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## **FEEDER INTRODUCTION**

The Model ZCF1600; 16" Belt Feeder is a heavy and versatile machine, with options to fit almost every application.

The ZCF1600 Belt Feeder Sections are made from 14 gauge sheet steel, and is dip painted with Enamel Paint. The Drive is made from ¼" plate steel and the Idle made from 10 gauge sheet steel. 2050 roller chain and heavy duty gear box are used for a smooth and positive delivery of feed. Formed Plastic Channel Boards are used to guide the chain between the Drive & Idle Sprockets. Your choice of a One Way or Two Way Plow are available, along with three styles of trip mechanisms. Hoppers are available in different lengths and can be purchased in standard or flow through styles. Special lengths can be custom made to order. The ZCF1600 Belt Feeder can be mounted on the floor of the feed bunk or hang from the feed bunk cross members, bunk roof or the inside of the barn ceiling. The PVC coated 120 low temp belt is all weather and silage acid & moisture resistant. An 8" drive roller provides great traction for longer length feeders. A 6" tail roller reduces excessive stress on the belt and belt lacing, giving you longer wear life. The Model ZCF1600 can also be used as a Conveyor Feeder Combination. The Feeder works well with any feed commodity mixture.

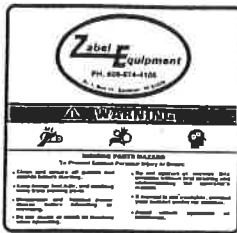
The ZCF1600 Feeder minimum length is 32' and the maximum length is 200'. Heavy Duty Drives are available for Feeders over 120'.

Please read all safety and installation instructions carefully. Reading and Understanding these instructions will in the assembling of the unit and keep you safe. Please keep all protective shields in place on the Feeder Unit, as this is required by Oscia and for your safety as well. Yearly maintenance of checking the oil, lubing the 2050 chain, checking bearings, and checking tracking will make your feeder last longer and help with your own protection from serious injury.

We at Zabel Equipment, INC. strive on building a solid and long lasting product. If you have any Questions please call (608) 874-4105.

Hoping that you, and your Livestock will enjoy a simply Feeder that will last for years.

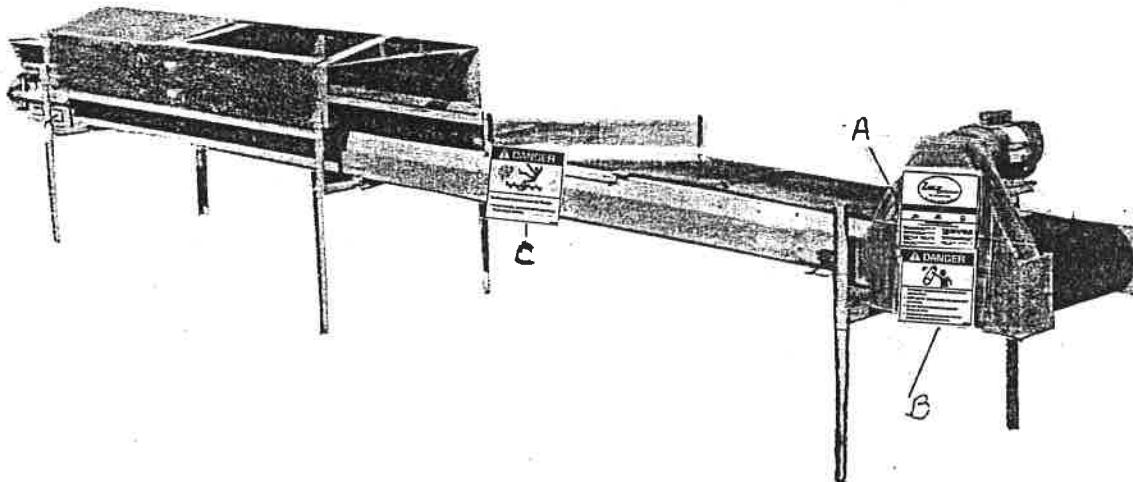
## -----SAFETY DECALS-----



- ZEW**
- (A) THIS DECAL IS LOCATED ON THE FRONT OF THE MAIN SHIELD.

- SW108**
- (B) THIS DECAL IS LOCATED UNDER THE MAIN SHIELD NEAR THE CHAIN, SPROCKETS, BELT AND PULLEYS. THIS DECAL MEANS YOU ARE IN IMMEDIATE DANGER OF SERIOUS INJURY OR DEATH. DISCONNECT POWER SOURCE AND REPLACE SHIELDS.

- SW402**
- (C) THIS DECAL IS LOCATED ON THE SIDE OF THE UNIT NEAR THE CENTER. THIS DECAL COMES IN THE MAIN PARTS BOX AND SHOULD BE APPLIED BY THE PERSON DOING THE INSTALLATION.



