

# **FT Fertilizer and Lime Spreader**

**SERIAL #** \_\_\_\_\_

**WORK ORDER #** \_\_\_\_\_

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## **Table of Contents**

Chandler Equipment Co. Personnel.....Page 1

Warranty Information.....Page 2

### **Section 1 FT – Truck Spreader Installation**

Chassis Length Page 1-1

Tie Down Locations Page 1-2

Hydraulic Pump Installation Page 1-3

Hydraulic Requirements Page 1-4

Hydraulic Oil Requirements Page 1-5

Setting Hydraulic Pressure Page 1-6

Spinner Flow Control Valve Page 1-7

Spinner Flow Control Valve Parts List Page 1-8

Hydraulic Filter Page 1-9

### **Section 2 FT – Truck Spreader Spinner Assembly**

Spinner Assembly Page 2-1

Spinner Assembly Parts List Page 2-2

Setting Spinner Speed Page 2-3

Flow Divider Assembly	Page 2-4
Setting Material Divider	Page 2-5
Hydraulic Spinner Motor M-30	Page 2-6
Parts List M-30	Page 2-7
Hydraulic Spinner Motor M-25	Page 2-8
Parts List M-25	Page 2-9
Maintenance	Page 2-10
Troubleshooting	Page 2-11

### **Section 3 – FT Truck Spreader Press Wheel Drive**

Basic Operations	Page 3-1
Hydraulic System	Page 3-2
Hydraulic Pump Exploded View	Page 3-3
Hydraulic Pump Parts List	Page 3-4
MV 4 Hydraulic Directional Valve	Page 3-5
MV 4 Parts List	Page 3-6
Hydraulic Cylinder	Page 3-7
Conveyor Drive Assembly	Page 3-8

Conveyor Assembly Parts List	Page 3-9
Press Wheel Drive Assembly	Page 3-10
Stationary Unload Motor	Page 3-11
Stationary Unload Valve	Page 3-12
Maintenance	Page 3-13
Troubleshooting	Page 3-14

## **Section 4 – FT Truck Spreader Simplified Hydraulic System**

Basic Operations	Page 4-1, 4-2
Selecting Rate Per Acre	Page 4-3
Rate Chart Work Sheet	Page 4-4
Hydraulic System	Page 4-5
Hydraulic Pump Exploded View	Page 4-6
Hydraulic Pump Parts List	Page 4-7
Hydraulic Valves	Page 4-8
33-66 Split Valve	Page 4-9

WJL Relief Valve	Page 4-10
Conveyor Drive Assembly	Page 4-11
Conveyor Assembly Parts List	Page 4-12
Conveyor Gear Case (single)	Page 4-13
Conveyor Gear Case (twin)	Page 4-14
Hydraulic Motor Exploded View	Page 4-15

## **Section 5 – FT Truck Spreader Control System**

Basic Operations	Page 5-1
Constant Numbers	Page 5-2
Hydraulic Pump Exploded View	Page 5-3
Hydraulic Pump Parts List	Page 5-4
Hydraulic System	Page 5-5

Conveyor Drive Assembly	Page 5-6
Conveyor Assembly Parts List	Page 5-7
Conveyor Gear Case (single)	Page 5-8
Conveyor Gear Case (twin)	Page 5-9
Conveyor Motor	Page 5-10
Terra Shift Option	Page 5-11
Terra Shift Pump Exploded View	Page 5-12
Terra Shift Pump Parts List	Page 5-13

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## **Chandler Equipment Company Personnel**

<b>Bill Chandler</b>	<b>Chief Executive Officer Advertising &amp; Marketing Dealer / Distributor Arrangements</b>
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<b>Brannon Chandler</b>	<b>General Manager Production &amp; Scheduling Warranty, Sales and Service</b>
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<b>Andrea Thompson</b>	<b>Administrative Assistant</b>
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<b>Lisa Johnson</b>	<b>Accounts Receivable Collections</b>
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<b>Michael Sosebee</b>	<b>Sales Manager</b>
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<b>Gene Dye</b>	<b>Outside Sales Mid-South Regional Sales Manager</b>
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<b>Dan McCorvey</b>	<b>Outside Sales Southeast Regional Sales Manager</b>
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<b>Richard Wray</b>	<b>Outside Sales Western Regional Sales Manager</b>
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<b>Matt Farmer</b>	<b>Inside Sales</b>
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<b>Michael Anderson</b>	<b>Precision Ag Products Equipment Service</b>
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<b>Wes Hobgood</b>	<b>Parts &amp; Service</b>
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<b>Kimbrow Grizzle</b>	<b>Parts &amp; Service</b>
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## **Warranty Policy**

### **A) Standard Warranty:**

Chandler Equipment Company warrants that equipment manufactured by Chandler Equipment Company, under normal conditions of use and service, shall be free from material defects due to faulty manufacturing for the period listed below.

- a. Poultry Litter Spreaders and Conveyors – Six (6) Months
- b. Fertilizer and Lime Pull Type Spreader – Six (6) Months
- c. Fertilizer Tenders (Trailer or Truck Mounted) – Six (6) Months
- d. Fertilizer and Lime Chassis Mounted Spreaders – One (1) Year

**This warranty period is from the date of delivery to the original owner.**

(Warranty period is on equipment built after July 1, 2012)

### **B) Warranty Approval:**

- a. Any and All warranty claims must be approved in writing by Chandler Equipment Company prior to any work being done.
- b. **ANY WORK DONE WITHOUT PRIOR WRITTEN APPROVAL WILL NOT BE COVERED UNDER WARRANTY AND THE CUSTOMER / DEALER WILL BE RESPONSIBLE FOR ALL COST.**

### **C) Warranty Claim Forms: (Dealer Only)**

- a. Warranty claim form / forms will be supplied to Dealer upon request.
- b. Warranty claim forms are available in 2 part paper form or in an electronic format.
- c. All warranty claims must include serial number, date of purchase, customer name and date of sale to original owner. (See attached warranty claim instructions for guidelines on filling out warranty claim form)
- d. Improperly filed or misleading information on warranty claims shall result in warranty claim being denied.
- e. **ALL WARRANTY CLAIMS MUST BE FAXED TO (770) 535-1265.**

### **D) Labor and Repair Cost: (Dealers Only)**

- a. Labor for any repairs must be approved prior to any work being done.
- b. Labor rate (per hour) will be determined by Chandler Equipment Company, See Chandler Labor Rate List.
- c. Also Chandler Equipment Company retains the right to adjust any and all warranty claims.

### **E) Dealer Responsibility:**

- a. Dealer shall be first line in all communications with the customer.
- b. Dealer shall also maintain good and open communications between the customer and Chandler Equipment in order to resolve warranty issues.

- c. Dealer shall be responsible for informing the customer of operating procedures, safety precautions and normal maintenance to help avoid any warranty issues.
- d. Promptly inform Chandler Equipment of any possible warranty issues.
- e. Dealer is responsible for making every effort to resolve warranty issues in a timely manner.
- f. Notify Chandler Equipment on any possible non-warranty issues, such as any modification made to equipment.

#### **F) Original Chandler Genuine Parts:**

- a. Chandler Equipment Company will only warranty equipment that uses Chandler Genuine Parts. Any equipment that is sold by a dealer with parts other than Original Chandler Genuine parts shall Void Any and All warranties

#### **G) Replacement Parts Shipping:**

- a. Chandler Equipment Company shall send Chandler Genuine Parts for warranty replacement. Chandler Equipment shall NOT warranty any part or parts replaced by the Customer/Dealer that are not Chandler Genuine Parts.
- b. Cost of any part or parts that are replaced by the Customer / Dealer that are not Chandler Genuine Parts shall be the sole responsibility of the Customer / Dealer.  
All replacement parts covered under warranty will be shipped via regular UPS. The cost of any parts shipped **UPS-Next Day Air** will be the sole responsibility of the Customer/Dealer.

#### **H) Parts Returns:**

- a. All parts replaced under warranty will be returned to Chandler Equipment Company within 20 days of replacement for warranty evaluation. All parts returned for warranty evaluation must be in its original state free of modifications. Any modifications will result in the warranty claim being denied and the part or parts returned back to the customer/dealer.
- b. Any hydraulic components returned must be assembled (in original state) and with the ports plugged to prevent any contamination. Any hydraulic component that has been disassembled will VOID the warranty claim and the part or parts returned back to the customer/dealer.
- c. All Returned Parts for warranty evaluation must be clearly tagged with the following information.
  - I. RMA number
  - II. Customer or Dealer Name, address, phone number and contact person
  - III. Equipment serial number
  - IV. Complete description of problem

#### **I) Misuse or Improper Installation:**

- a. Any equipment, parts, or components that have been damaged by improper installation or misuse will **NOT** be covered under this warranty.
- b. Chandler Equipment accepts no responsibility or liability of any kind due to improper installation of equipment or parts on any product manufactured by Chandler Equipment Company. This includes, but is not limited to, any damages to personal property, crops, or any other equipment.

#### **J) Incomplete Equipment and Dealer Add-Ons:**

- a. Chandler Equipment does not warrant any equipment sold **INCOMPLETE**. This includes (but is not limited to) axles, tires, any hydraulic components or paint.
- b. Any Non Genuine Chandler Parts that are installed as aftermarket add-ons by anyone not approved in writing by Chandler Equipment Company shall **VOID ALL WARRANTIES**.
- c. Chandler Equipment Company accepts no responsibility, nor shall warrant any equipment or any component that is damaged due to any type Control System not sold and installed by Chandler Equipment Company.

**K) Items Not Covered Under this Warranty:**

- a. Any equipment that has been modified from its original state.
- b. Any equipment used for any other purpose than what it was originally designed for.
- c. Any travel time, cleaning of equipment, unloading of material, or towing.
- d. Any cost of materials that have been applied improperly due to the lack of customer / dealer not following proper operating instructions.

## **Raven Industries**

1 year standard warranty covers all defects in workmanship or materials on your Raven applied products under normal use.

All Raven Industries parts must be returned clean and free of any fluids.

It is recommended that the defective parts be returned to Chandler Spreaders, Inc. in the packaging that the replacements parts came in.

**Warranty claims must be submitted to Chandler Equipment Company no later than 10-days after the repair date. The dealer must add the following information when filing a warranty claim on a Raven component.**

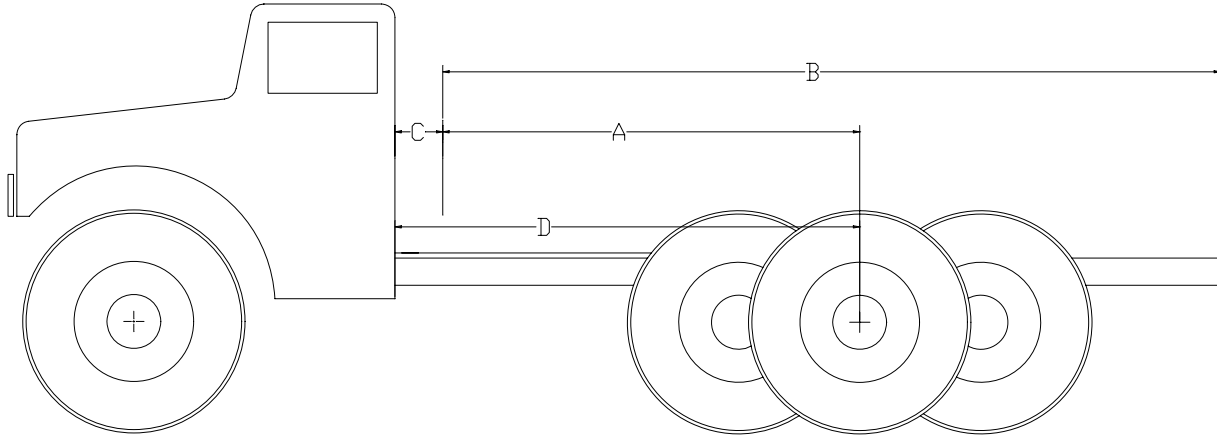
- Spreader serial number.
- Part number and serial number of the defective part.
- Description of failure.
- Procedure to diagnose failure.

All Raven Industries parts returned to Chandler Spreaders, Inc. for warranty reimbursement will be submitted to Raven Industries for diagnostic testing. If the defective part is deemed a “No Failure” by Raven Industries the part will be returned to the customer, and the customer will be charged a \$108.00 diagnostic fee and any freight charges associated with the defective part.

**All defective parts must be returned to Chandler Spreaders, Inc. within 15 days of failure. Customer will be invoiced for replacement parts until warranty credit is issued by Raven Industries to Chandler Spreaders, Inc. Customer will then be credited for the replacement parts at that time. If any part/parts are found to be defective by misuse or improper installation, customer will be responsible for all charges for replacement parts and any corresponding freight charges.**

# Section 1 - Installation

## 1) Chassis Length



**A= Distance from front of spreader to center of axle**

**B= Distance from front of spreader to end of frame rail**

**C= Distance from back of cab to front of spreader**

**D= Distance from back of cab to center of axle**

**(Center of axles on tandem axle truck)**

**E= Distance from center of axle/axle to end of frame rail**

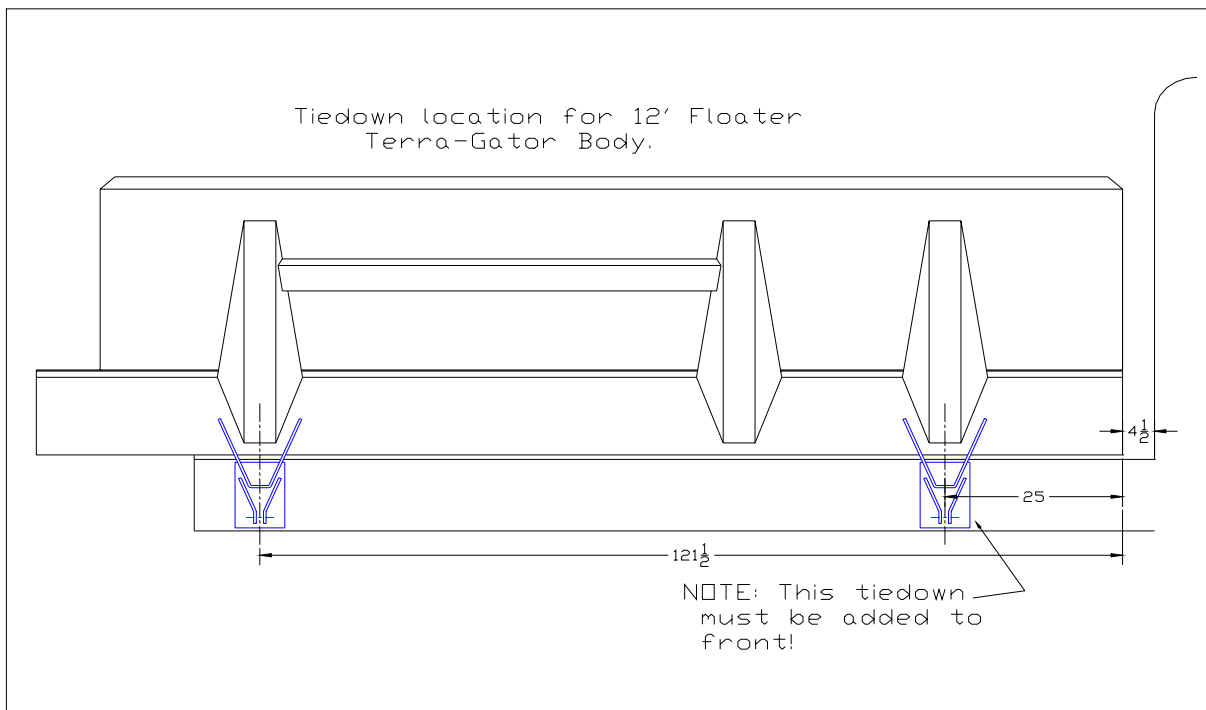
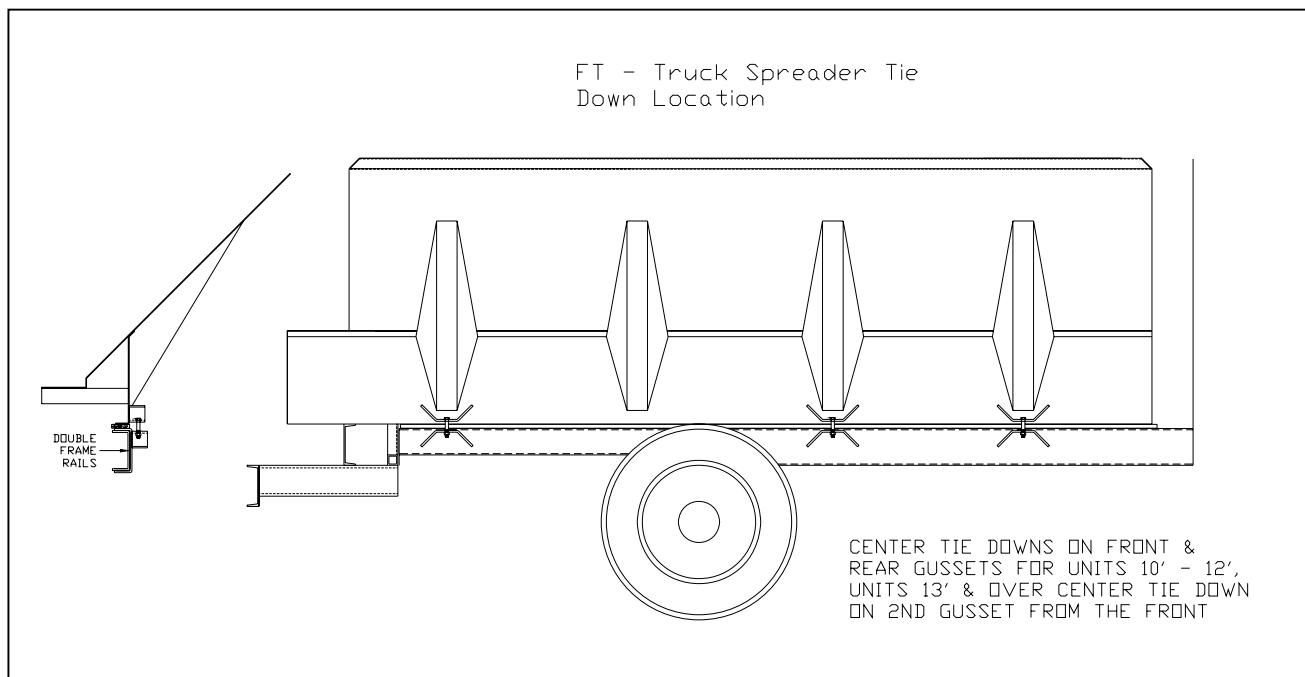
### Single Axle Trucks

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
10'	66"	108"	6"	72"	42"
11'	78"	120"	6"	84"	42"
12'	88"	132"	6"	94"	44"
13'	96"	144"	6"	102"	48"

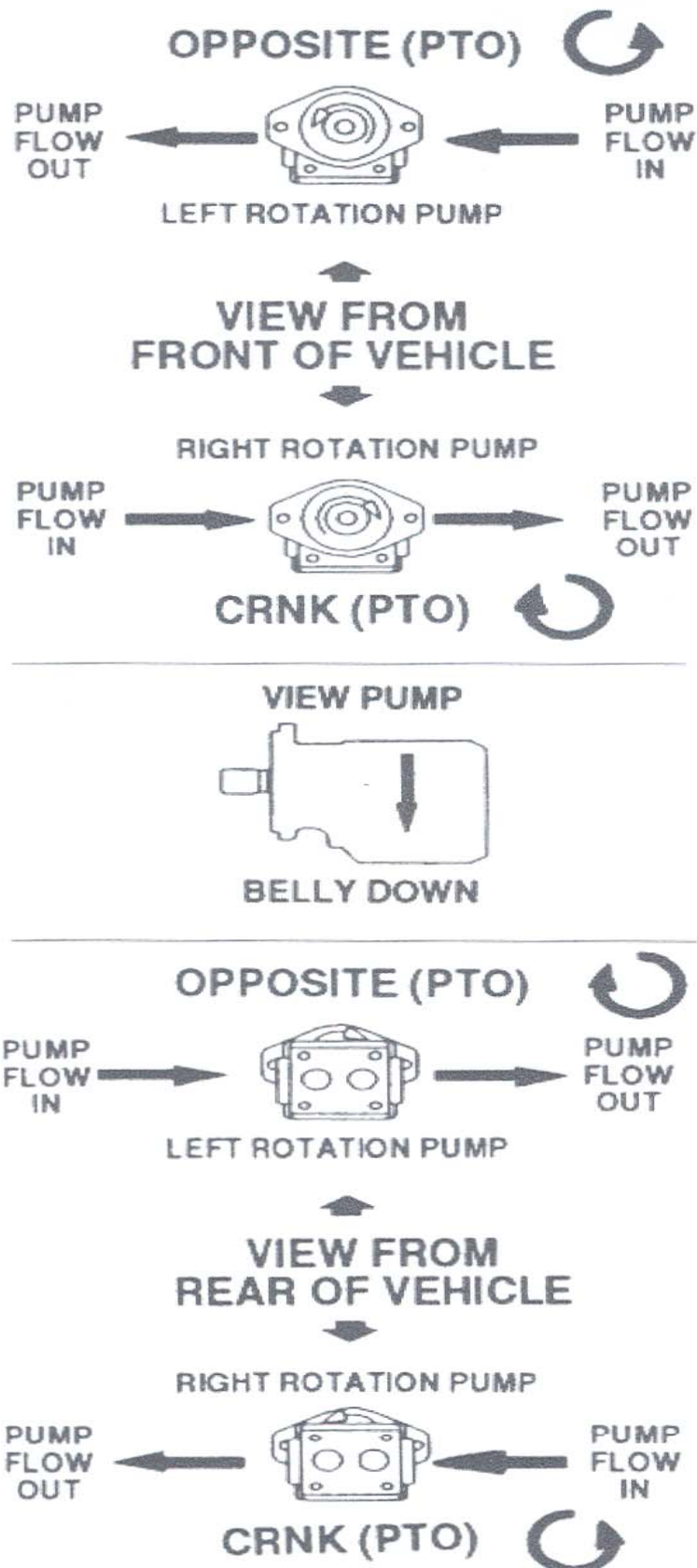
### Tandem Axle Truck

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
14'	102"	156"	12"	114"	54"
15'	108"	168"	12"	120"	60"
16'	114"	180"	12"	126"	66"

## 2) Tie Location



### 3) Hydraulic Pump Installation



## **Hydraulic Drive System Requirements**

### **1) The Chandler FT – Press Wheel Drive System**

Requires a single pump, pumping 16 – 18 GPM with a capability producing of 2200 PSI. This spread comes standard with a Commercial P-20-2 pump. Use the following chart below to match proper Pump and PTO combination.

