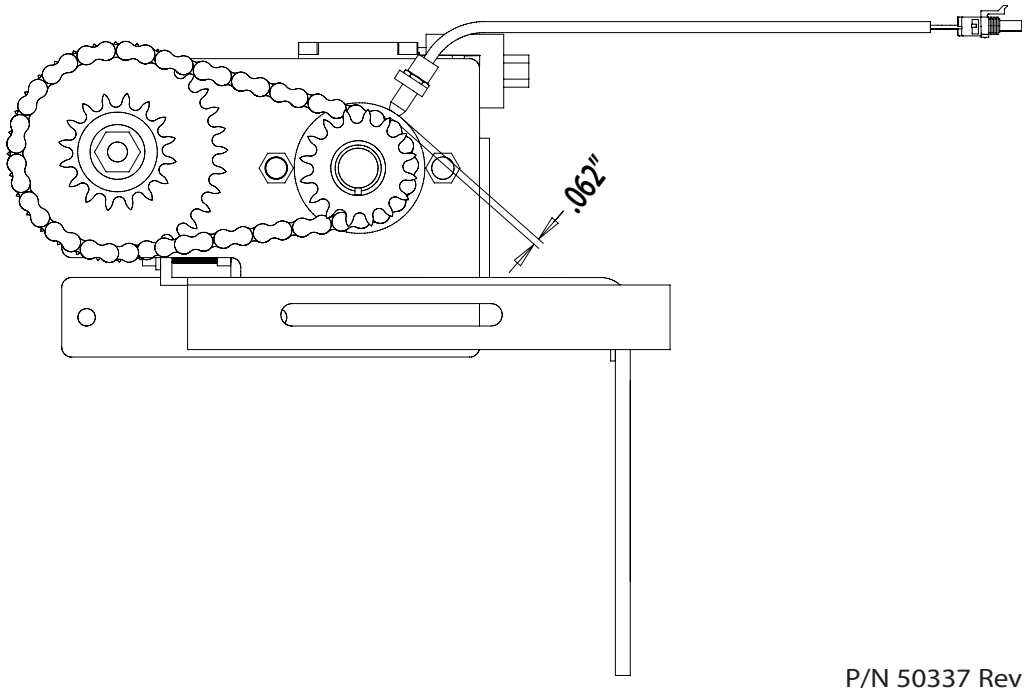
EXAMPLE: (32 ÷ 16) x (28 ÷ 16) x (24 ÷ 18) = 4.666

In the above example, the First Stage Drive Sprocket will need to make 4.666 complete revolutions in order for the Third Stage Driven Sprocket to make 1 revolution.



1. Choose a location between row units for the tool bar mount bracket approximately five inches to the left of a hex shaft hanger bearing to the center of the tool bar mount bracket. Mount the bracket to the tool bar using the supplied 1/2" U-bolt making sure the bracket is square with the tool bar. It is important to mount the drive assembly as close as possible to a hex shaft hanger bearing.
2. Mount the motor bracket assembly to the tool bar bracket using the four 3/8" by 1 1/4" flange bolts. Slide the motor bracket towards the tool bar as far as it will go and tighten the flange bolts.
3. Mount the hydraulic flow control valve to the motor bracket using the two 5/16" by 2 3/4" bolts and 5/16" flange nuts. Be sure the output of the control valve is pointed away from the tool bar.
4. Install the split sprocket on the hex shaft. Align the hex shaft sprocket with the outside idler sprocket and tighten.
5. Cut a piece of chain to 23 1/2" and install on inside motor sprocket and idler sprocket using one of the supplied connector links. Tighten chain by loosening idler sprocket and sliding down and retighten.
6. The length of chain required between the outside idler sprocket and hex shaft sprocket varies by planter manufacturer and model, so you will need to measure to determine the length. Cut to length and install using the supplied connector link.
7. Loosen the four 3/8" flange bolts installed in step 2.
8. Locate the full threaded 1/2" by 3" bolt, 1/2" jam nut and 1/2" flat washer. Install the flat washer on the bolt and insert through the tab on the back of the tool bar bracket, thread the jam nut on and then thread bolt into the motor bracket. Use this bolt to adjust the chain between the idler and the hex shaft and tighten the four 3/8" flange bolts.
9. Install the sensor bracket to the motor bracket near the motor sprocket using one 1/4" by 3/4" bolts and flange nut. Install gear tooth sensor to sensor bracket using the included sensor retaining nuts and adjust so that the sensor is pointed directly at the center of the motor shaft and 1/16" away from the tip of the sprocket teeth.





Calculate your Hydraulic Oil Needs

1. What is your Maximum Planting Speed in miles per hour?
   MPS = _____
2. What is the closest Desired Seed Spacing in inches?
   DSS = _____
3. How many seeds are dispensed per revolution of your Seed Meter Disc?
   SMD = _____
4. What is the Ratio of hydraulic motor revolutions to seed meter revolutions?
   Ratio = _____ to 1
5. What is the Displacement in Cubic Inches of the hydraulic motor on your planter drive assembly?
   CID = _____

   EXAMPLE:
   MPS = 5
   DSS = 6.5
   SMD = 30
   Ratio = 5.333
   CID = 4.9

- (MPS x 5280) x 12) = Inches traveled per hour
  ((5 x 5280) x 12 = 316800 inches traveled per hour
- Inches traveled per hour ÷ DSS = Seeds per hour
  316800 ÷ 6.5 = 48738.46 seeds per hour
- Seeds per hour ÷ SMD = Seed meter revolutions per hour
  48738.46 ÷ 30 = 1624.6 seed meter revolutions per hour
- Seed meter revolutions per hour ÷ 60 = Seed meter revolutions per minute
  1624.6 ÷ 60 = 27 seed meter revolutions per minute
- Seed meter revolutions per minute x Ratio = Hydraulic motor revolutions per minute
  27 x 5.333 = 144.4 hydraulic motor revolutions per minute

  NOTE: the minimum recommended motor RPM is 30.
- Hydraulic motor revolutions per minute x CID = Cubic inches of hydraulic oil per minute
  144.4 x 4.9 = 707.6 cubic inches of hydraulic oil per minute
- Cubic inches of hydraulic oil per minute ÷ 231 = Gallons of hydraulic oil per minute
  707.6 ÷ 231 = 3 gallons of hydraulic oil per minute

Connecting the Planter Drive Assembly to the Hydraulic System

The hydraulic fitting size is used for both the hydraulic motor and PWM valve is #8 O-ring port.

The recommended hydraulic hose size is 1/2" for both the pressure and return hoses.

Be sure to route hoses away from pinch points and leave enough excess length to accommodate folding and unfolding.

Whether you have an open or closed hydraulic system be sure to turn the oil flow down to about 20% more than calculated because the excess oil flow means excess heat.

See how to calculate your hydraulic oil needs at the top of this page.