**IMPORTANT:** ALL SAFETY DECALS SHOULD BE KEPT CLEAN AND READABLE. CLEAN SAFETY DECALS USING WARM WATER AND SOAP. IF A DECAL IS DESTROYED, PAINTED OVER, WORN, MISSING, OR NO LONGER READABLE IT MUST BE REPLACED. A SAFETY DECAL (DECALS) CAN BE ORDERED BY SPECIFYING THE MACHINE SIZE, NAME OF DECAL, PART NUMBER. IF YOU WOULD LIKE MORE THAN 1 DECAL, PLEASE INDICATE ALL DECALS THAT ARE NEEDED.

# ZABEL EQUIPMENT, INC.

## ZCF1600 BELT FEEDER

Before operation, thoroughly read and understand this entire ASSEMBLY AND OPERATING INSTRUCTIONS MANUAL. Pay particular attention to the safety information on the inside front cover. Completely familiarize yourself with all control mechanisms for this unit.

### -----OPERATION-----

#### GENERAL

Read the safety and operation sections of this manual before starting the machine.

Always shut off the power, and if possible lock it in the OFF position or remove the fuses before attempting any maintenance or repairs. When you must observe the operation to check any adjustments made, always do so from a safe distance.

**WARNING** *Never operate the machine with any of the guards or shields removed. Failure to observe the Proper safety precautions may result in personal injury or death.*

**WARNING** *Keep hands, feet, and loose clothing away from moving parts. NEVER STAND, SIT, OR LEAN ON THE UNIT WHILE IT IS IN OPERATION. Failure to follow these and all normal Safety precautions may result in personal injury or death.*

**STEP 1:** Clear the area of feed, animals, etc. before starting up the feeder.

**STEP 2:** Start up the machine (feeder) and check it for proper operation.

**STEP 3:** Startup the filling equipment and check the placement of the material going into feeder.

**STEP 4:** When the desired amount of material has been conveyed, shut off the filling equipment.

**STEP 5:** Continue running the unit until all material has been dumped. When the unit is empty, shut off Feeder.

DATE THIS BOOK March 10, 1999

# ZABEL EQUIPMENT, INC.

## MODEL ZCF1600 BELT FEEDER

### BEFORE YOU START- PLAN THE INSTALLATION

1. **READ THIS ENTIRE MANUAL** thoroughly and familiarize yourself with the parts of the equipment before you. begin.
2. Decide how this feeder is to be supported and fastened into position. Supports must be securely fastened to a solid structure.
3. This feeder has the capacity to handle 2 to 3 silo unloaders maxim, some discretion may be needed. Do not overload the feeder.
4. Determine where the Idle end will be positioned as it is critical. Position feeder accordingly
5. Tools needed to assemble the feeder used are:
  1.  $\frac{3}{4}$ ", 5/8", 9/16" and 7/16" wrenches.
  2. Ratchet with  $\frac{3}{4}$ ", 9/16", and 7/16" sockets.
  3. Vise grip and crescent wrench.
  4. Grease gun and lube spray.
  5. Pliers.
  6. String and level.

## ZABEL EQUIPMENT, INC. MODEL ZCF1600 BELT FEEDER

### SPECIFICATIONS

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- LENGTH-** 32 TO 120' MAXIMUM LENGTH
- BELTING-** 16" PVC, easy flex, low temperature, silage acid and moisture resistant
- CAPACITY-** 2 to 3 silo unloader maximum
- PLOW-** Chain driven—single lot or split lot..
- FRAME-** 14 gauge steel, double dipped paint
- OPTIONS AVAILABLE-** 2', 4' and 8' sections only.

### HOW TO ORDER PARTS

1. Refer to illustration which shows the part to be order.
2. Find the part on the illustration.
3. Note the number at the end of the arrow pointing to the part.
4. Refer to the parts list and find that number under item column.
5. Follow across the page to the column headed Part #. Use this number and the name of the part when placing your order.