<b><u>Type of Engine</u></b>	<b><u>Truck RPM</u></b>	<b><u>PTO %</u></b>
Diesel	1200 – 1500	60 – 75
Gas	1800 – 2000	55 – 65

### **2) The Chandler FT – Simplified Hydraulic Drive System**

Requires a Tandem pump, pumping 16 – 18 GPM from each section with a capability of producing of 2200 PSI. This spread comes standard with a Commercial P-20-1.5 x 1.5 pump. Use the following chart below to match proper Pump and PTO combination.

<b><u>Type of Engine</u></b>	<b><u>Truck RPM</u></b>	<b><u>PTO %</u></b>
Diesel	1200 – 1500	60 – 75
Gas	1800 – 2000	55 – 65

### **3) The Chandler FT – Control System**

Requires a Tandem pump, pumping 25 GPM for the conveyor and 18 GPM for the spinners from each section with a capability of producing of 2200 PSI. This spread comes standard with a Commercial P-20-2 x 1.5 pump. Use the following chart below to match proper Pump and PTO combination.

<b><u>Type of Engine</u></b>	<b><u>Truck RPM</u></b>	<b><u>PTO %</u></b>
Diesel	1200 – 1500	70 – 85
Gas	1800 – 2000	60 – 70

**Note:** If pump and PTO combination are not available contact your  
Local Dealer or Chandler Equipment Service Department

## **Hydraulic Oil Requirements**

- 1) Oil Type – 46 Series (10 to 15 W)

**Note:** Use hydraulic oil not motor oil

## **Fertilizer and Lime Spreader Pressure Settings for Spinners**

### **1) Checking Pressure**

- A) Run unit empty at ordinary operating speed (engine RPM's) for approximately 10 minutes. This allows oil to reach operating temperatures.
- B) Shut truck off and install pressure gauge into "CF" port on flow control valve. (Refer to hydraulic flow control valve drawing – page?)
- C) Set flow control valve on 10.
- D) Restart engine
- E) With PTO engaged and clutch engaged, increase truck engine RPM's to ordinary operating speed. (1500-2000 RPM)
- F) Slowly release clutch while watching pressure gauge.
- G) Pressure gauge should read 2000 PSI. If not, adjust pressure as outlined below.

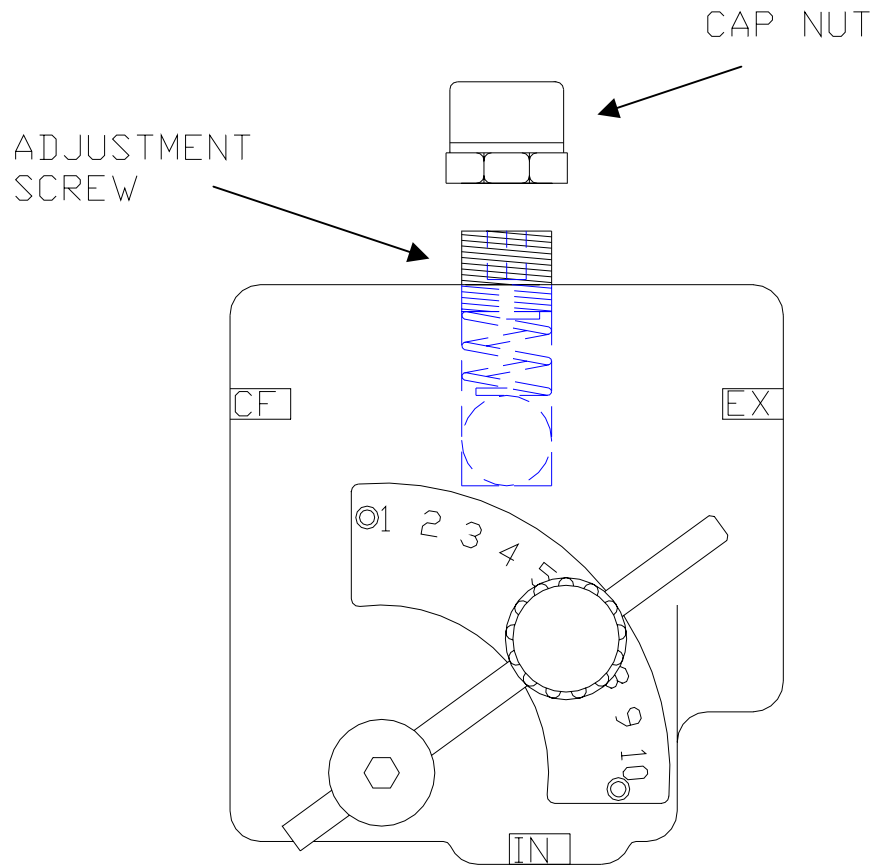
**Caution: When checking pressure, never allow truck to run over a few seconds with pumping running and gauge installed in line. Once pressure reading is taken engage clutch immediately.**

### **2) Adjusting Hydraulic Flow Control Valve Pressure:**

- A) Remove cap nut on flow control valve (located on top of valve)
- B) Using a 5/16" Allen wrench turn adjustment screw "IN" to increase pressure or "OUT" to decrease pressure.
- C) Turn adjustable screw one half turn, and then check pressure setting as outlined above.
- D) Continue this procedure until pressure gauge reads 2000 PSI.

**NOTE: If unable to obtain 2000 PSI contact your local dealer or Chandler Equipment Service Department at 1-800-243-3319**

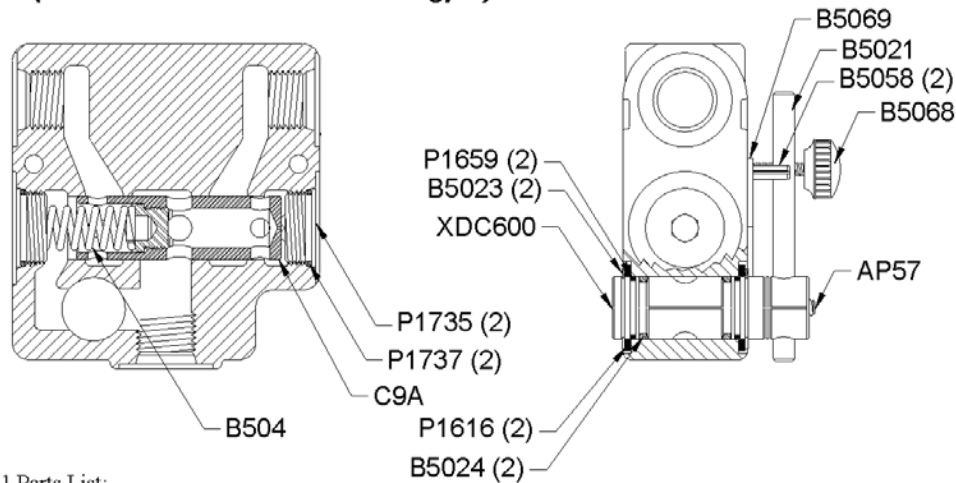
## FCR – 51 - .75 Flow Control Valve



**Note: Never bottom out adjustment screw this could damage hydraulic system.**



**FC51 (Manual Flow Control and 0-30 gpm):**



**FC51 Parts List:**

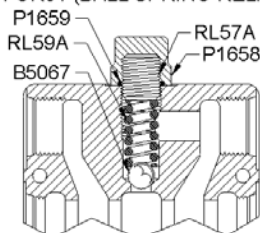
AP57 1/4-20 x 1/4 Set Screw  
 B5021 Handle  
 B5023 Snap Ring  
 B5024 O-ring 2-116  
 B504 Spring  
 B5058 3/16 x 7/8 Spring Pin  
 B5068 10-32 x 3/4 Thumb Screw

B5069 FC51 Dial Plate  
 C9A Spool (Standard)  
 C9A-093 Spool (.093 Dash Pot)  
 C9A-2P Spool (2 Port)  
 C9AS Spool (.020 Dash Pot)  
 P1616 Nylon Seal Retainer  
 P1659 O-ring 2-019 90D

P1735 #12 SAE Plug  
 P1737 O-ring 2-021 90D  
 P1740 Identification Tag  
 XDC598 Spool (30 gpm)

**FC Options:**

**FCR51 (BALL SPRING RELIEF)**

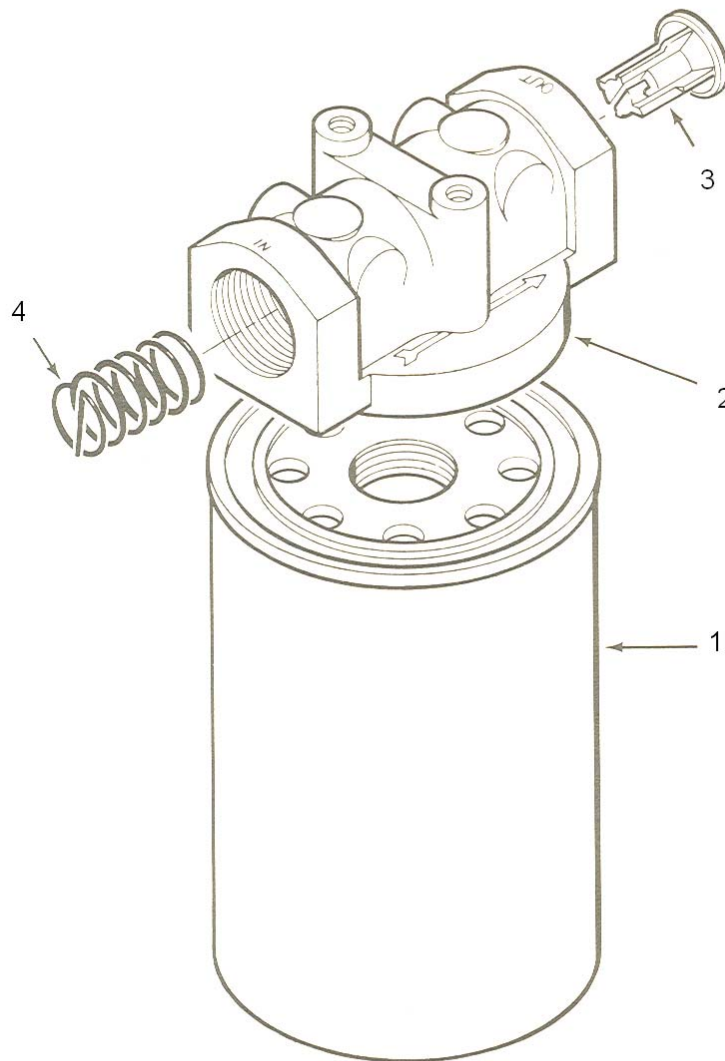


**FCR51 Parts List:**

B5067 1/2 Steel Ball  
 P1658 Cap Nut  
 P1659 O-ring 2-019 90D  
 RL57A Adjusting Screw  
 RL59A Spring

Note: Casting not sold separately.  
 Replace with new valve.

## Hydraulic Filter



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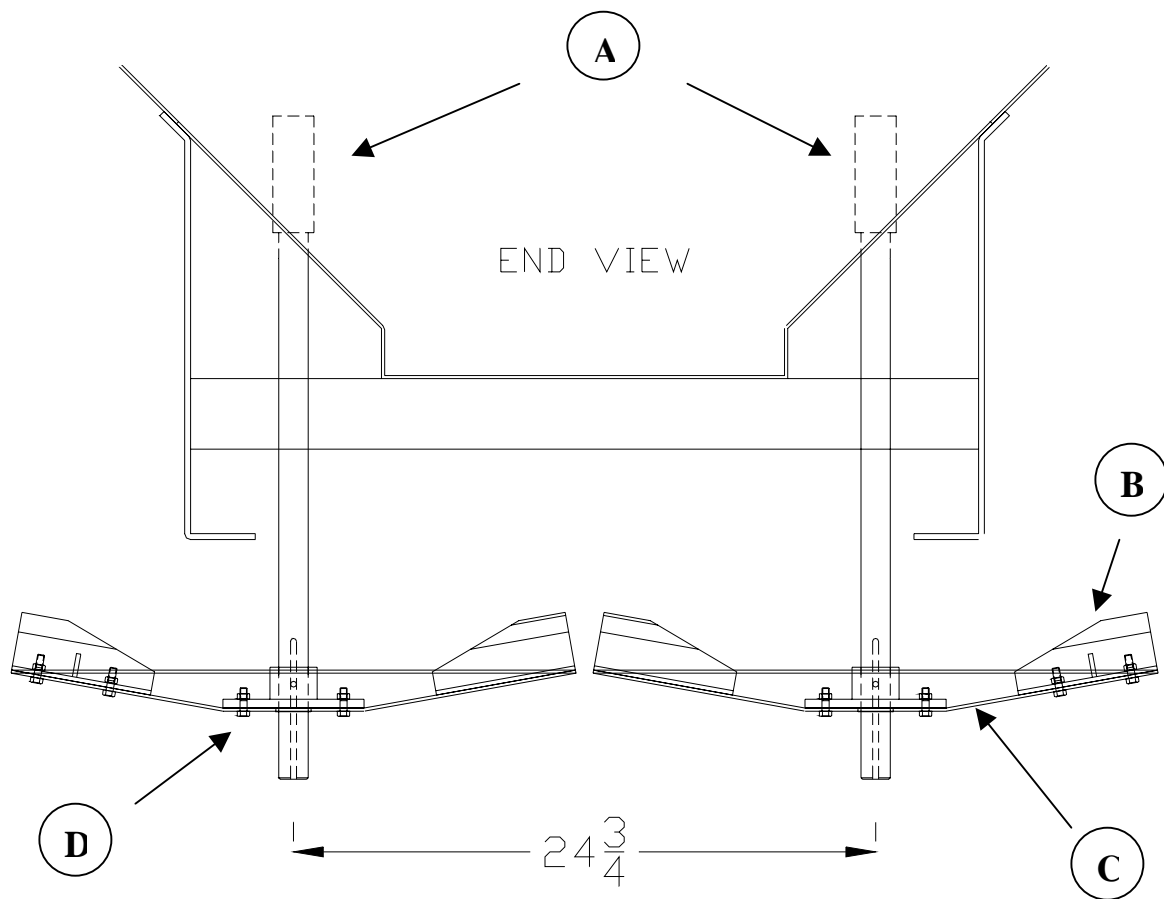
**1) Filter Element 400-1-319**

**2) Filter Head 400-1-318 (when ordering this part # items 3,4 are included)**

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# Section 2

## Spinner Assembly



## **Spinner Assembly Parts List**

- A) Spinner Shaft – 2 each
  - a. Mild Steel Shaft and Sleeve – 300-1-210
  - b. 304 Stainless Steel Shaft & Sleeve – 300-1-211
  
- B) Spinner Blade – 6 each
  - a. Mild Steel – 300-FL-107
  - b. Heat Treated – 300-FL-108
  - c. 304 Stainless Steel – 300-FL-109
  
- C) Spinner Hub – 2 each
  - a. Mild Steel – 300-FL-112
  - b. 304 Stainless Steel – 300-FL-112A
  
- D) Spinner Disc – 2 each
  - a. Mild Steel – 300-FL-101
  - b. 304 Stainless Steel – 300-FL-102
  
- E) Complete Spinner Disc Assembly (Complete w/ Blades and Hub)
  - a. Mild Steel – 300FL-105
  - b. 304 Stainless Steel – 300-FL-106

## **Basic Set Up**

### **1) Setting Spinner Speed**

#### **A) Spinner Speed:**

A standard Chandler Equipment fertilizer and lime spreader is set up for a 50 ft. spread pattern for fertilizer and a 30 ft. spread pattern for lime with a spinner speed of 650 RPM.

Use the following procedure to set spinners to proper speed

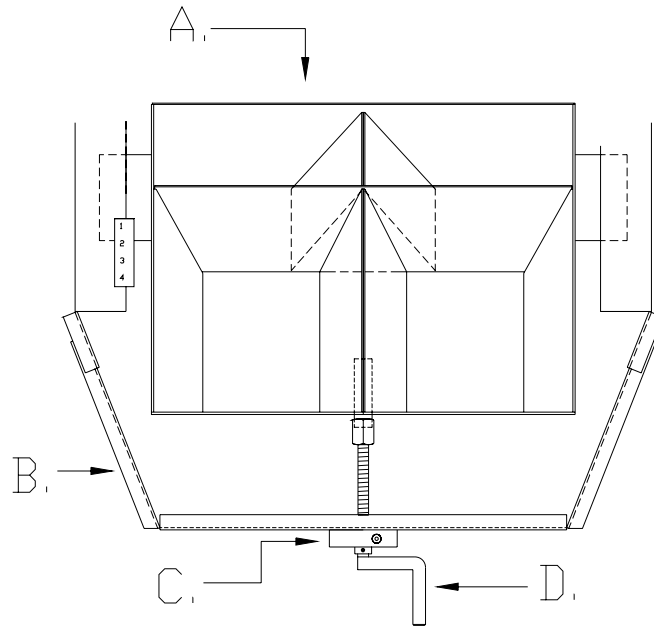
- a. Start engine and engage PTO (Power Take Off)  
(Before starting engine make sure that there is no material or obstructions on spinners)
- b. Set flow control valve to 6  
(Flow control valve is located at the front of the spreader)
- c. Take a hand tach reading of the spinners speed.  
(Spinners shafts are center drilled underneath the spinners to accept a hand tach)
- d. Increase engine speed to 1500-200 RPMs.
- e. Take another hand tach reading.
- f. Adjust flow control valve until spinners are set at 650 RPMs.

**Record Valve Setting \_\_\_\_\_**

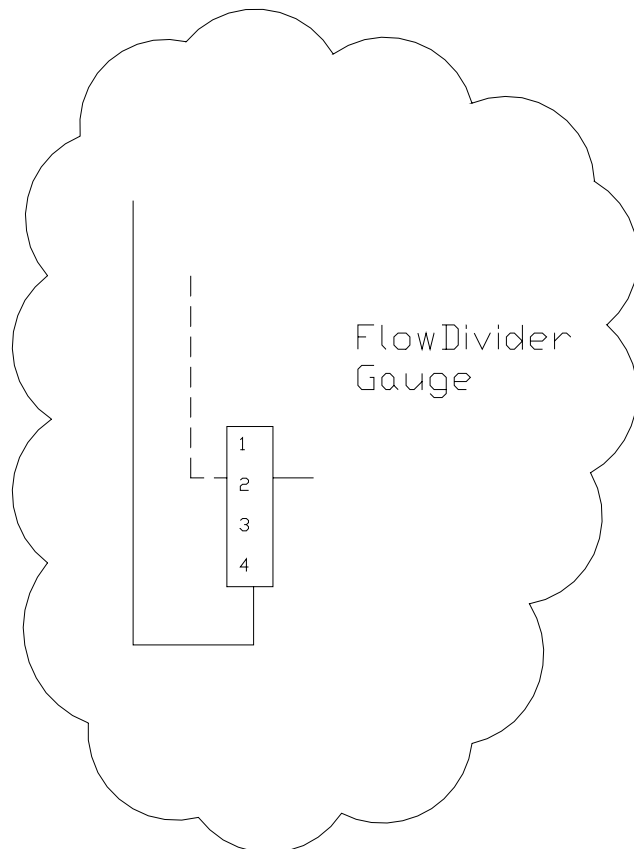
**Caution:** spinner speed is one of the most important factors in achieving a proper spread pattern and **must** be set properly and checked regularly.

**Notes:** \_\_\_\_\_  
\_\_\_\_\_

## Flow Divider Assembly



- A) **Flow Divider**
  - a. 16" Chain - 300-FT-010-16
  - b. 18" Chain - 300-FT-010-18
  - c. 20" Chain - 300-FT-010-20
  - d. 24" Chain - 300-FT-010-24
- B) **Flow Divider Bar**  
300-FT-011
- C) **Bearing – UCFL-204-10**
- D) **Adjustment Rod**  
300-FT-012
- E) **Flow Divider Gauge**  
300-FT-019



## 2) Setting Material Divider

Material Divider settings are very important to the accuracy of the spread pattern. Improper divider settings will cause light or heavy streaks in the field. Use the following steps to set material divider.

- a. Material Divider has an adjustment rod at the rear of the divider. Moving the divider “IN” or “OUT” will change the spread pattern.
- b. Moving the Material Divider “OUT” will cause the spread pattern to be heavy on the outside of the spread swath.
- c. Moving the Material Divider “IN” will cause the spread pattern to be heavy in the middle of the spread swath.
- d. Material Divider Settings:

<u>Material</u>	<u>Setting</u>	<u>Pattern</u>
Lime	1 ½”	30’
Blended Fertilizer	2 ½”	50’
Ammonia Nitrate	3 ¼”	50’
Urea	3 ¾”	50’

**These are recommended settings and will vary according to material weight.**

**Chandler Equipment Co. recommends each spreader to be tested, using a pan test kit, every season to insure proper spread pattern.**

**Notes:**

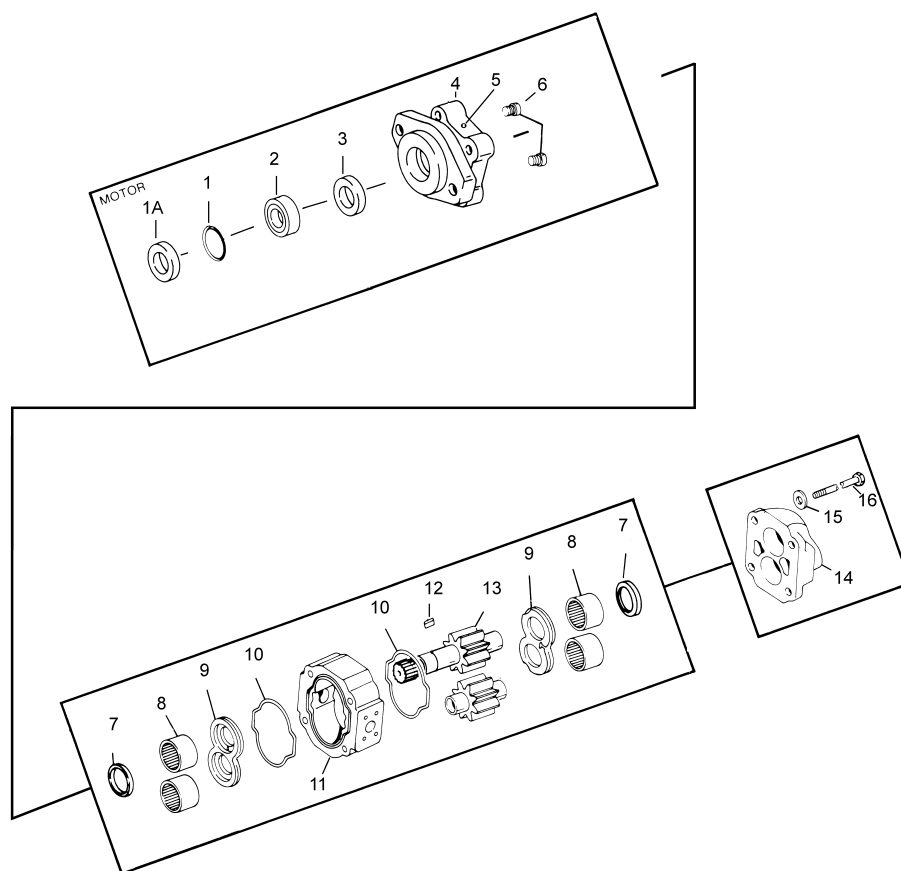
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# 3000/5000 SERIES

EXPLODED VIEW FOR M3000A886ADHE10-32(CHA)



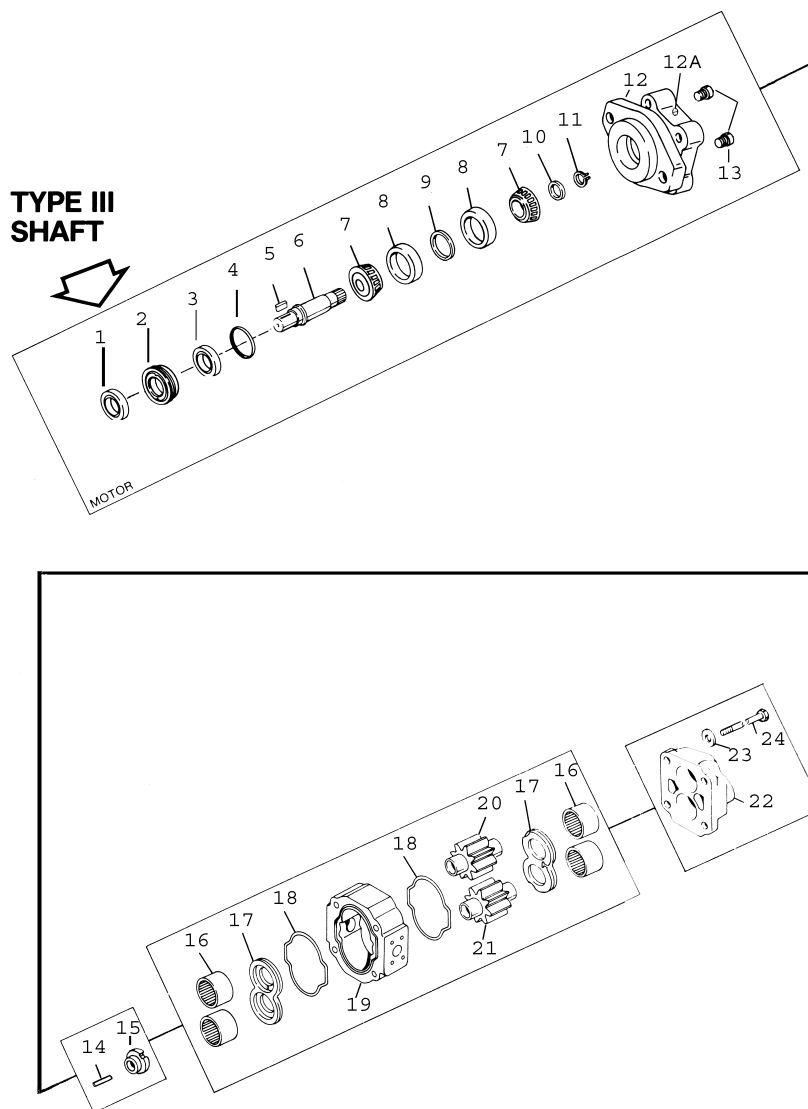
MODEL NUMBER	PARTS ORDERING
DESCRIPTION	NUMBERS M3000A886ADHE10-32(CHA)
	MOTOR TYPE I SHAFT

Item Number On Exploded View	Description	Order This Part Number	Quantity Per Unit
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1A	GREASE SEAL	226-00538	1
1	SNAP RING	W023-206	1
2	BEARING SPACER	400-00682	1
3	MOTOR SHAFT SEAL	W62-49-9	1
4	2-BOLT-B SHAFT END COVER (SEC)	FA-0574-4	1
5	PIPE PLUG 1/4" NPT FOR (SEC)	W0-17	1
6	CHECK VALVE ASSEMBLY	L-0280-K	2
7	RING SEAL	KA-0558-1XS	2
8	ROLLER BEARING	X-0921	4
9	THRUST PLATE	ZZ-0947-TC	2
10	GEAR HOUSING GASKET SEAL	TA-2995-242	2
11	GEAR HOUSING 1"	QZ-0577-10-2	1
12	SHAFT KEY	W09-02	1
13	GEAR SET 1-1/2"L X 1" KEYED	DC-0024L-3-10	1
14	PORT END COVER (PEC)	WZ-0592	1
15	WASHER 5/8"	W033-2	4
16	HEX HEAD BOLT 5/8-11 X 4-1/2"	W1-14	4

# 2500 SERIES

EXPLODED VIEW FOR M2500A(786SPL)ADDQ15-62



MODEL NUMBER	PARTS ORDERING
DESCRIPTION	NUMBERS M2500A(786SPL)ADDQ15-62
	MOTOR TYPE III SHAFT

Item Number On Exploded View	Description	Order This Part Number	Quantity Per Unit
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1	SPECIAL SHAFT SEAL	280-1774-935	1
2	SEAL RETAINER	GZ-0961-1	1
3	MOTOR SHAFT SEAL	W62-49-1	1
4	O"RING	K-2995-47	1
5	SHAFT KEY	W09-44	1
6	SHAFT 1/4" DIA. KEYED	TB-0024-1	1
7 & 8	TAPER BEARING	W015-7	2
9	TAPER BEARING SPACER	XZ-0558-2	1
10	SHAFT BEARING SPACER	FA-0558	1
11	SNAP RING	W86-100	1
12	2-BOLT-B SHAFT END COVER (SEC)	RA-0575-3	1
12A	1/4" PIPE PLUG FOR (SEC)	W0-17	1
13	CHECK VALVES	L-0280-K	2
14	ROLL PIN	W004-19	1
15	SHAFT BUSHING	ZQ-1909	1
16	ROLLER BEARING	R-0921	4
17	THRUST PLATE	X-0947-TC	2
18	GEAR HOUSING GASKET SEAL	TA-2995-244	2
19	GEAR HOUSING 1-1/2"	LZ-0577-15-2	1
20 & 21	GEAR SET 1-1/2"	JZ-0996L-15	1
22	PORT END COVER (PEC)	QZ-0592	1
23	WASHER 5/8"	W033-2	4
24	HEX HEAD BOLT 5/8-11 X 5"	W1-14	4

## **Maintenance**

### **1) Spinner Assembly**

#### **A) Spinner Blades**

The spinner blades are a wearable item and must be checked regularly for wear. If spinner blades are worn, bent or have holes replace immediately for proper spread pattern.

#### **B) Spinner Disc**

Check spinner disc daily for wear. If spinner disc are worn or do not spin true replace immediately for proper spread pattern.

#### **C) Spinner Bearings**

Check spinner bearings daily for wear and movement. Replace spinner bearing immediately if there is any movement in bearing. This can cause serious damage to spinner disc and motors.

Grease spinner bearings daily – one shot of grease per day.  
(Do Not Over Grease)

#### **D) Spinner Motors**

Check spinner motor seals daily for leaks. If spinner motor seal is leaking replace immediately. This could cause serious damage to hydraulic system and spinner motor.

## **Trouble Shooting**

<b>Problem</b>	<b>Solution</b>
Spinners will not throw material far enough	Check hydraulic pressure relief see page 1-4 , 1-5  Check to see is spinner blade has come loose or been knocked off
Spinners will not turn	Check hydraulic pressure  Check keyway in motor Replace if needed  Check spinner bearings Replace if needed
Improper spread pattern	Check Material Divider location  Check spinner disc and blades For wear Replace if needed  Check Spinner Speed

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# Section 3

## **FT – Truck Spreader Press Wheel Drive**

### **Basic Operation**

#### **Basic Start Up:**

##### **1) Engage Power Take Off (PTO)**

- A) Using cable or air shifter engage PTO
- B) After engaging PTO run hydraulic system for 10 minutes. This will allow the hydraulic oil to reach proper operating temperature.
- C) Not allowing hydraulic oil to warm up could damage some components and **Void** warranty.

##### **2) Starting Hydraulic Spinners**

- A) If spinner speed has not already been set see pages 1-4,1-5. Once spinner speed has been set spinner will start when PTO is engaged.

##### **3) Press Wheel Drive**

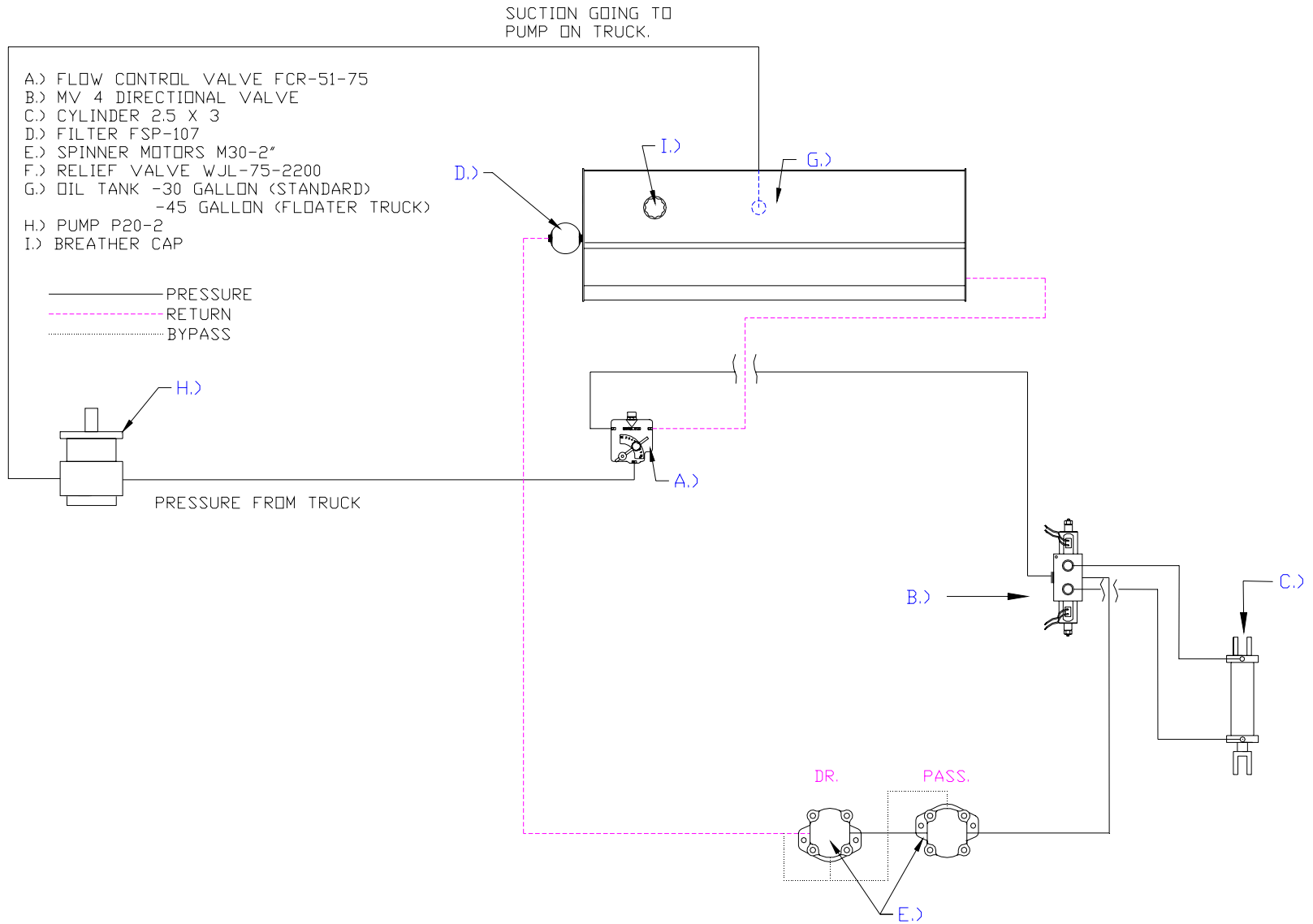
- A) **Engage Press Wheel:** Pressing the toggle switch (located near the PTO engagement) “UP” will engage the press wheel and will start the flow of material.
- B) **Disengage Press Wheel:** Pressing the toggle switch “DOWN” will disengage the press wheel and stop the flow of material.