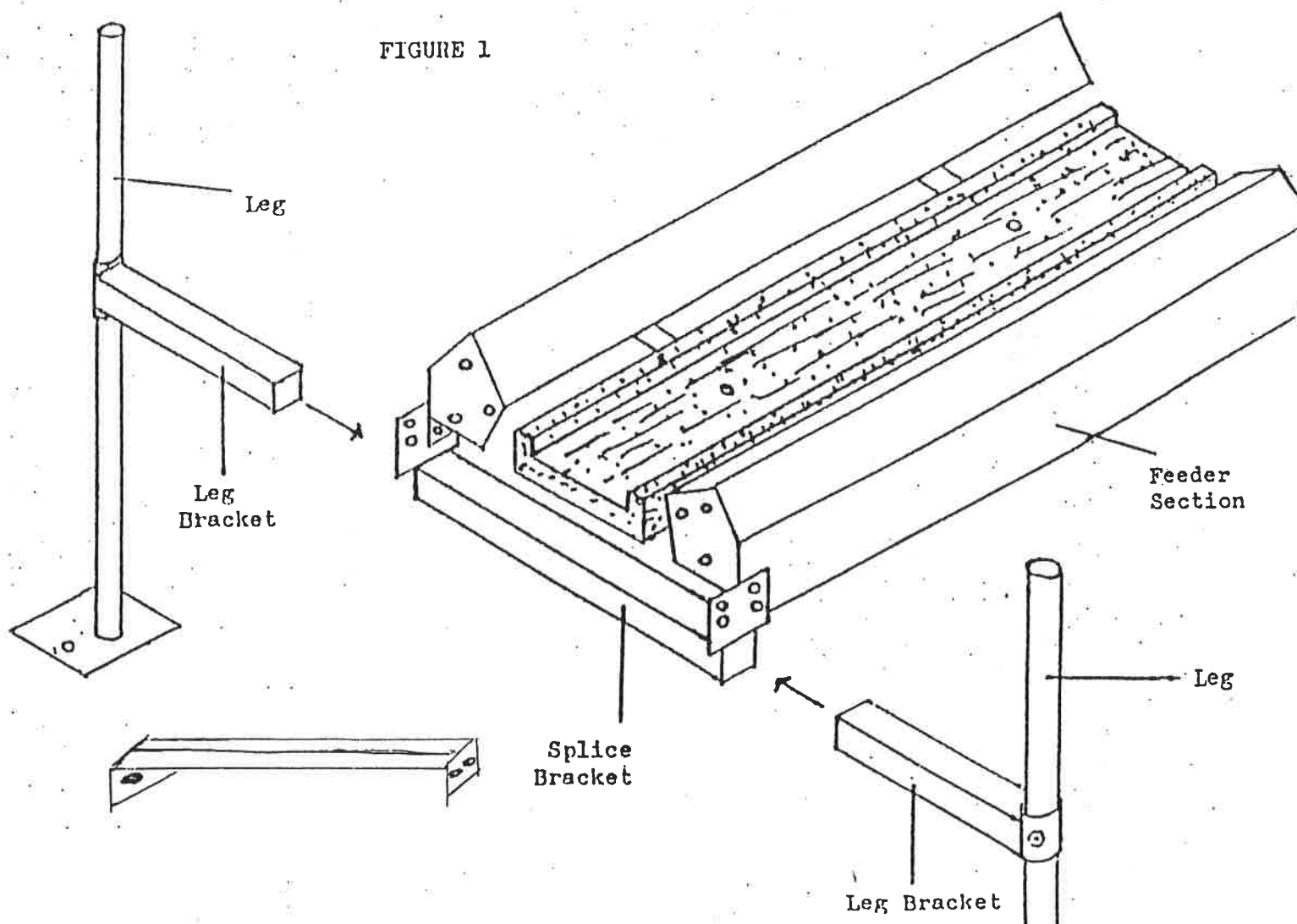
## INSTALLATION INSTRUCTIONS

### PART: 1 ASSEMBLY OF FEEDER SECTIONS

**STEP 1:** Take the Idle end and lay it in the end of the bunk where it is to be installed.

**STEP 2:** Attach the 8' idle rail section to the idle end, using (6) 3/8"x1" hex head bolt and 3/8" hex nuts, (Unless you are using the feeder as a conveyor, you must then determine where you want the feed to begin plowing off and then place the rail section at that point). now you can attach the splice bracket to the 8' section using (4) 3/8"x3/4" hex head bolts and 3/8" flange nuts (8 bolts and nuts for feeders with legs). If you are using legs, this would be a good time to put them on the feeder sections; (see figure 1 below). The Idle end can now be positioned where it will be permanently stationed, idle end positioning is critical so that the silage falls into the hopper. If you plan to use a split lot plow, you must center the feeder in the bunk. If you plan on using a standard plow, you must offset the feeder so that the feed falls near the center of the bunk (approximately 6" from feeder section side). **DO NOT** permanently fasten idle end down at this time.

FIGURE 1





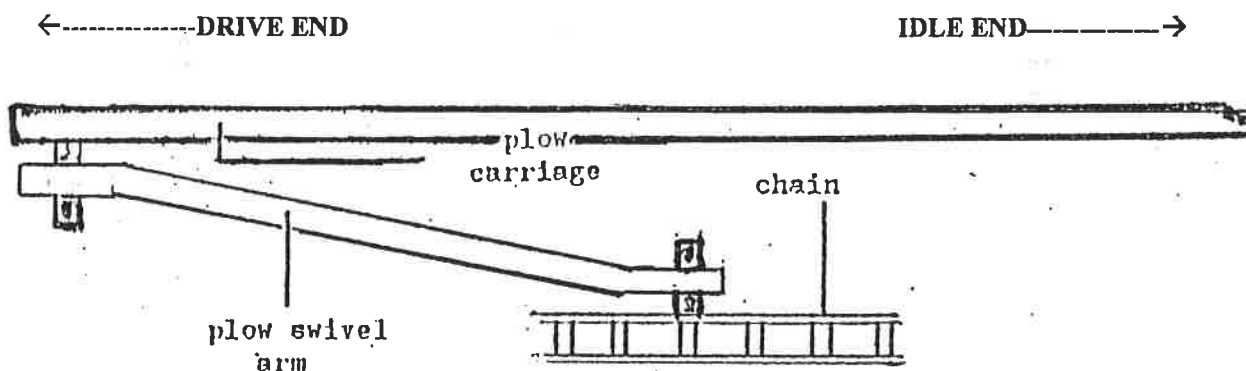
## PART 2: ASSEMBLY OF FEEDER SECTIONS

- STEP 3:** Take the next feeder section and fasten a splice bracket (which includes two leg brackets, and two legs; if you are using legs on the installation of the feeder) to one end of the feeder section.
- STEP 4:** Set this feeder section up and attach it to the end of the previous section using (6) 3/8" x 1" bolts and (6) 3/8" hex nuts. Use (4) 3/8"x3/4" hex head bolts and (4) 3/8" flange nuts from inside the feeder section out through the splice bracket, and tighten only finger tight. You should now have two (2) sections together and standing on their own.
- STEP 5:** Repeat Steps 3 & 4 until the entire feeder is together and standing on its own. In the last section, next to the drive a return roller assembly with (2) tabs will mount in the splice bracket holes using (4) 3/8"x3/4" hex head bolts and (4) 3/8" hex nuts (see figure 2).  
(NOTE: The belt will run on the under side of this return roller.)
- STEP 6:** Straighten the feeder using a string tied from the idle end to the drive end. Pull the string tight and adjust feeder towards or away from string as needed. Check levelness of feeder and make any necessary adjustments.
- STEP 7:** When the feeder is straight and level, tighten all bolts. Make sure when tightening bolts that the joints between the sections are as smooth as possible. Tightening the bolts snug, and then using a hammer to align joints will make this job easier.
- STEP 8:** Fasten the feeder to the bunk by either anchoring the legs to the floor, or by using angle iron clips to fasten it to the cross members.
- STEP 9:** Return rollers may now be put in at this time. Starting from the idle, place return rollers in the set of holes nearest the idle section of every 8' section.  
(NOTE: The belt will return on the top side of these rollers.)

## PART 2: ASSEMBLY OF 16" FEEDER PLOW & PLOW DRIVE

- STEP 1:** Determine where you wish to begin feeding on the Idle end of the feeder. This is where you will locate the idler sprocket assembly. (**NOTE:** In most cases, the idler sprocket assembly will be located in the first eight (8') foot section on the end **CLOSEST** to the Idle section.)
- STEP 2:** Set the idler sprocket base plate on the idler sprocket support angles. Using 3/8x1" bolts and 3/8" flat washers, bolt the base plate to the idler sprocket tightener plates. Tighten only finger tight at this time. The base plate and tightened plates, should now slide easily along the support angle.
- STEP 3:** Unroll the # 2050 roller chain and put it around the idler sprocket and drive sprocket. Make sure that the 3/8" pin which is welded to the chain is **UP**. Put the connector link in the chain.
- STEP 4:** Tighten the chain by sliding the idler sprocket base plate **AWAY** from the Drive head. While holding the chain tight, tighten the four (4) 3/8" bolts in the base plate.
- STEP 5:** Set the plow carriage on the feeder with the plow swivel arm **NEAREST** to the Drive head. Install the swivel arm to the chain and plow as shown in Figure 2 below. Slip in the 3/16 x 1" Cotter keys through the holes in the pins and crimp.
- STEP 6:** (For standard plow only): Place plow carriage angling in the direction of which feed is to be directed to feed in the center of the bunk.
- STEP 7:** (For split lot plow only): Place the plow trip mechanism assembly on the set of legs **NEAREST** the Idle end. Simply slide the entire structure down over the legs with the plow trip mechanism pointing towards the Idle end. The correct height is when the plow trip mechanism clears the plow by about 1", but catches the plow trip pin by about a 1/2".

Figure 2



## PART 3: ELECTRICAL INSTALLATION

### ZCF1600 BELT FEEDER

**STEP 1:** The electric motor should be mounted at this time on the unit. It can be single phase or three phase, this motor should be foot mounted. A 3" drive pulley is recommended, and one is furnished with the feeder. The motor is to be furnished by the purchaser. Refer to the chart below to check the required horsepower for the length of feeder you have installed.

#### HORSEPOWER REQUIREMENTS

LENGTH	32' to 40'	41' to 70'	71' to 90'	90' to 130'	130' to 200'
HORSEPOWER	1 HP	1.5 HP	2 HP	3 HP	5 HP

**STEP 2:** Set the motor on the top surface of the motor mount plates. Bolt the motor to the plates, making sure the shaft extends far enough, so that the supplied 3" pulley aligns with the 12" pulley mounted on the Drive head.