##### **4) Spread Swath**

- A) Standard Spread Swath for Fertilizer – 50’
- B) Standard Spread Swath for Lime – 30’

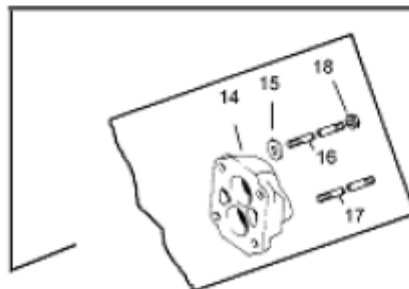
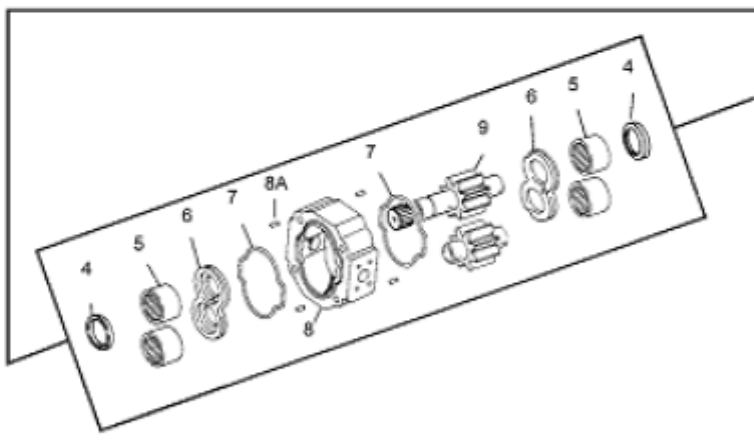
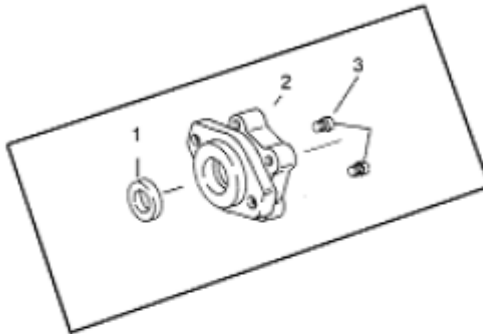
**See section 1 for setting spread pattern**

# Hydraulic System



## Hydraulic Pump

### P – 20 2" Gear Pump



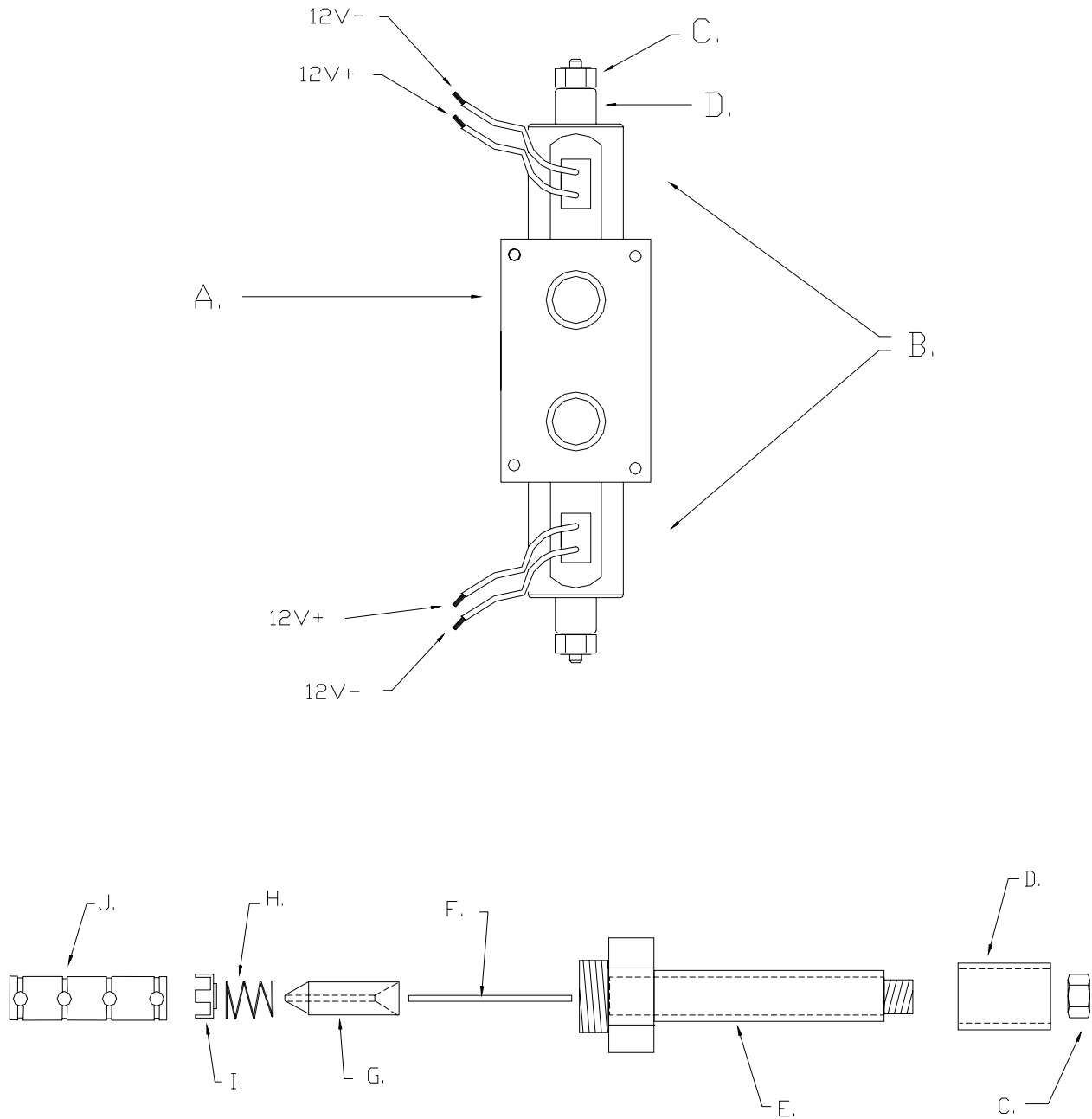
MODEL NUMBER	PARTS
DESCRIPTION	ORDERING
	NUMBERS P - 20 -2" GEAR PUMP
	PUMP TYPE I SHAFT

Item Number On Exploded View	Description	Order This Part Number	Quantity Per Unit
------------------------------------	-------------	---------------------------	----------------------

1	PUMP SHAFT SEAL		W62-26-16	1
2	2-BOLT-B SHAFT END COVER (SEC)		574-00664	1
3	CHECK VALVE ASSEMBLY		L-0280-K	2
4	RING SEAL		KA-0558-1XS	4
5	ROLLER BEARINGS		X-0921	8
6	THRUST PLATE		ZZ-0947-TC	4
7	HOUSING GASKET		K-2995-240	4
8	GEAR HOUSING 2"		577-00661-20-64	1
9	GEAR SET 2"L X 13 SPLINE		AC-0024L-3-20	1
10	BEARING CARRIER (BC)		576-00665	1
11	PORT END COVER (PEC)		592-00662	1
12	WASHER 5/8"		W033-2	4
13	HEX HEAD BOLT 5/8-11 X 5-1/2"		W1-78	4

# Hydraulic Valves

## MV 4 Directional Valve



### **MV 4 Valve Parts List**

A) MV 4 Valve Assembly – 400 –1-306

B) MV 4 Coil – 400-1-324

C) Stem Nut – 400-1-324B

D) Spacer – 400-1-324C

E) MV 4 Stem 400-1-324A

F) Stem Pin 400-1-324D

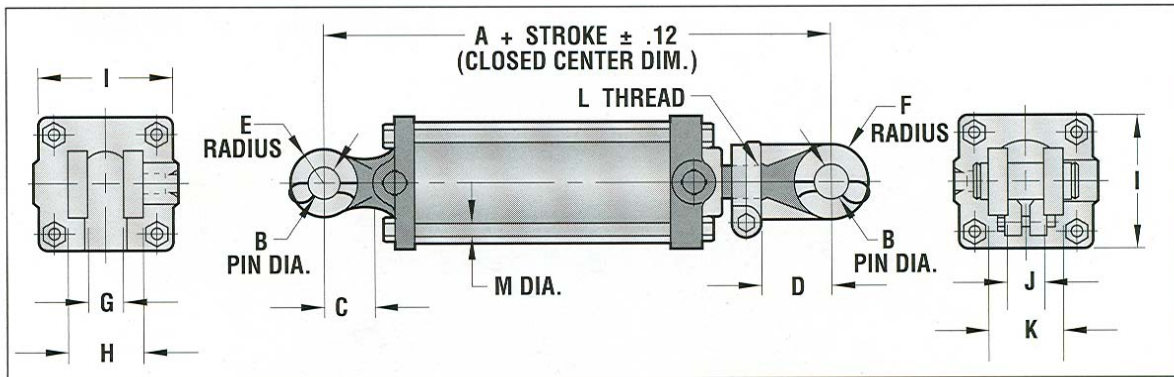
G) Plunger

H) Spring

I) Retainer

J) Spool – 400-1-324E

## Hydraulic Cylinder



Bore Dia.	A	B	C	D	E	F	G	H	I	J	K	L	M
2 1/2	10 1/4	1 1/64	1 3/8	2 1/8	1	1	1 1/8	2 5/8	3 1/4	1 1/8	2 5/8	1 1/16-12	3/8

### Specifications:

**Bore sizes: 2 1/2"**

**Pressure Ratings:**

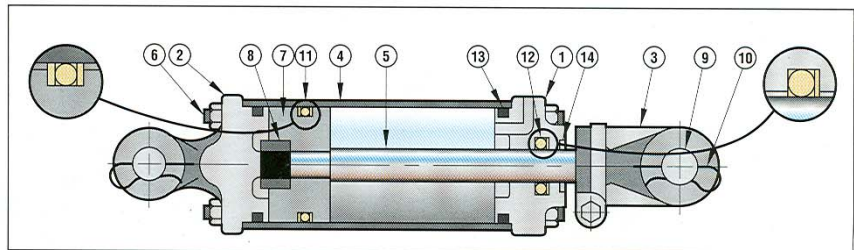
2,500 PSI maximum operating pressure

4,000 PSI maximum shock and surge pressure

Porting: NPTF ports standard

### Features:

- 1 Gray iron head casting
- 2 Ductile iron cap clevis casting
- 3 Removable ductile iron clevis with set-screw locking device
- 4 Precision skived steel tubing
- 5 Hard chrome plated rod
- 6 High tensile strength tie rods with rolled threads
- 7 One-piece gray iron piston
- 8 Self-locking piston nut
- 9 Plated pins are standard
- 10 Heavy gauge plated spring clips are standard
- 11 O-ring piston seal with back-up rings
- 12 O-ring rod seal with back-up ring
- 13 O-ring tube seals
- 14 Canned Urethane wiper
- 15 Cylinders stamped with part number and date of manufacture for permanent identification
- 16 Standard cylinder color is black



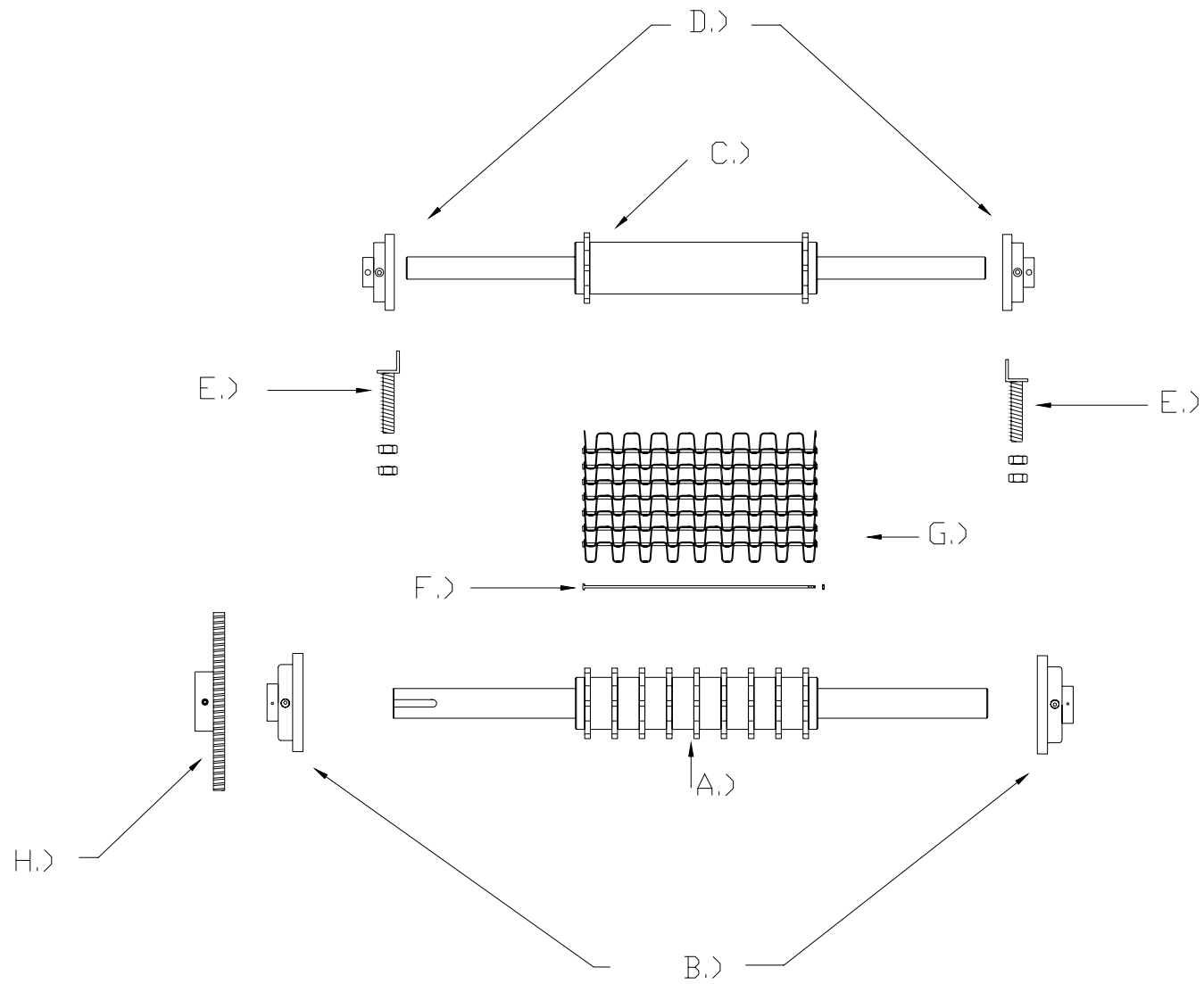
## Parts List

**1) Standard Cylinder 2.5 x 3 – 400-1-301**

**2) Seal Kit – 400-1-298**

**3) Clevis Pin Kit – 400-1-299**

## Conveyor Drive Assembly



## **Conveyor Assembly Parts List**

### A) Rear Roller

- a. 16" Chain – GWC-R-1634
- b. 18" Chain – GWC-R-1834
- c. 20" Chain – GWC-R-2034
- d. 24" Chain – GWC-R-2434

### B) Bearing – UCF-211-32

### C) Front Roller

- a. 16" Chain – GWC-F-1634
- b. 18" Chain – GWC-F-1834
- c. 20" Chain – GWC-F-2034
- d. 24" Chain – GWC-F-2434

### D) Bearing – UCF-208-24

### E) Roller Adjustment 300-FT-008

### F) Connecting Pin

- a. 16" – 500-3-306
- b. 18" – 500-3-307
- c. 20" – 500-3-308
- d. 24" – 500-3-309

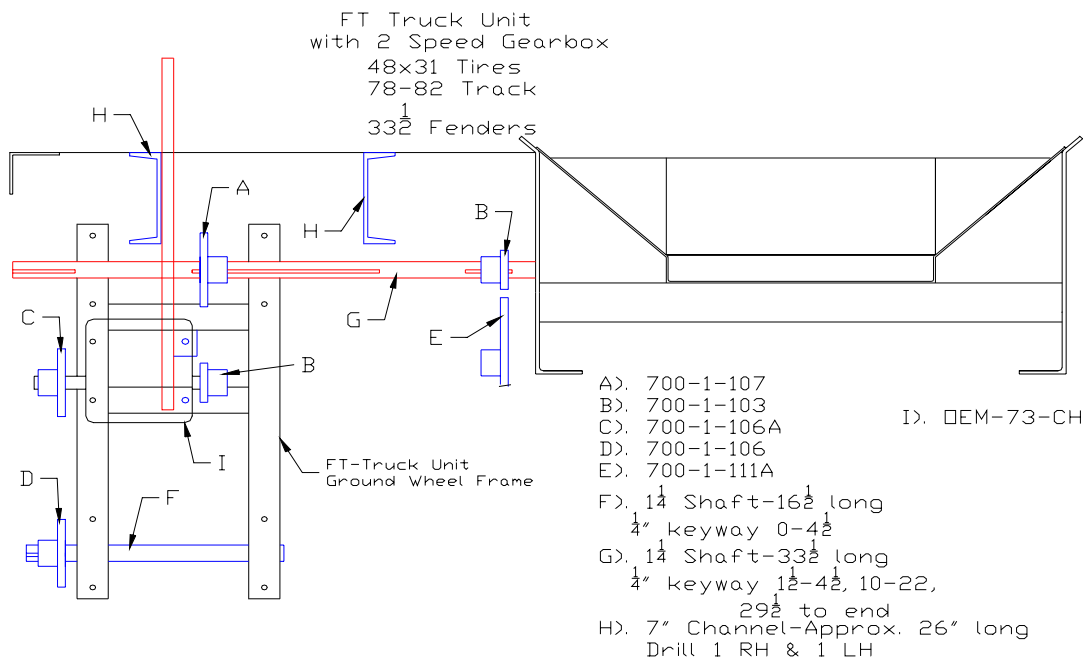
### G) Mesh Type Chain

- a. 16" – 500-3-301
- b. 18" – 500-3-302
- c. 20" – 500-3-303
- d. 24" – 500-3-304

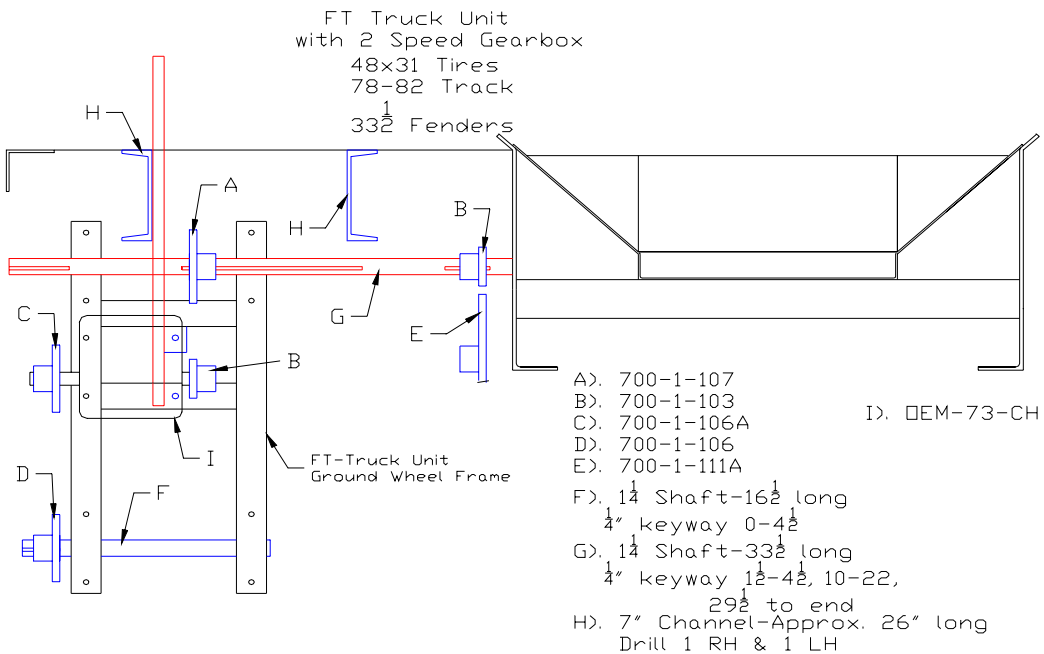
### H) Sprocket – 700-1-11A

# Press Wheel Drive Assembly

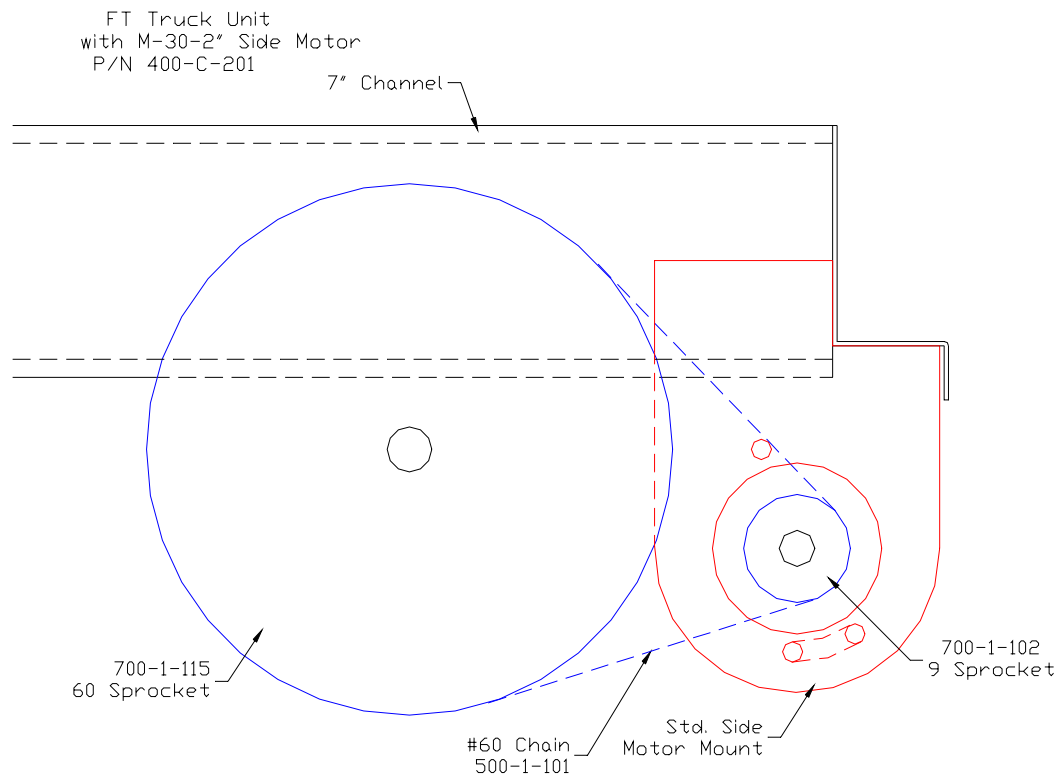
## 1) Standard Press Wheel w/ Quick Change Sprockets