**STEP 3:** Align and lock the 3" pulley on the motor shaft using the key stock provided. (please refer to the Shield diagram and installation manual.)

**NEVER OPERATE THE FEEDER WITHOUT ALL SHIELDS IN THEIR PROPER PLACE. FAILURE TO FOLLOW THE PROPER SAFETY PRECAUTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.**

**WARNING**

**CAUTION**

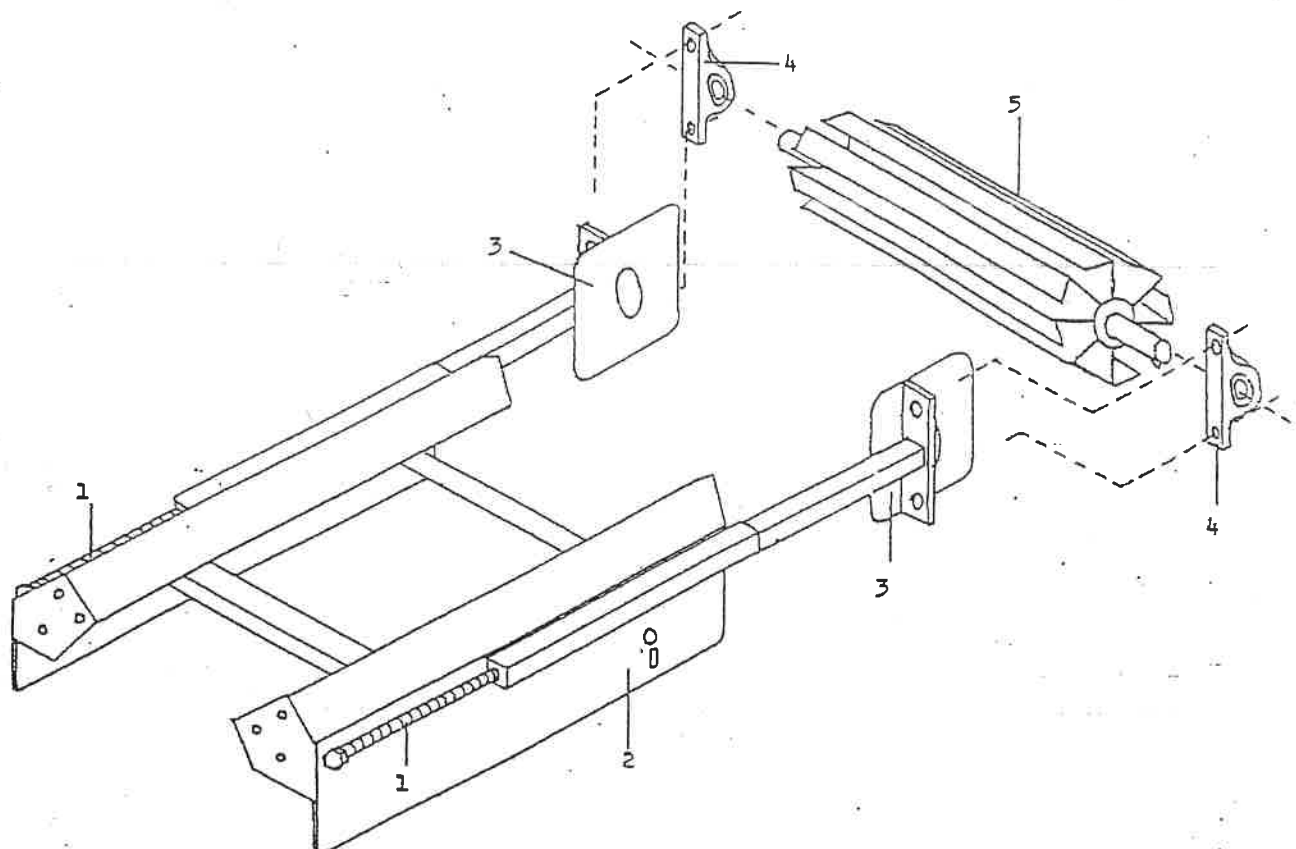
**STEP 4:** The electrical wiring for the feeder unit is the responsibility of the purchaser. All wiring should be done by a qualified electrician in accordance with all safety codes. Make sure an appropriate ON/OFF control switch is used. All wiring and switches are to be kept out of livestock reach.