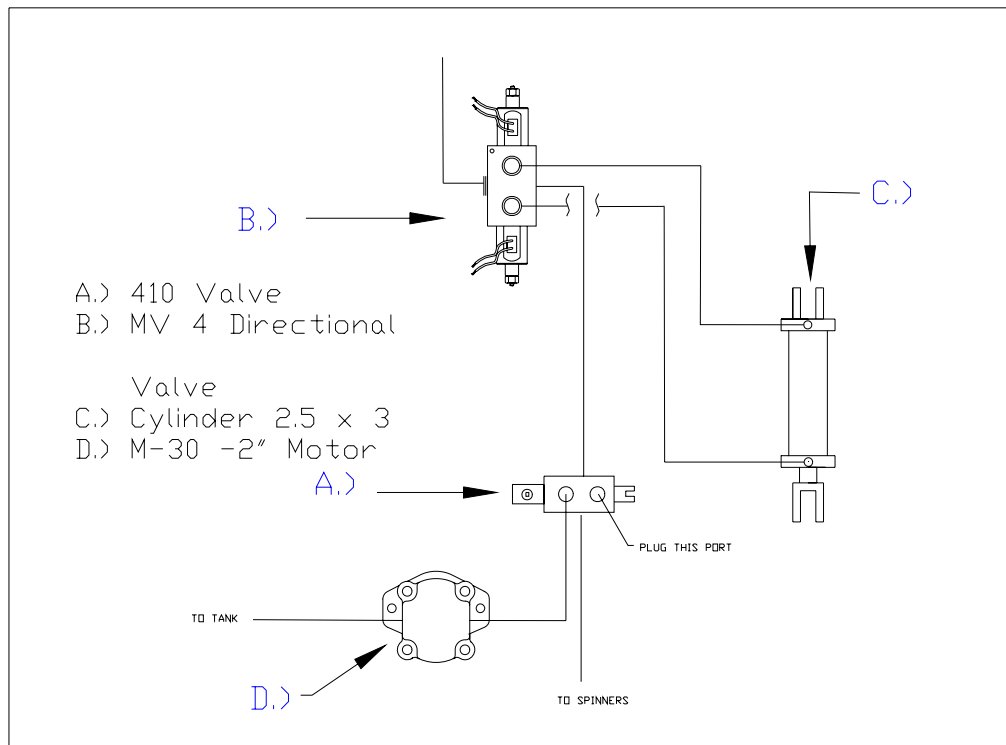
## 2) Press Wheel Drive w/ 2-Speed Gear Case

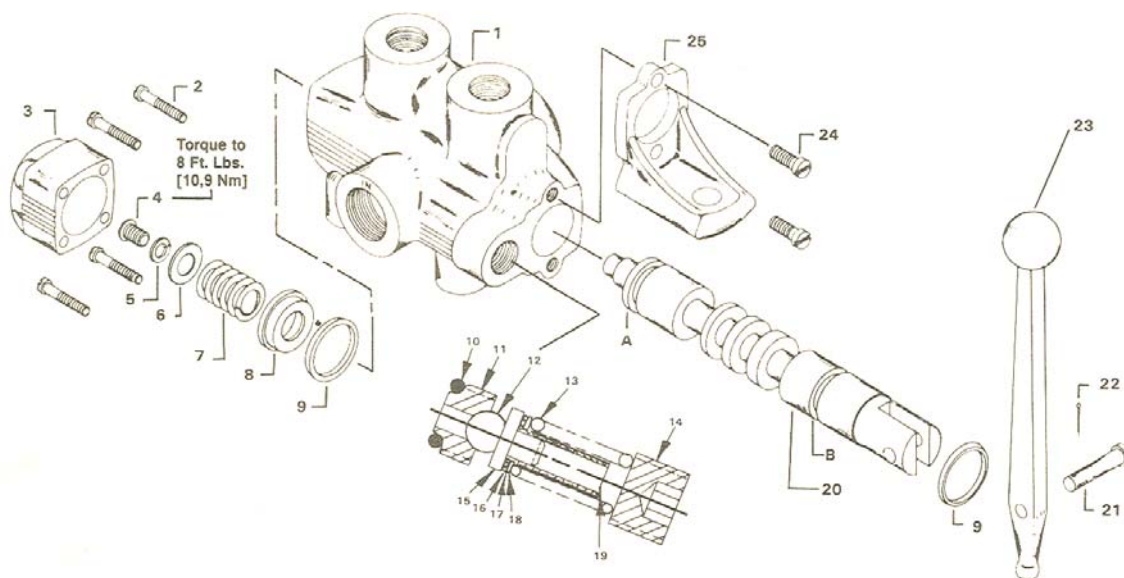


### 3) Stationary Unload Option



### 4) Stationary Unload Hydraulic Diagram



**GRESEN®****MODEL No. 410****HYDRAULIC CONTROL VALVE****With Hardened Replaceable  
Relief Valve Seat****PARTS LIST**

Item	Part No.	Description	No. Req'd.	Item	Part No.	Description	No. Req'd.
1	*0575-xxx	Valve housing	1	14	0073-001	.375 NPTF Plug	1
2	0559-001	Bonnet Screws, 8-32 x 1"	4	15	8087-001	Guide	1
3	0558-001	Bonnet	1	16	0458-001	Shim, .040 inch [1,02 mm]	A/R
4	0510-001	Spring Assembly Screw 1/4-20 x 1/2	1	17	0462-001	Shim, .010 inch [0,25 mm]	A/R
5	20345-001	Lock Washer	1	18	0459-001	Shim, .020 inch [0,51 mm]	A/R
6	0509-001	Flat Washer	1	19	8086-001	Dampening Sleeve	1
7	0557-001	Centering Spring, Std.	1	20	*0576-001	Valve Spool, 4-way	1
8	0577-001	Stop Collar	1	21	0553-001	Handle Pin	1
9	0555-001	Spool Seal (Order Kit No. K-3001C)	2	22	0086-001	Cotter Pin	1
10	2503-001	O-Ring Seal	1	23	0552-001	Handle, Black Plastic Coated, Standard	1
11	6382-001	Relief Seat	1	24	0562-001	Bracket Screw	2
12	0155-001	Ball	1	25	0551-001	Handle Bracket	1
13	1450-001	Relief Spring, High Pressure, 1000-2500 PSI [69-172 bar]	1				

## **Maintenance**

### **1) Conveyor Chain**

A Chandler Fertilizer and Lime Spreader comes standard with a 16" – 1" x 1" 304 stainless steel mesh type chain. The conveyor chain must be adjusted properly to ensure long life and proper spread of material.

- K) To adjust conveyor chain, tighten the adjustment screw rods located behind the front roller bearings.
- L) Adjust Chain tension so that the chain clears the cross members of the spreader frame by ½".
- M) Adjust each side only one half inch at a time.
- N) When adjusting the chain measure each side to ensure that the front stays square with the frame of the spreader.
- O) When the chain stretches beyond the adjustment on the front roller it may be necessary to remove a few links of the chain
- P) Locate the splice pin in the chain. Remove the splice pin, using bolt cutters, cut the pin on the link you want to remove. (Be sure the pin you cut is not spot welded, in ALL Chandler Spreaders every other link is spot welded on the chain)
- Q) Replace the splice pin and adjust chain.

### **2) Press Wheel Assembly**

#### **A) Roller Chains and Sprockets**

Check sprockets and roller chain daily for wear.  
Oil roller chains and check tension daily.

#### **B) Spinner Bearings**

Check bearings daily for wear and movement. Replace bearing immediately if there is any movement in bearing. This can cause serious damage to sprocket and roller chains.  
Grease spinner bearings daily – one shot of grease per day.  
(Do Not Over Grease)

## **Trouble Shooting**

<b>Problem</b>	<b>Solution</b>
Conveyor Chain will not turn	Check chain for obstructions Check chains and sprockets  Check compression on press wheel
Press Wheel will not engage	Check hydraulic pressure  Check Power and Fuses to Valve Replace if needed  Check Coil on Valve Replace if needed
Improper rate per acre	Make sure sprocket ratio Matches flow chart

# **Section 4**

## **FT – Truck Spreader Simplified Hydraulic Drive**

### **Basic Operation**

#### **Basic Start Up:**

##### **1) Engage Power Take Off (PTO)**

- A) Using cable or air shifter engage PTO
- B) After engaging PTO run hydraulic system for 10 minutes. This will allow the hydraulic oil to reach proper operating temperature.
- C) Not allowing hydraulic oil to warm up could damage some components and **Void** warranty.

##### **1) Starting Hydraulic Spinners**

- A) If spinner speed has not already been set see pages 1-4,1-5. Once spinner speed has been set spinners will start when PTO is engaged.

##### **2) Spread Swath**

- A) Standard Spread Swath for Fertilizer – 50'
- B) Standard Spread Swath for Lime – 30'

**See section 1 for setting spread pattern.**

### 3) Simplified Hydraulic Drive

Chandler's Simplified Hydraulic Drive has a low rate for fertilizer and a high rate for lime. Use the following procedure to operate conveyor chain.

#### A) Conveyor Low Rate

- a. **Engaging Low Rate:** With the toggle switch (located near the PTO engagement) in "CENTER" position the Conveyor Valve is in neutral. Pressing the toggle switch "Down" will engage the Hydraulic Conveyor and will start the flow of material.
- b. **Disengage Low Rate:** Returning the toggle switch to the "CENTER" position will disengage the hydraulic conveyor and stop the flow of material.

#### B) Conveyor High Rate

- a. **Engaging High Rate:** With the toggle switch (located near the PTO engagement) in "CENTER" position the Conveyor Valve is in neutral. Pressing the toggle switch "UP" will engage the Hydraulic Conveyor and will start the flow of material.
- b. **Disengage High Rate:** Returning the toggle switch to the "CENTER" position will disengage the hydraulic conveyor and stop the flow of material.

#### 4) Select Rate Per Acre

Chandler's Simplified Hydraulic Drive comes with a Rate Chart for determining rate per acre. Use the following procedure to select rate.

1

2

3

4

Rate Chart 1st Gear Low Rate 50 Ft. Swath									
Gate	Weight Per Cubic Ft. Fertilizer								
Opening	45	50	55	60	65	70	75	80	85
1	61	67	74	81	88	94	101	108	115
2	121	135	148	162	175	189	202	216	229
3	182	202	223	243	263	283	304	324	344
4	243	270	297	324	351	378	405	432	459
5	304	337	371	405	439	472	506	540	574
6	364	405	445	486	526	567	607	648	688
7	425	472	520	567	614	661	709	756	803
8	486	540	594	648	702	756	810	864	918

##### 1) Selecting Proper Rate Chart

For most applications there are 4-rate charts supplied with each spreader that has a Simplified Hydraulic Drive System. These charts are for 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> gears. The rate chart selected will depend on the gear and speed that you wish to spread.

##### 2) Selecting Density of Material

Select density (weight per cubic foot) of the material that you are going to apply.

##### 3) Selecting Application Rate

Once the density has been determined go down the column to find desired rate per acre.

##### 4) Determining Gate Opening

Once you have found the desired rate per acre go across the chart to determine the gate opening needed.

## **Simplified Hydraulic Spreader Calibration Work Sheet**

**Customer Name:** \_\_\_\_\_

**Contact:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Type of Spreader:** \_\_\_\_\_

**Serial Number:** \_\_\_\_\_

**Type of Chain:** \_\_\_\_\_

**Chain Width:** \_\_\_\_\_

**Rear Tire Size:** \_\_\_\_\_

**Trans. Model #:** \_\_\_\_\_

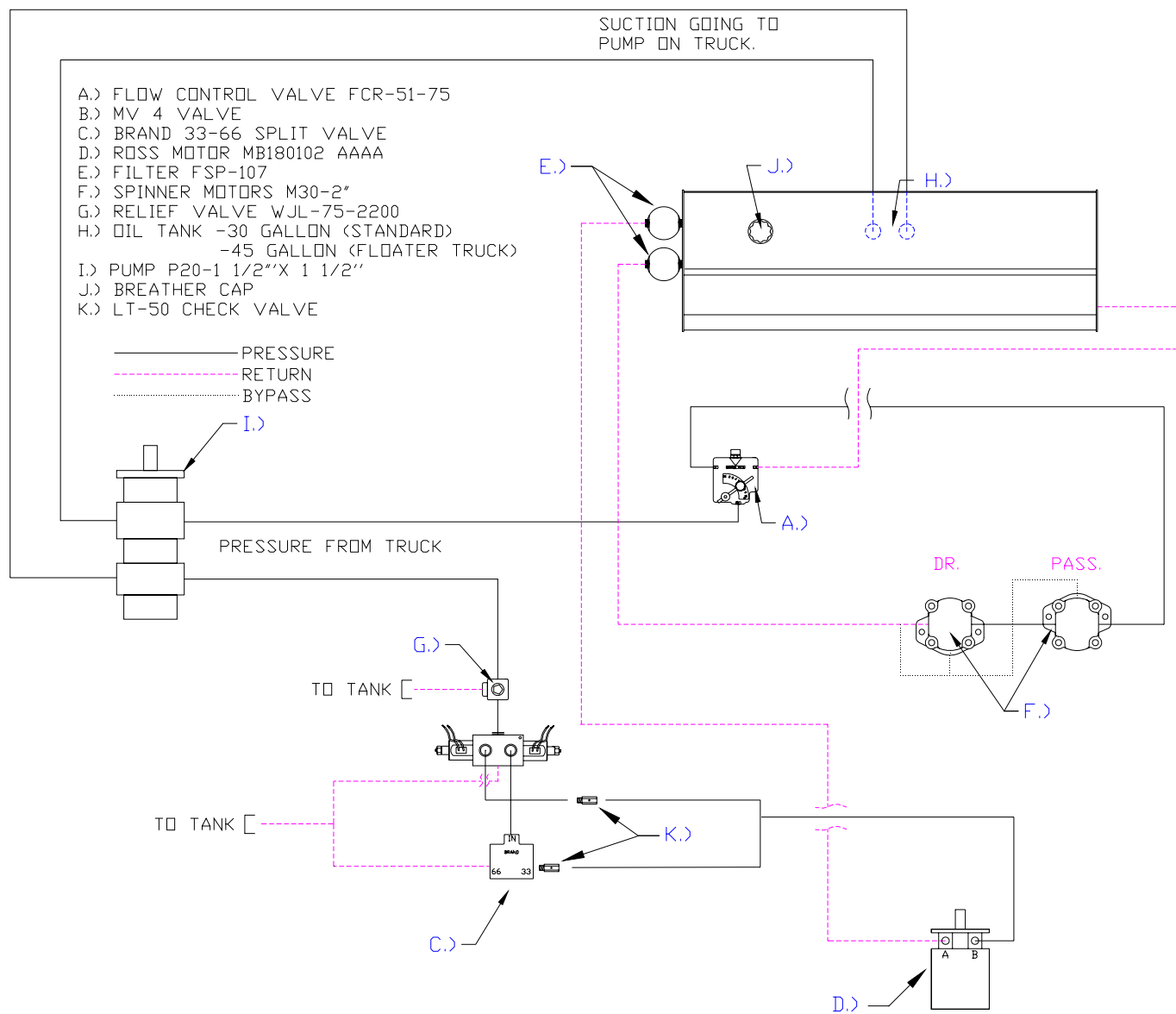
**PTO Model #:** \_\_\_\_\_

**Low Side (of Chain) - Roller Rev. in 3rd Gear:** \_\_\_\_\_

**High Side (of Chain) - Roller Rev. In 3rd Gear:** \_\_\_\_\_

**In 3<sup>rd</sup> Gear Drive one mile and count the front roller revolutions.  
This has be done with the chain in low and high.**