## PART: 4 BELT INSTALLATION AND FINAL ASSEMBLY

### ZCF1600 BELT FEEDER

- STEP 1:** You are now ready to install the belt. Loosen the belt tightener bolt on either side of Idle end to get as much slack as possible. Inspect feeder and make sure there are **NO** sharp edges to cut or snag belt, these sharp points or edges must be removed before the belt is installed.
- STEP 2:** Unroll the belt so that the PVC coated (black shiny side) side is up. Pull the belt over the Idle roller and through the underside of the feeder. Be sure to go **OVER** the splice brackets. Mesh the loops of the metal belt splice together and thread the connector cable through the splice. Once the cable is in place, crimp the retaining washers on both ends of the cable with a pliers.
- STEP 3:** Tighten the belt tightener bolts on either side of the Idle end until the belt is tight. Tightener bolts should be tightened the same amount on side to help keep the belt straight.
- STEP 4:** Now adjust the belt so that it is in the center of the rollers at either end. Start the unit up in short bursts, doing all the initial adjustment in the Idle end. If the belt is too near one side and not centered, loosen the bolt on the side it is **FARTHEST** from. When belt is centered on Drive end, no further adjustment is necessary.
- STEP 5:** If the belt must be adjusted on Drive end, locate the roller alignment adjustment rod, (it is on the opposite side of the motor pulley). Loosen the two bolts holding the bearing by turning several turns. Now center the belt on the roller, by screwing the roller alignment adjusting rod in or out. When the belt is centered, center it as you did previously. ( **NOTE: The belt may wander as much as ½" when properly adjusted, and this is normal.** )
- STEP 6:** The hopper can now be placed on the feeder. Determine where you want the hopper to be placed. (You have the option of size and flowage when distributing the feed.) (**IMPORTANT:** Hopper must be **AT LEAST 26"** from the chain Idler sprocket, to ensure clearance for the plow.) The bottom steel edge of the hopper, should be at least 1" from the belt surface to keep the belt from being cut. (Rubber sealing strips will seal up any gap that may appear.) Drill 1.4" holes through brackets once the hopper is properly positioned. Use four ¼" x 1" bolts to fasten the hopper to the feeder section.
- WARNING** **STEP 7:** Place all shields in their proper places on the feeder. These shields are for your protection and should be kept in place at **ALL** times. Before you operate the feeder unit, place the red/white **"WARNING"** (that is found in the main parts box) on the unit. The decal should be placed in a clearly visible place on a section near the center of the feeder unit.