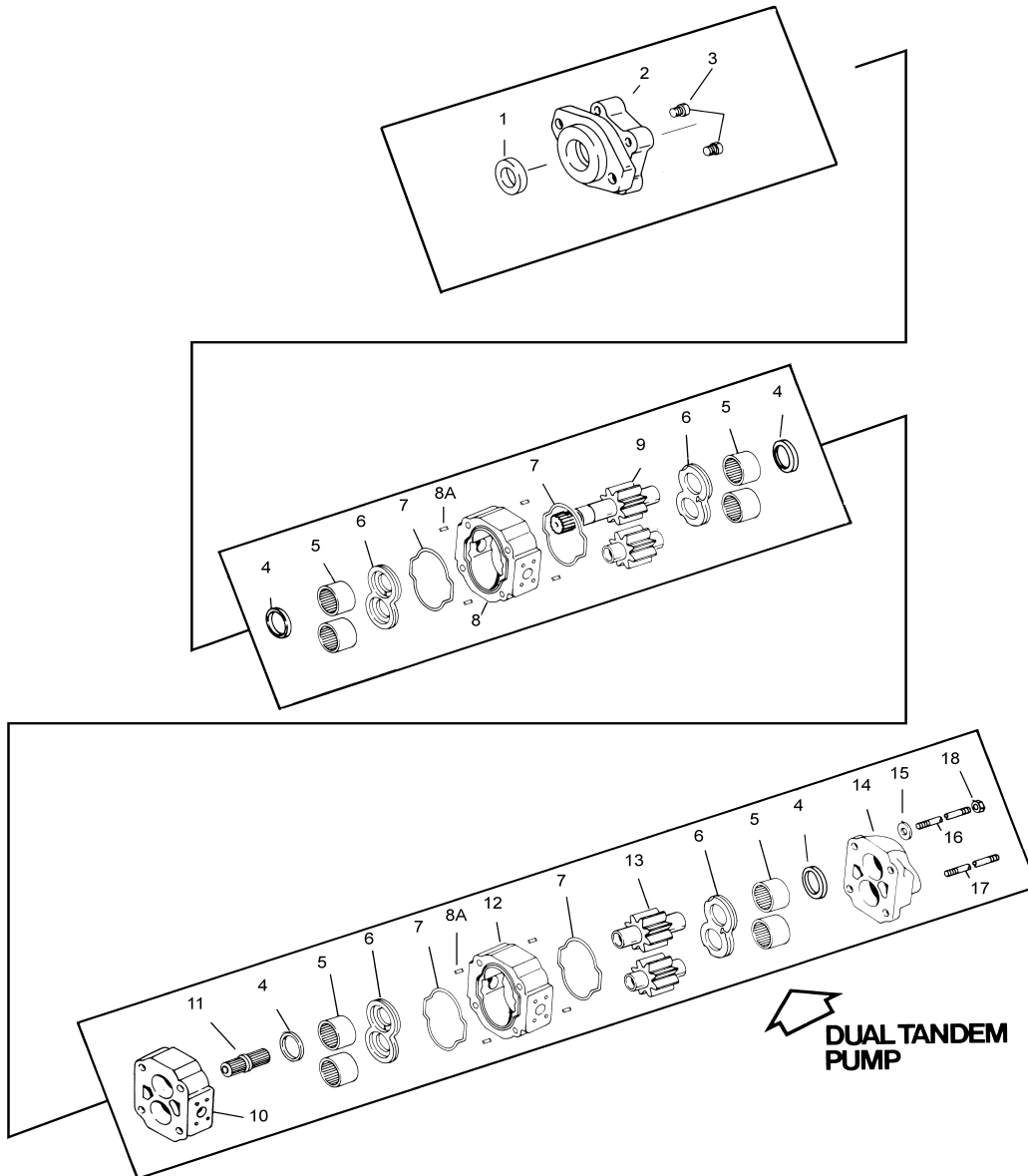
## Hydraulic System



# Hydraulic Pump

## 2100 SERIES

EXPLODED VIEW FOR P2100B286AXXE15-14AXE15-1



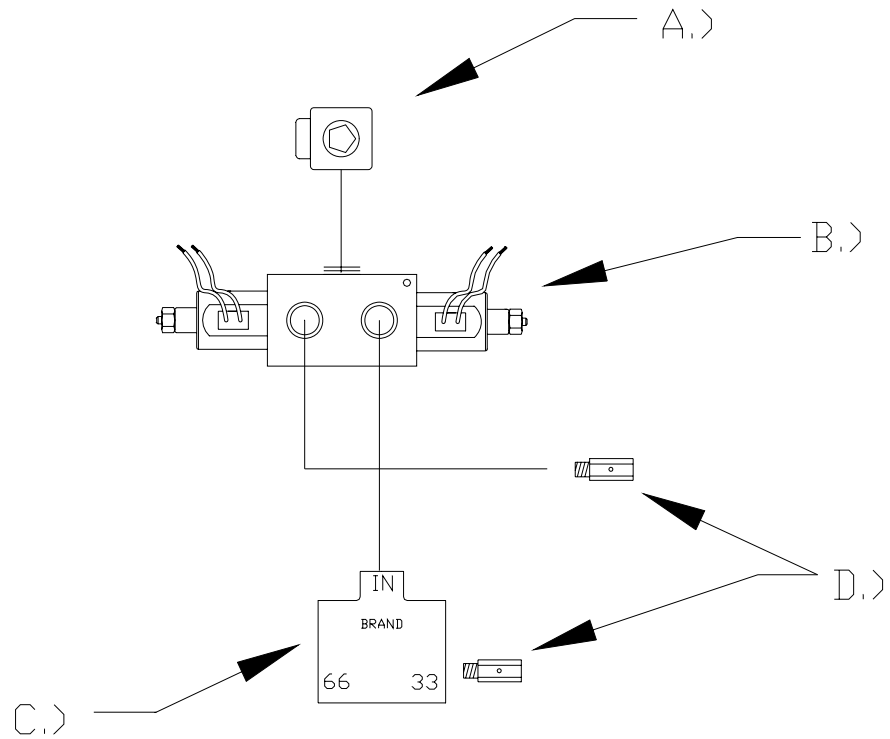
MODEL NUMBER	PARTS
DESCRIPTION	ORDERING
	NUMBERS P2100B286AXXE15-14AXE15-1
	PUMP TYPE I SHAFT

Item Number On Exploded View	Description	Order This Part Number	Quantity Per Unit
------------------------------------	-------------	---------------------------	----------------------

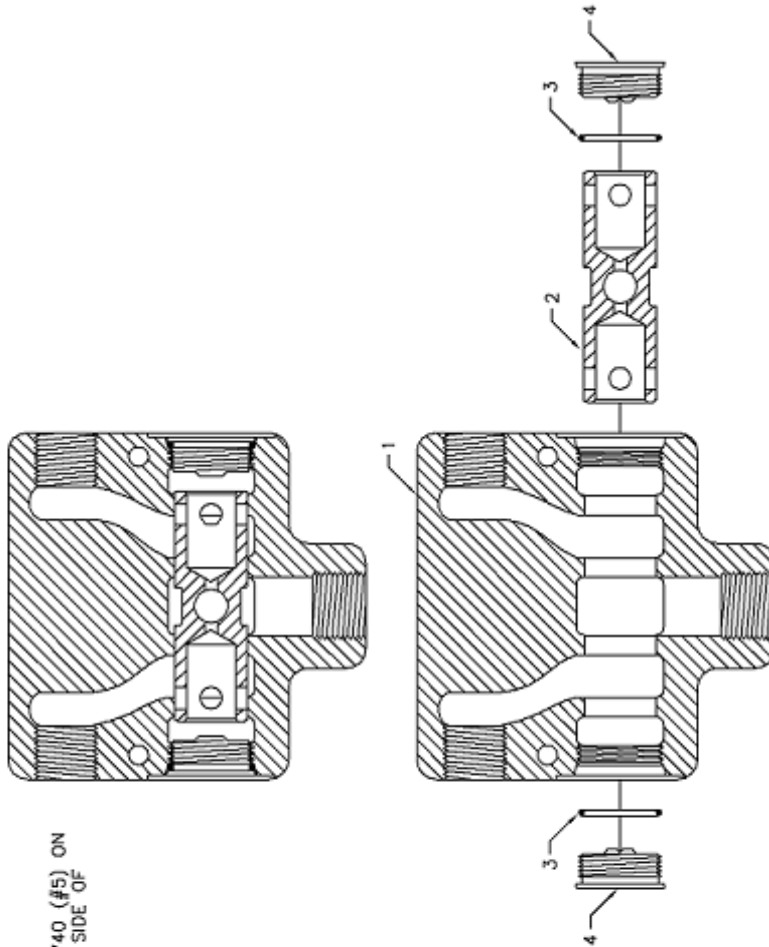
1	PUMP SHAFT SEAL		W62-26-16	1
2	2-BOLT-B SHAFT END COVER (SEC)		574-00664	1
3	CHECK VALVE ASSEMBLY		L-0280-K	2
4	RING SEAL		KA-0558-1XS	4
5	ROLLER BEARINGS		X-0921	8
6	THRUST PLATE		ZZ-0947-TC	4
7	HOUSING GASKET		K-2995-240	4
8	GEAR HOUSING 1-1/2"		577-00661-15-5	1
8A	DOWEL PINS		280-1971-031	8
9	GEAR SET 1-1/2"L X 13 SPLINE		AC-0024L-3-15	1
10	BEARING CARRIER (BC)		576-00665	1
11	SHAFT CONNECTOR		YZ-0022	1
12	GEAR HOUSING 1-1/2"		577-00661-15-5	1
13	GEAR SET 1-1/2"		U-0996L-15	1
14	PORT END COVER (PEC)		592-00662	1
15	WASHER 9/16"		W033-3	4
16 & 17	TIE BOLTS 9/16-12 X 12-1/4"		900-01021-1225	4
18	HEX NUT 9/16-12		900-01022	4

## Hydraulic Valves

- A.) WJL-75 Relief Valve
- B.) MV 4 Directional Valve
- C.) Brand 33-66 Split Valve
- D.) LT - 50 Check Valve

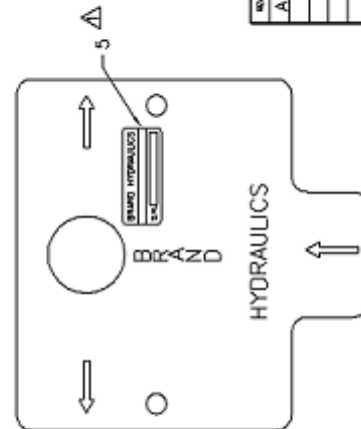


#	QTY	PART #	DESCRIPTION
1	1	B5010	CAST #10 SAE PORTS
1	1	B5012	CAST #12 SAE PORTS
1	1	B5037	CAST 3/8" NPT PORTS
1	1	B5050	CAST 1/2" NPT PORTS
1	1	B5075	CAST 3/4" NPT PORTS
2	1	C3	SPool B50-3/8
2	1	C337	SPool B50-3/8
2	1	C350	SPool B50-1/2 & -10 SAE
2	1	C375	SPool B50-3/4 & -12 SAE
3	2	P1737	O RING 2-021 900 FOR P1735 PLUG
4	2	P1735	SPG PLUG
5	1	P1740	TAG

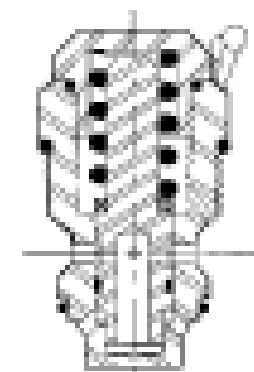
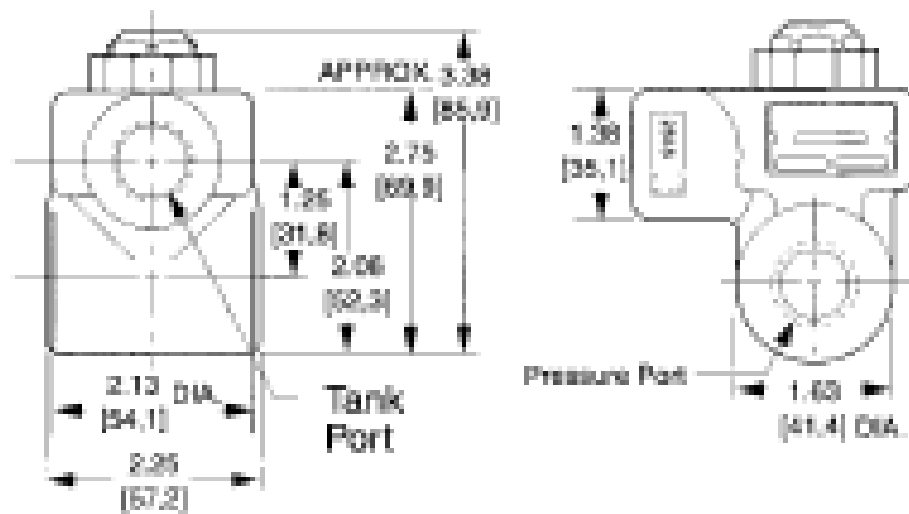


NOTE  $\Delta$  PLACE P1740 (#5) ON  
PRIORITY SIDE OF  
CASTING

REV.	DATE	BY	DESCRIPTION
A	08/07/11	UT	ADD EXPLODED VIEW & ODC. BLOCK. TEC
BRAND HYDRAULICS CO., INC. 2337 SOUTH 25TH STREET, OMAHA NEBRASKA 68105			
TITLE: PROPORTIONAL DIVIDER ASSEMBLY			
DESIGNED BY: J. CASEY			
CHECKED BY: J. CASEY			
DATE: 10/23/98			
SCALE: FULL			
MATERIAL: PLATE			
FINISH: 30-0000 20 & 4000			
PART NUMBER: B50-XX			



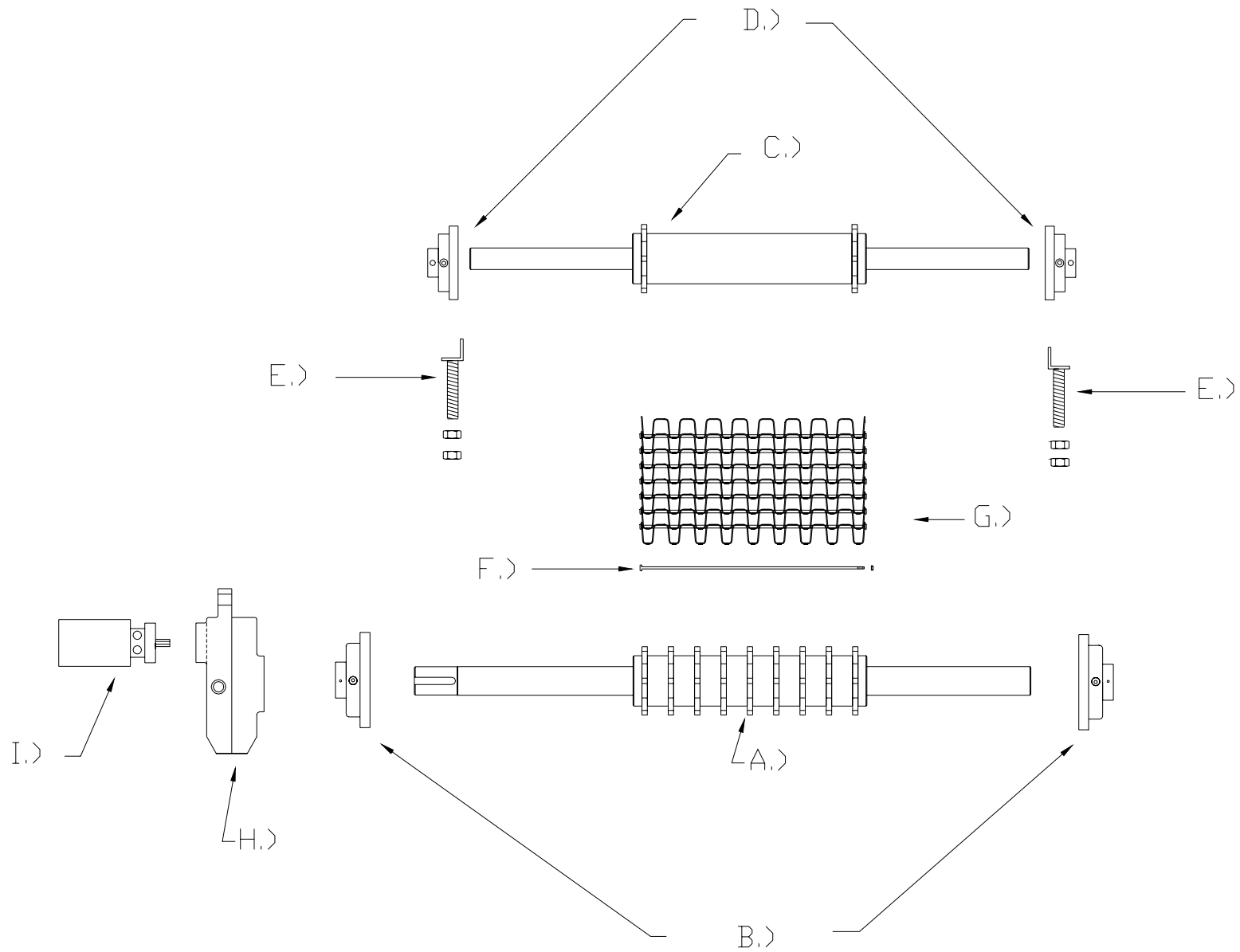
## MODEL WJL



"N" Standard

WJL – 75 (per set @ 2500 PSI)

## Conveyor Drive Assembly



## **Conveyor Assembly Parts List**

### **A) Rear Roller**

- a. 16" Chain – HWC-R-1634
- b. 18" Chain – HWC-R-1834
- c. 20" Chain – HWC-R-2034
- d. 24" Chain – HWC-R-2434

### **B) Bearing – UCF-211-32**

### **C) Front Roller**

- a. 16" Chain – HWC-F-1634
- b. 18" Chain – HWC-F-1834
- c. 20" Chain – HWC-F-2034
- d. 24" Chain – HWC-F-2434

### **D) Bearing – UCF-208-24**

### **E) Roller Adjustment 300-FT-008**

### **F) Connecting Pin**

- a. 16" – 500-3-306
- b. 18" – 500-3-307
- c. 20" – 500-3-308
- d. 24" – 500-3-309

### **G) Mesh Type Chain**

- a. 16" – 500-3-301
- b. 18" – 500-3-302
- c. 20" – 500-3-303
- d. 24" – 500-3-304

### **H) Gear Case**

- a. Single – 100-R-1-01
- b. Twin – 100-R-2-01

### **I) Hydraulic Motor**

- a. MB18102AAAA Single
- b. MB12012AAAA Twin

# Conveyor Motor

Service Bulletin 050016

Issued February 2003

For TF (MB) and TG (ME) Torqmotor Seal Kits

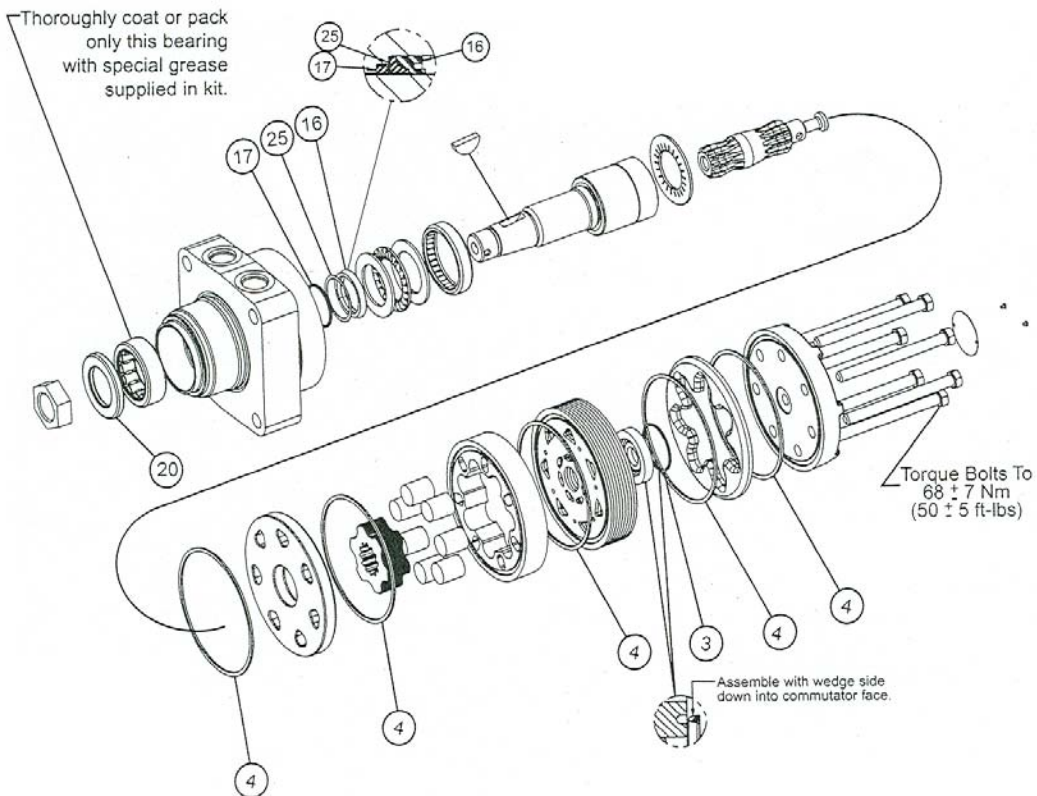
SK000092 (Buna), SK000093 (Fluorocarbon),

SK000099 (Vespel Commutator Seal)

Reference Torqmotor Service Manual SM1512.