**IDLE UBIT ASSEMBLY  
PART # ZCF1609**

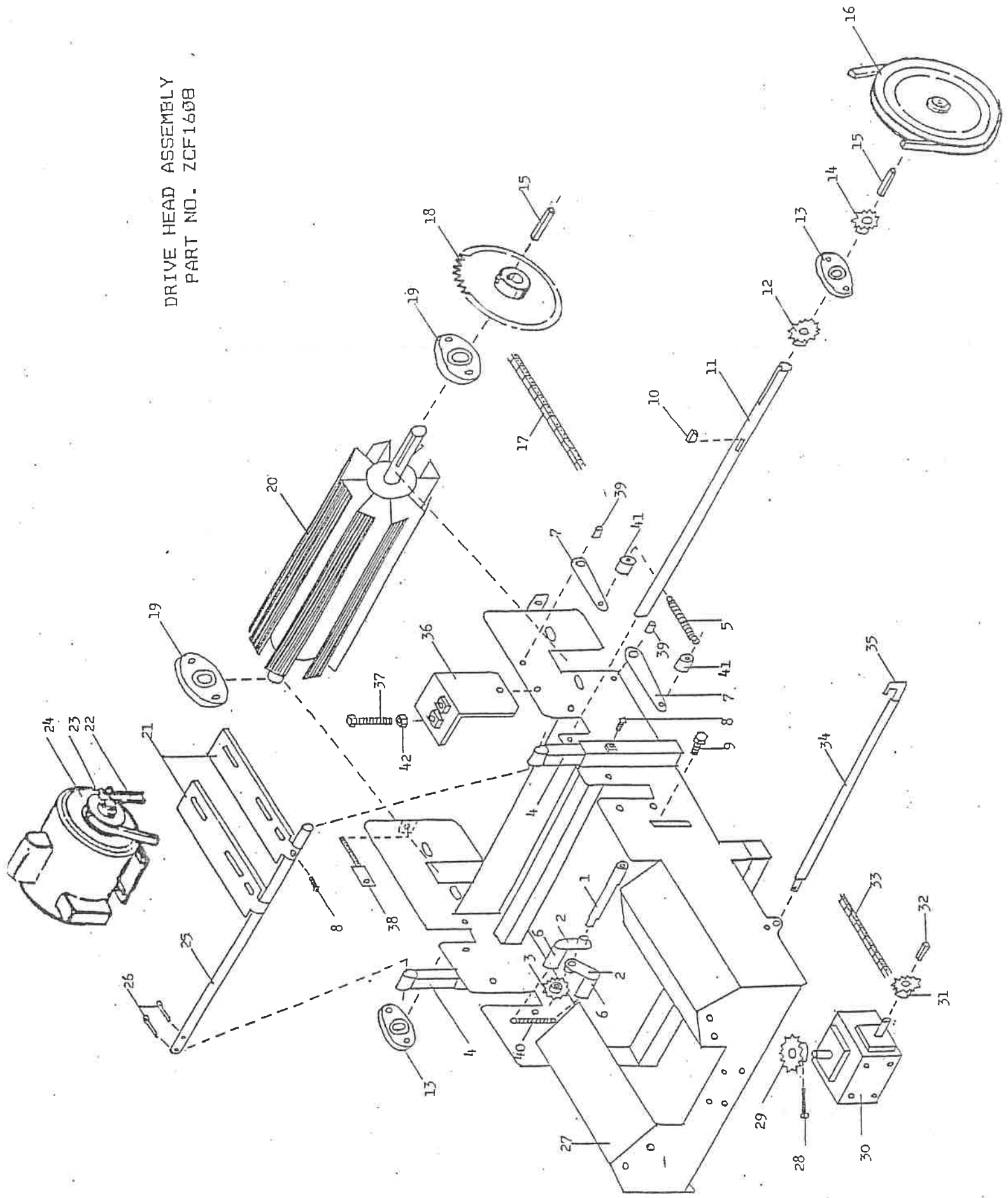


<u>ITEM</u>	<u>PART #</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	ZC162512	2	3/4" x 12" Belt Tightener Bolt
2	ZCF121	1	Idle Unit Frame
3	ZC162509-A	2	14" Brg. Holder Plate w/Shield
4	ZCCL25114S	2	1 1/4" Pillow Blk. Bearing
5	ZC162507	1	M1625 Idle Roller

FEEDER DRIVE HEAD ASSEMBLY  
PART # ZCF1608

ITEM	PART #	QUANTITY	DESCRIPTION
1	ZCF425	1	FLOW DRIVE CHAIN TIGHTENER SHAFT
2	ZCF421	2	PIVOT ARM (SHORT)
3	ZCF422	1	IDLER SPROCKET, 17 TOOTH, 1/2" BORE
4	ZC162511-B	1	MOTORMOUNT TUBE w/SET SCREW
4	ZC162511	1	MOTORMOUNT TUBE I/SET SCREW
5	ZC216	1	LONG PIVOT ARM SPRING
6	ZCF166-A	2	1-1/2" x 1-3/4" NYLON TIGHTENER
7	ZC214	2	PIVOT ARMS (LONG)
8	1BSQHSS3834	3	3/8 x 3/4" SQ HD SET SCREW
9	1BHS3834	1	3/8 x 3/4" HEX HD BOLT F/BASE SHAFT
10	ZC162545-A	1	1/4"x1/4"x1-1/4" KEY
11	ZCF107	1	23-3/4" x 1" JACK SHAFT
12	ZCF143	1	12 TOOTH, 1" BORE SPROCKET
13	ZC-FC2251	2	1" BORE FLANGE BLOCK BEARING
14	ZC162516	1	10 TOOTH, 1" BORE SPROCKET
15	ZC162545	2	1/4"x1/4"x2-3/4" KEY
16	ZC162520	1	12 "PULLEY WITH 1" BORE
17	ZCF405	1	#50 CHAIN, 53 PITCHES, CONNECTER
18	ZC162515-A	1	42 TOOTH SPROCKET W/1-1/4" BORE
19	ZC-FC225114S	2	1-1/4" FLANGE BLOCK BEARING
20	ZC162518	1	DRIVE ROLLER
21	ZC162523-A	1	MOTOR MOUNT BRACKET w/SET SCREW
21	ZC162523-B	1	MOTOR MOUNT BRACKET I/SET SCREW
22	BBB45	1	B45 BELT
23	PPBS30(XXX)	1	3" MOTOR PULLEY, SPECIFY BORE
24	EM00	1	MOTOR
25	ZCF117	1	3/4" x 20-1/2" MOTORMOUNT SHAFT
26	X04-B	2	3/16" x 1-1/2" COTTER KEY
27	ZCF111	1	DRIVE HEAD FRAME WELMENT
29	ZCF145-C	1	50BS15x1" SPROCKET
30	ZCF105	1	WORM GEAR REDUCER
31	ZCF143-A	1	40BS12x3/4" SPROCKET
32	ZC347	1	3/16x3/16"x1" KEYSTOCK
33	ZCF407	1	#40 CHAIN, 102 PITCHES, CONNECTR
34	ZCF169	1	RETURN ROLLER
35	ZCF168	1	RETURN ROLLER ROD F/FEEDER
36	ZCF114	1	BELT TIGHTENER BRACKET
37	ZCF229	1	1/2x3-1/2" TIGHTENER BOLT
38	ZCF108	1	DRIVE ROLLER TRACKING BOLT
39	ZCF426	2	5/8"x 1" L PIVOT ARM SHAFT
40	ZCF216	1	SHORT PIVOT ARM SPRING
41	ZCF166-A	2	1-1/2"x1-3/4" NYLON ROD
42	1BHN12	1	1/2 "HEX NUT

DRIVE HEAD ASSEMBLY  
PART NO. ZCF1608



## INSTRUCTIONS FOR INSTALLING CENTER-FILL KIT ZCF1610

**NOTE:** "Center filled ZTF1600 Feeders" can have feed drop onto the belt anywhere between the drive and idle sections, not necessarily in the "center".