QTY	Item	Description	Buna P/N	Fluorocarbon P/N	Vespel P/N
1	17	Back up ring	028515	028515	028515
1	25	Back up washer	029118	029118	029118
1	3	Commutator Seal	032435	032435	032439
1	16	Shaft Seal	032817	032818	032817
6	4	Body Rings	032819	032820	032819
1	20	D&W Seal	478035	478035	478035
1		Bearing Lubricant	406018	406018	406018
1		Service Bulletin	050016	050016	050016

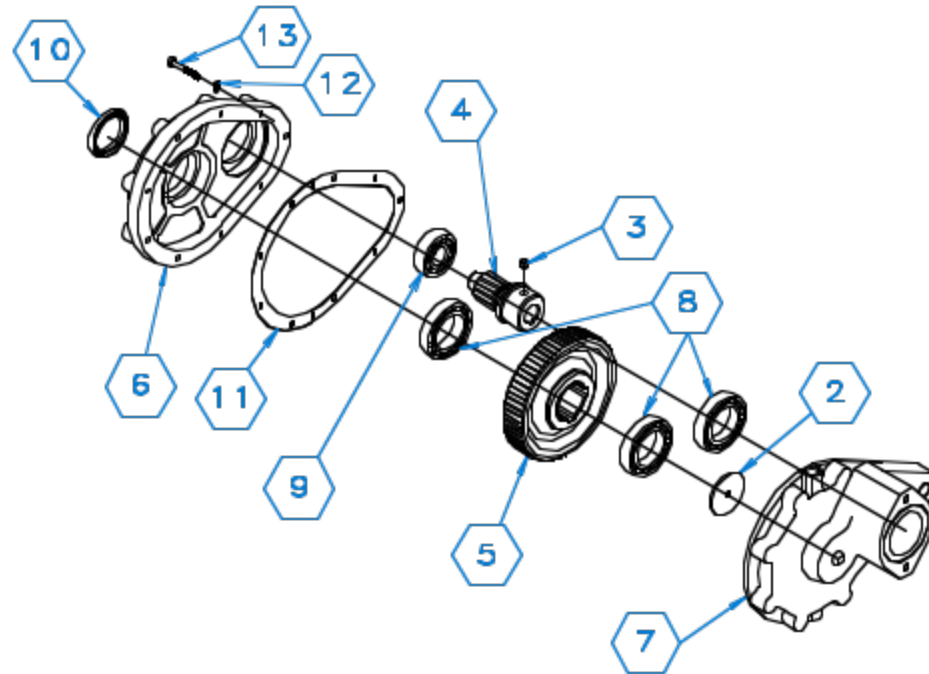




**RAWSON**  
CONTROL SYSTEMS INC.

110 2nd St. S.E.  
Oklahoma City, OK 73102  
(405) 233-1000  
Fax (405) 233-1001

## SINGLE SPEED REDUCER 301075 STANDARD



ITEM	PART NO.	DESCRIPTION	QTY
1	301506	GROUP ASSY-KEY & PLUG-NS	1
2	311062	WASHER	1
3	312021	PLUG-DELFIN	1
4	313077	GEAR-PINION	1
5	313084	GEAR-DRIVEN	1
6	315051	HOUSING-INBOARD	1
7	315084	HOUSING-OUTBOARD	1
8	601151	BEARING	3
9	601173	BEARING	1
10	601350	SEAL-OIL	1
11	611951	GASKET	1
12	617006	WASHER-LOCK	9
13	620041	CAPSCREW	9

**965596**

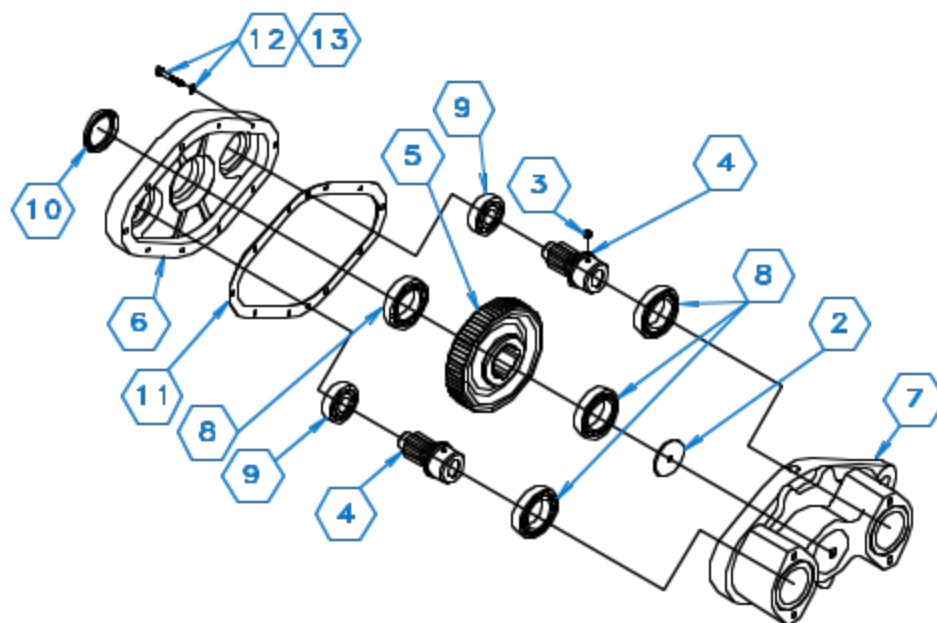
### Conveyor Gear Case



RAWSON  
CONTROL SYSTEMS INC.

110 WAB ST. S.E.  
CALUMET, ILL. 60009  
312-262-2525  
FAX: 312-262-1338

## TWIN SPEED REDUCER 301033



ITEM	PART NO.	DESCRIPTION	QTY
1	301505	GROUP ASSY-KEY & PLUG-NS	1
2	311062	WASHER	1
3	312021	PLUG-DELRIN	1
4	313077	GEAR-PINION	2
5	313084	GEAR-DRIVEN	1
6	315052	HOUSING-INBOARD	1
7	315082	HOUSING-OUTBOARD	1
8	601151	BEARING	4
9	601173	BEARING	2
10	601350	SEAL-OIL	1
11	611952	GASKET	1
12	617006	WASHER-LOCK	10
13	620041	CAPSCREW	10

965592

### Conveyor Gear Case

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# **Section 5**

## **FT – Truck Spreader w/ Control System**

### **Basic Operation**

#### **Basic Start Up:**

##### **1) Engage Power Take Off (PTO)**

- A) Using cable or air shifter engage PTO
- B) After engaging PTO run hydraulic system for 10 minutes. This will allow the hydraulic oil to reach proper operating temperature.
- C) Not allowing hydraulic oil to warm up could damage some components and **Void** warranty.

##### **1) Starting Hydraulic Spinners**

- a. If spinner speed has not already been set see pages 1-4,1-5. Once spinner speed has been set spinners will start when PTO is engaged.

##### **2) Spread Swath**

- a. Standard Spread Swath for Fertilizer – 50'
- b. Standard Spread Swath for Lime – 30'

**See section 1 for setting spread pattern.**

### 3) Control System

Chandler Spreaders can be equipped with several types of control systems. Including Mid-Tech, Dickey/john, Raven and Falcon

### 4) Constant Numbers

#### A) 16" Mesh Type Chain

1 – 524.0  
2 – 262.0  
3 – 175.0  
4 – 131.0  
5 – 105.0  
6 – 87.0  
7 – 75.0  
8 – 65.0  
9 – 58.0  
10 – 52.0

#### 20" Mesh Type Chain

1 - 424.0  
2 - 212.0  
3 - 141.0  
4 - 106.0  
5 – 85.0  
6 – 71.0  
7 – 61.0  
8 - 53.0  
9 - 47.0  
10 - 42.0

#### B) 18" Mesh Type Chain

1 – 469.0  
2 – 312.0  
3 – 156.0  
4 – 117.0  
5 – 94.0  
6 – 78.0  
7 – 67.0  
8 – 59.0  
9 – 52.0  
10 – 47.0

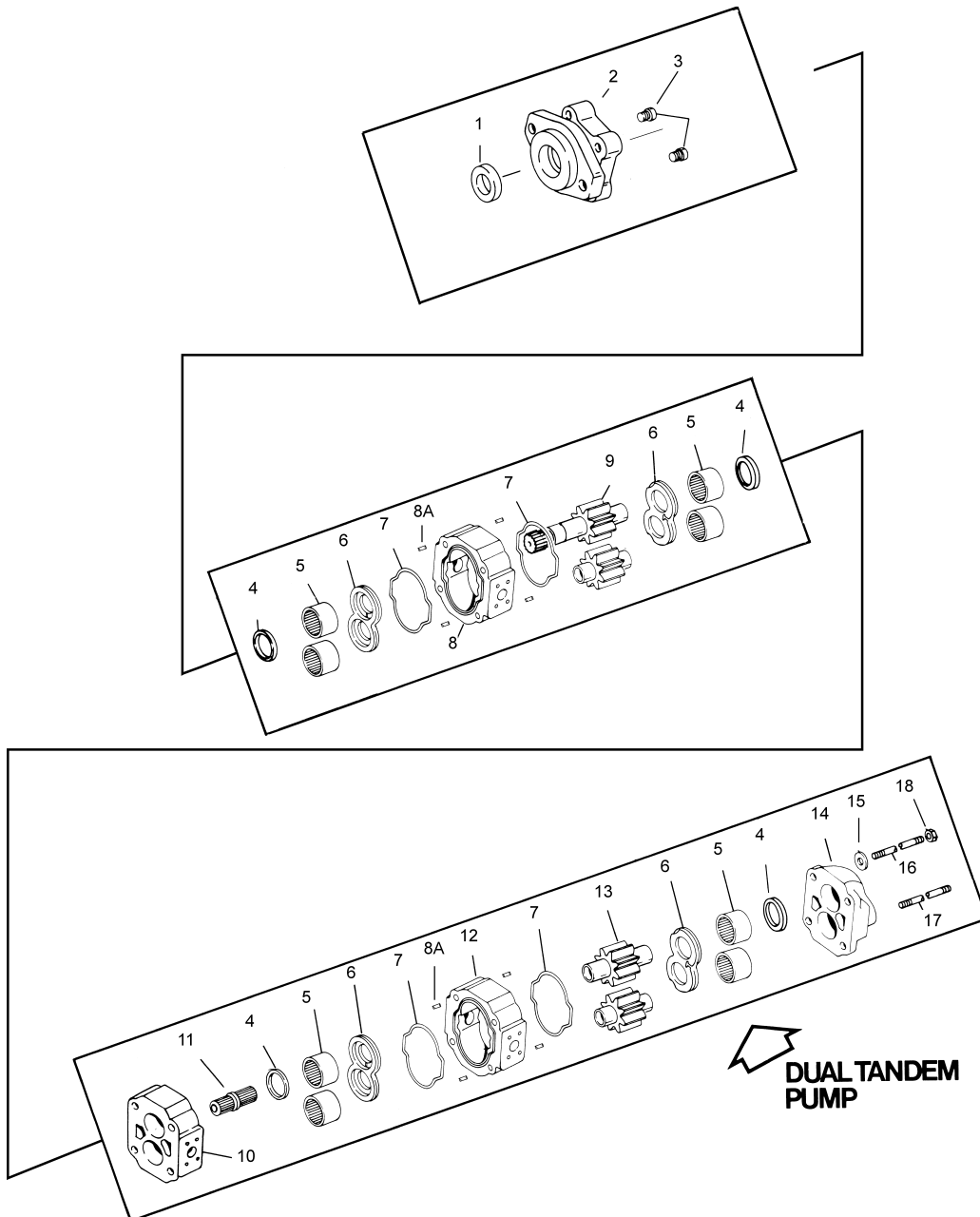
#### 24" Mesh Type Chain

1 - 356.0  
2 - 178.0  
3 – 119.0  
4 - 89.0  
5 - 71.0  
6 - 59.0  
7 – 51.0  
8 - 44.0  
9 – 40.0  
10 – 36.0

# Hydraulic Pump

## 2100 SERIES

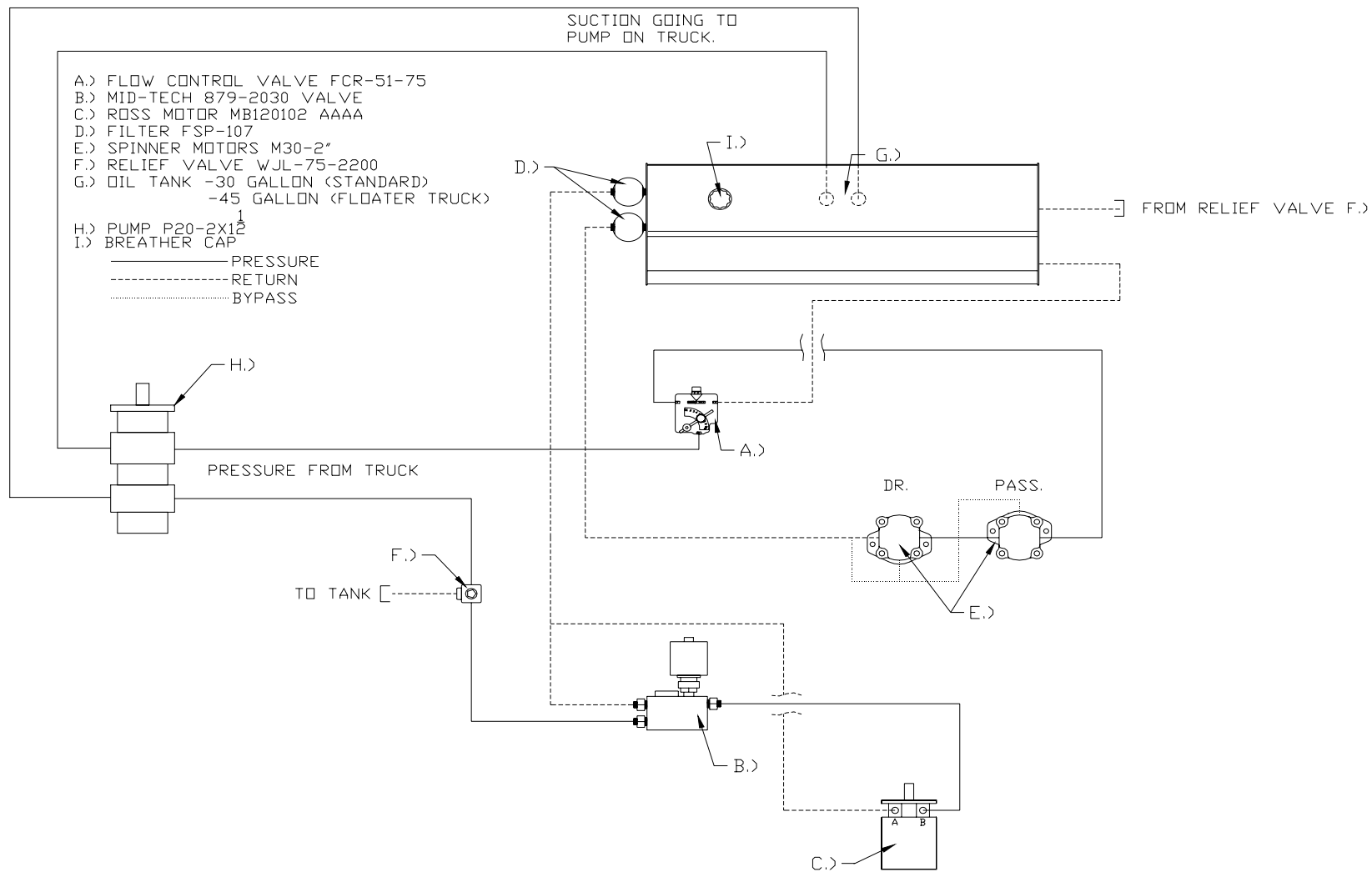
EXPLODED VIEW FOR P2100B286AXZE20-14AZE15-1



MODEL NUMBER	PARTS ORDERING
DESCRIPTION	NUMBERS P2100B286AXZE20-14AZE15-1
	PUMP TYPE I SHAFT

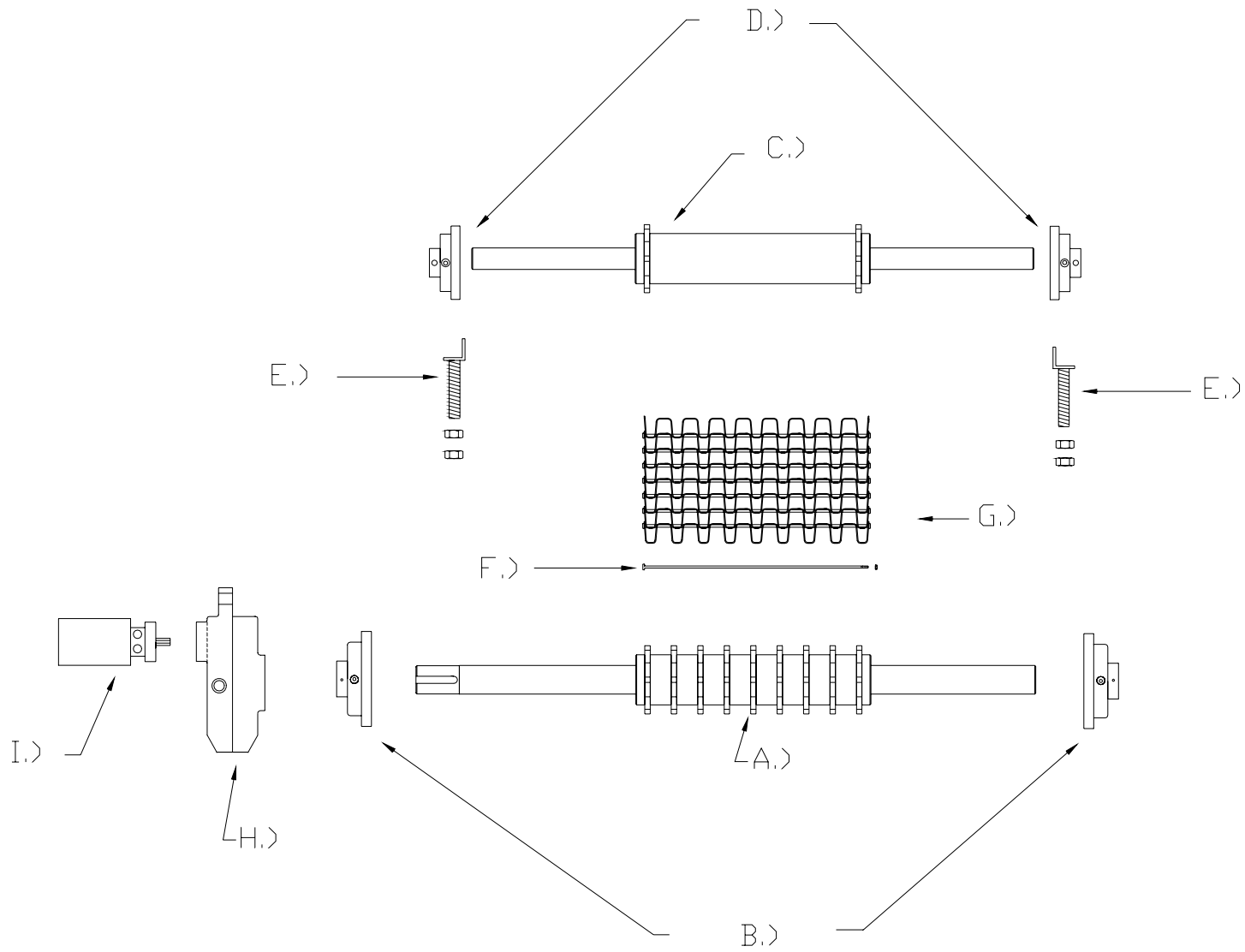
Item Number On Exploded View	Description	Order This Part Number	Quantity Per Unit
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1	PUMP SHAFT SEAL		W62-26-16	1
2	2-BOLT-B SHAFT END COVER (SEC)		574-00664	1
3	CHECK VALVE ASSEMBLY		L-0280-K	2
4	RING SEAL		KA-0558-1XS	4
5	ROLLER BEARINGS		X-0921	8
6	THRUST PLATE		ZZ-0947-TC	4
7	HOUSING GASKET		K-2995-240	4
8	GEAR HOUSING 2"		577-00661-20-64	1
8A	DOWEL PINS		280-1971-031	8
9	GEAR SET 2"L X 13 SPLINE		AC-0024L-3-20	1
10	BEARING CARRIER (BC)		576-00665	1
11	SHAFT CONNECTOR		YZ-0022	1
12	GEAR HOUSING 1-1/2"		577-00661-15-64	1
13	GEAR SET 1-1/2"		U-0996L-15	1
14	PORT END COVER (PEC)		592-00662	1
15	WASHER 9/16"		W033-3	4
16 & 17	TIE BOLTS 9/16-12 X 12-1/4"		900-01021-1225	4
18	HEX NUT 9/16-12		900-01022	4



**Hydraulic Diagram for Mid-Tech Control**

## Conveyor Drive



## **Conveyor Assembly Parts List**

### A) Rear Roller

- a. 16" Chain – HWC-R-1634
- b. 18" Chain – HWC-R-1834
- c. 20" Chain – HWC-R-2034
- d. 24" Chain – HWC-R-2434

### B) Bearing – UCF-211-32

### C) Front Roller

- a. 16" Chain – HWC-F-1634
- b. 18" Chain – HWC-F-1834
- c. 20" Chain – HWC-F-2034
- d. 24" Chain – HWC-F-2434

### D) Bearing – UCF-208-24

### E) Roller Adjustment 300-FT-008

### F) Connecting Pin

- a. 16" – 500-3-306
- b. 18" – 500-3-307
- c. 20" – 500-3-308
- d. 24" – 500-3-309

### G) Mesh Type Chain

- a. 16" – 500-3-301
- b. 18" – 500-3-302
- c. 20" – 500-3-303
- d. 24" – 500-3-304

### H) Gear Case w/ Rate Sensor Port

- a. Single – 100-R-1-01A
- b. Twin – 100-R-2-01A

### I) Hydraulic Motor

- a. MB12102AAAA Single 16" – 18"
- b. MB18102AAAA Single 20" – 24"
- c. MB10012AAAA Twin

# Conveyor Motor

## Service Bulletin 050016

Issued February 2003

For TF (MB) and TG (ME) Torqmotor Seal Kits

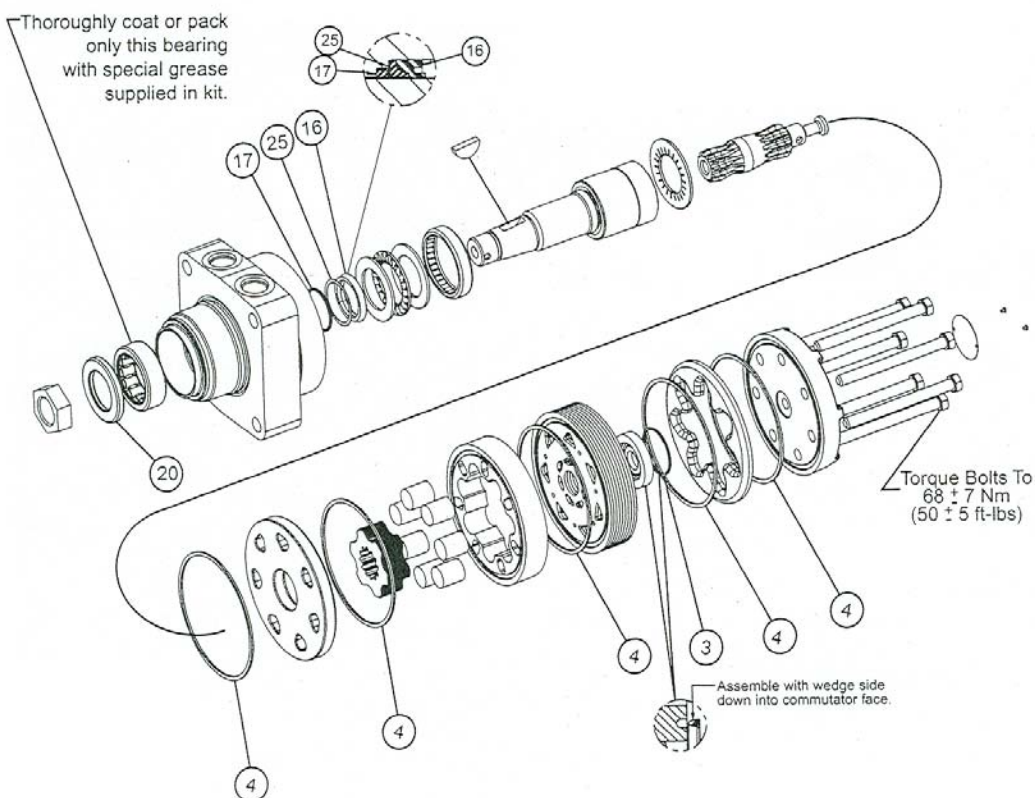
SK000092 (Buna), SK000093 (Fluorocarbon),

SK000099 (Vespel Commutator Seal)

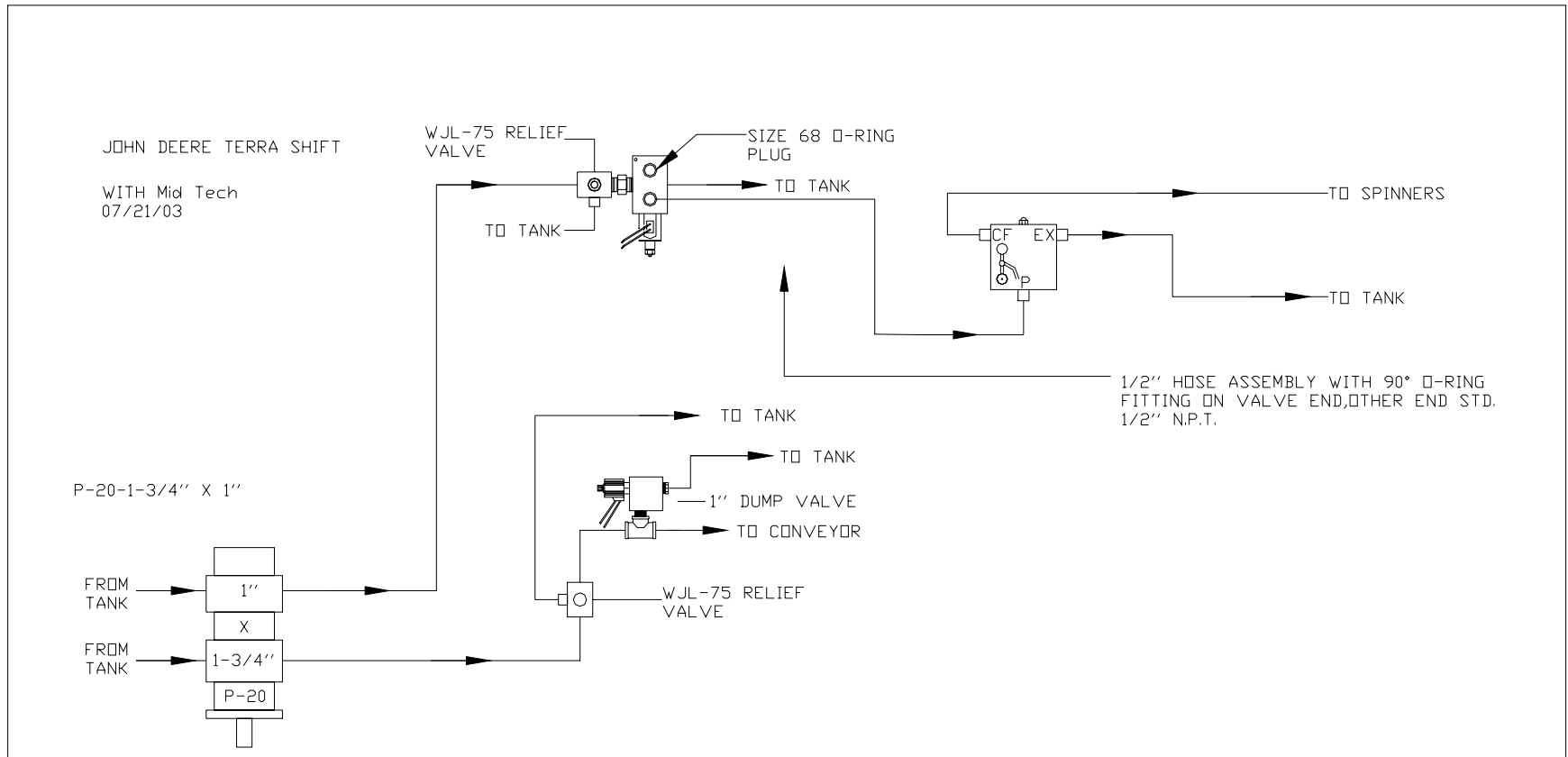
Reference Torqmotor Service Manual SM1512.



QTY	Item	Description	Buna P/N	Fluorocarbon P/N	Vespel P/N
1	17	Back up ring	028515	028515	028515
1	25	Back up washer	029118	029118	029118
1	3	Commutator Seal	032435	032435	032439
1	16	Shaft Seal	032817	032818	032817
6	4	Body Rings	032819	032820	032819
1	20	D&W Seal	478035	478035	478035
1		Bearing Lubricant	406018	406018	406018
1		Service Bulletin	050016	050016	050016

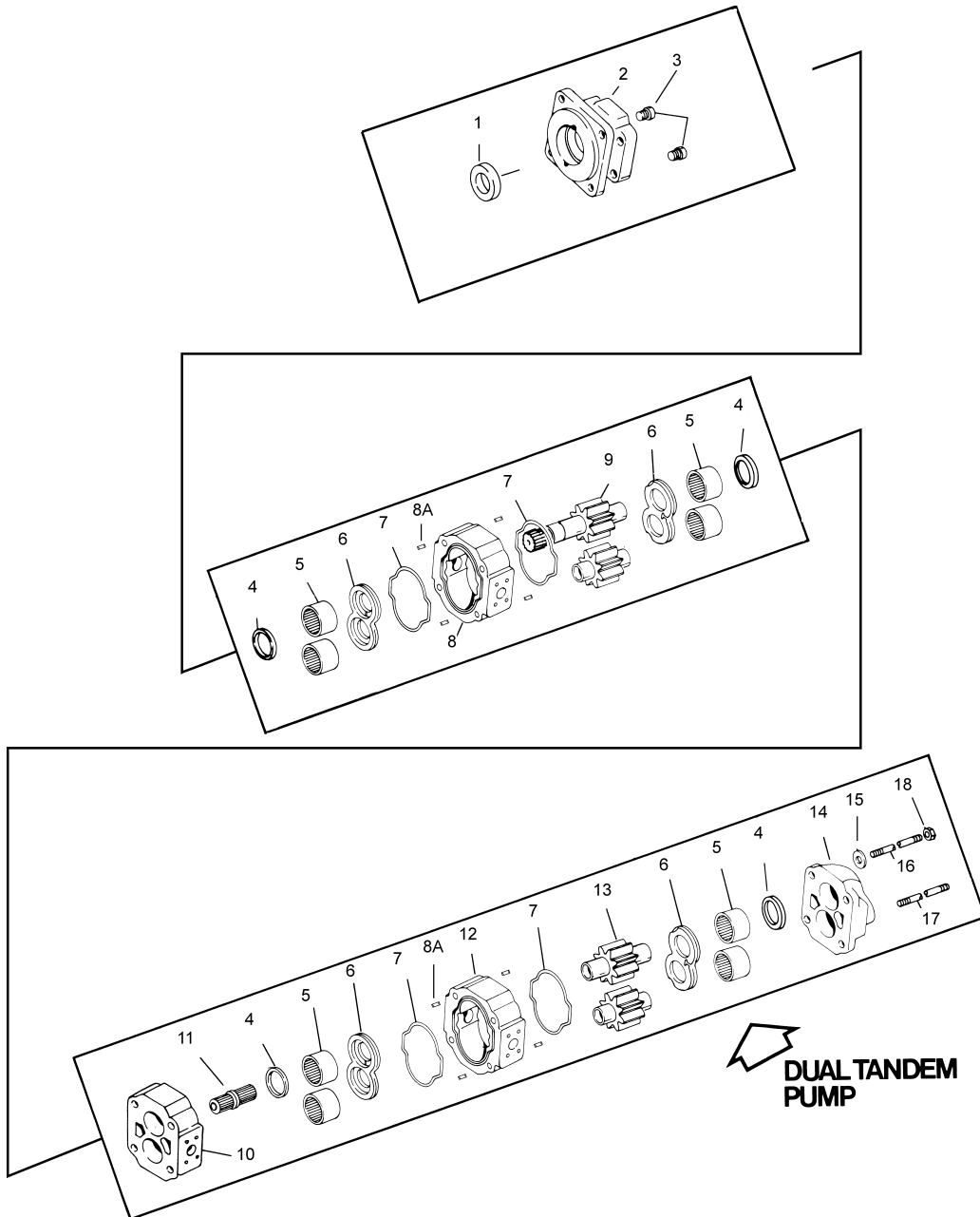


## Terra Shift Option



# 2100 SERIES

EXPLODED VIEW FOR P2100B231AXXE17-14AXE10-1



MODEL NUMBER	PARTS ORDERING
DESCRIPTION	NUMBERS P2100B231AXXE17-14AXE10-1 PUMP TYPE I SHAFT

Item Number On Exploded View	Description	Order This Part Number	Quantity Per Unit
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1	PUMP SHAFT SEAL		W62-26-16	1
2	4-BOLT-B SHAFT END COVER (SEC)		574-00890	1
3	CHECK VALVE ASSEMBLY		L-0280-K	2
4	RING SEAL		KA-0558-1XS	4
5	ROLLER BEARINGS		X-0921	8
6	THRUST PLATE		ZZ-0947-TC	4
7	HOUSING GASKETS		K-2995-240	4
8	GEAR HOUSING 1-3/4"		577-00661-17-5	1
8A	DOWEL PINS		280-1971-031	8
9	GEAR SET 1-3/4"L X 13 SPLINE		AC-0024L-3-17	1
10	BEARING CARRIER (BC)		576-00665	1
11	SHAFT CONNECTOR		YZ-0022	1
12	GEAR HOUSING 1"		577-00661-10	1
13	GEAR SET 1"		U-0996L-10	1
14	PORT END COVER (PEC)		592-00662	1
15	WASHER 9/16"		W033-3	4
16 & 17	TIE BOLTS 9/16-12 X 12-1/4"		900-01021-1225	4
18	HEX NUT 9/16-12		900-01022	4

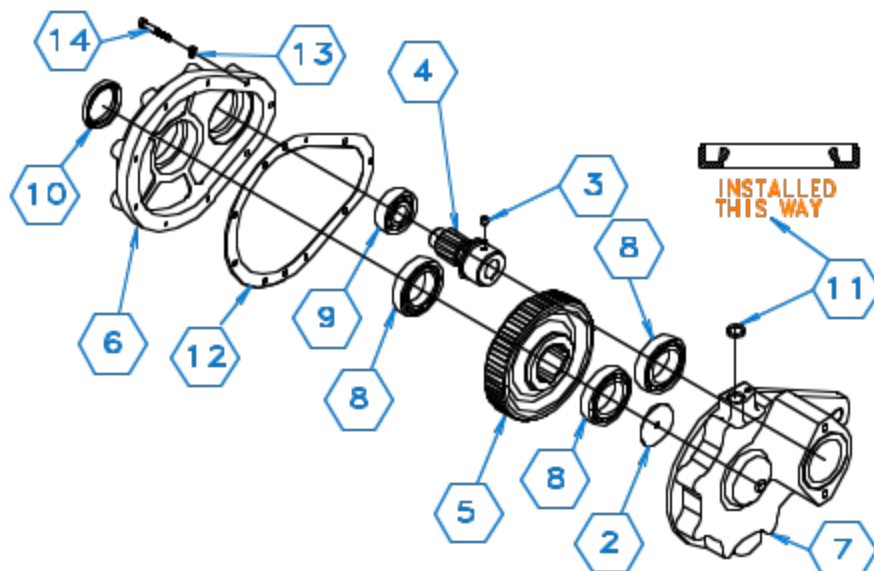


**RAWSON**  
CONTROL SYSTEMS INC.

1 1/2 HP MAX. S.S.  
CONV. TO: 230V 208V  
24" X 22" X 22"  
PART NO. 965599

## SINGLE SPEED REDUCER

67 CT SMART-L.H. OR R.H.  
501000 R.H.-501001 L.H. WITHOUT SENSOR



ITEM	PART NO.	DESCRIPTION	QTY
1	301506	GROUP ASSY-KEY & PLUG-NS	1
2	311062	WASHER	1
3	312021	PLUG-DELRIN	1
4	313077	GEAR-PINION	1
5	313084	GEAR-DRIVEN	1
6	315051	HOUSING-INBOARD	1
7	315087	HOUSING-OUTBOARD R.H.	1
7	315088	HOUSING-OUTBOARD L.H.	1
8	601151	BEARING	3
9	601173	BEARING	1
10	601350	SEAL-OIL	1
11	601360	SEAL-OIL	1
12	611951	GASKET	1
13	617006	WASHER-LOCK	9
14	620041	CAPSCREW	9
OPTIONAL CABLES:			
	307176	ASS'Y-SENSOR, GEAR TOOTH Pigtail	1
	307177	ASS'Y-SENSOR, GEAR TOOTH 10 FT. CABLE	1
	307178	ASS'Y-SENSOR, GEAR TOOTH 20 FT. CABLE	1
	307179	ASS'Y-SENSOR, GEAR TOOTH 30 FT. CABLE	1

965599

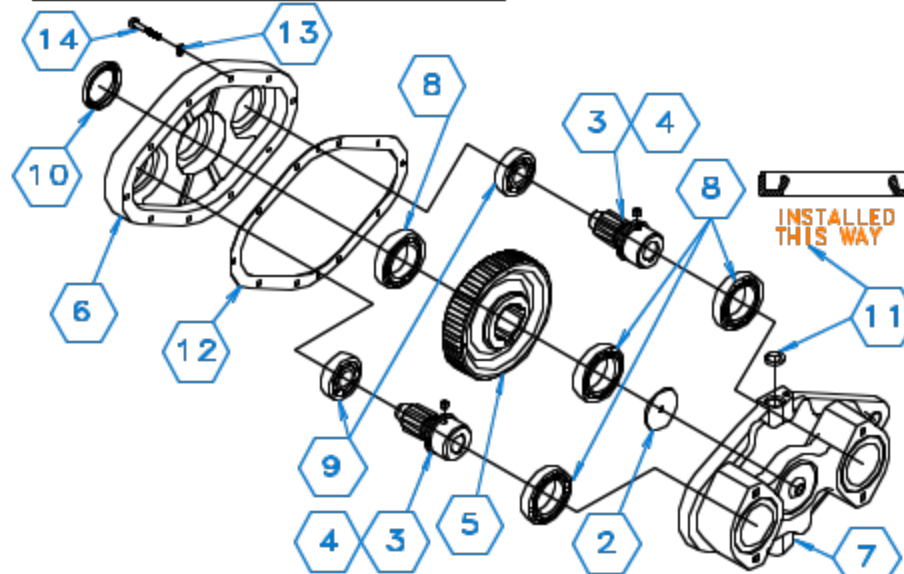
Single - Conveyor Gear Case w/ Rate Single



**RAWSON**  
CONTROL SYSTEMS INC.

11800 Hwy. 20, P.O.  
Box 100, Jena, MO 64504  
816-633-6666  
Fax: 816-633-1388

**TWIN SPEED REDUCER**  
67 CT SMART—L.H. OR R.H.  
301092 R.H.—301093 L.H. WITHOUT SENSOR



ITEM	PART NO.	DESCRIPTION	QTY
1	301505	GROUP ASSY-KEY & PLUG-NS	1
2	311062	WASHER	1
3	312021	PLUG-DELRIN	2
4	313077	GEAR-PINION	2
5	313084	GEAR-DRIVEN	1
6	315052	HOUSING-INBOARD	1
7	315089	HOUSING-OUTBOARD R.H.	1
7	315090	HOUSING-OUTBOARD L.H.	1
8	601151	BEARING	4
9	601173	BEARING	2
10	601350	SEAL-OIL	1
11	601360	SEAL-OIL	1
12	611952	GASKET	1
13	617006	WASHER-LOCK	10
14	620041	CAPSCREW	10

**OPTIONAL CABLES:**

307176	ASS'Y-SENSOR, GEAR TOOTH Pigtail	1
307177	ASS'Y-SENSOR, GEAR TOOTH 10 FT. CABLE	1
307178	ASS'Y-SENSOR, GEAR TOOTH 20 FT. CABLE	1
307179	ASS'Y-SENSOR, GEAR TOOTH 30 FT. CABLE	1

**965600**

**Tandem - Conveyor Gear Case w/ Rate Single**

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