**STEP 1:** Remove plastic board from under where the feed will be dropping onto the belting, on "center filled feeders"; or where the bunk will be divided on a double plow end fill. (You may have to remove two boards and cut them in half.)

**STEP 2:** Install idle sprocket support angles in place where the plastic boards were removed. You may use 2 or 4 angles, depending on the situation. If 4 angles are used and have to be back to back to each other, thread the two 1-1/4" long bolts, from the inside out. Then attach through the first set of angles, and thread the second set of angles onto the remaining bolt

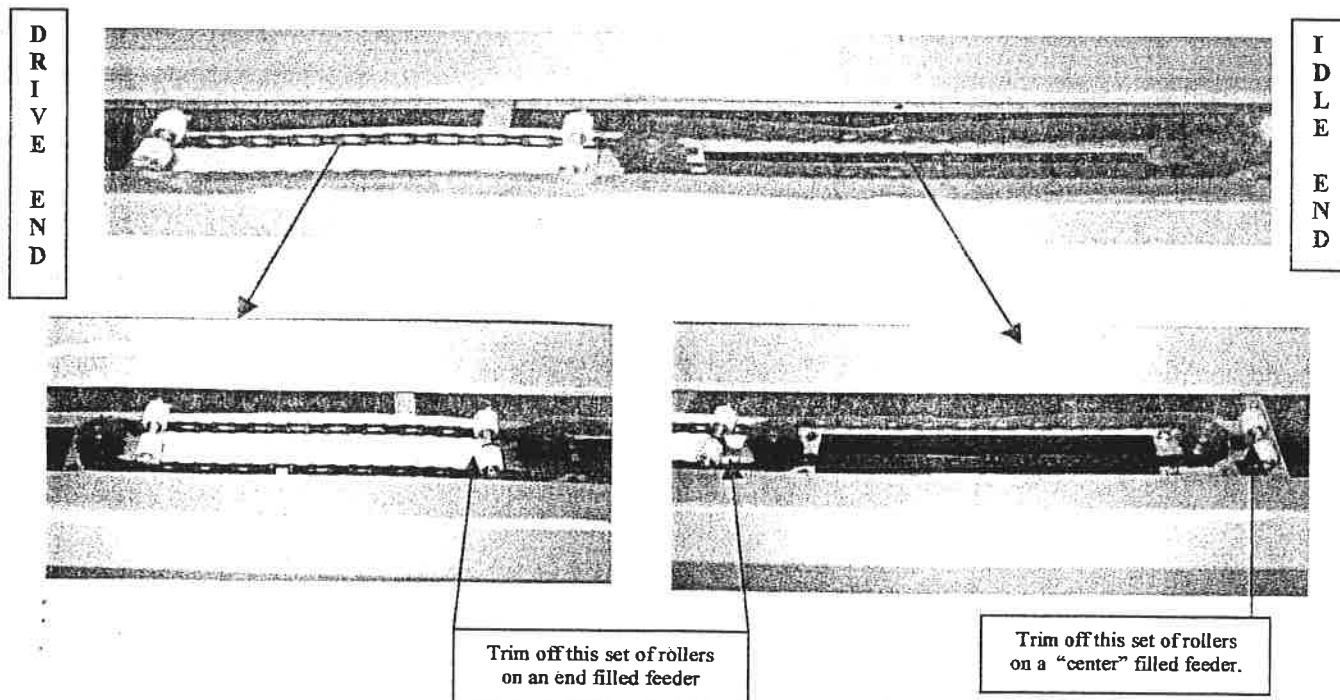
**STEP 3:** Place the plow that will be running between the Drive and the first double sprocket at the desired end of travel. Install the first double sprocket under the plow swivel arm, then install the plow chain from drive to the top sprocket and tighten.

**STEP 4:** Place the plow that will be running between the Idle and the second double idle sprocket at the desired end of travel. Install second double sprocket under the plow swivel arm. (Make sure to install the plows far enough apart, so that they don't hit one another.) Install the 2050 roller chain onto the bottom sprockets of the double sprockets and tighten. Install the plow chain from idle sprocket to the top sprocket of the second double idle sprocket & then tighten.

**STEP 5:** Bolt a piece of manger liner or belting under the lower chain. (Not supplied in kit)

**STEP 6:** Drill 13/32" hole at each set of sprockets and run the grease hoses.

**NOTE:** On "center filled feeders" the belt lift rollers attached to the single idler sprocket plate will need to be cut off in order to clear plow carriage. On double plow end fill feeders the belt lift rollers will need to be cut off the double idler sprocket plate nearest the idle instead of the single idler sprocket plate.





**CENTERFILL PLOW KIT F/FEEDER**  
**PART # ZCF1610**

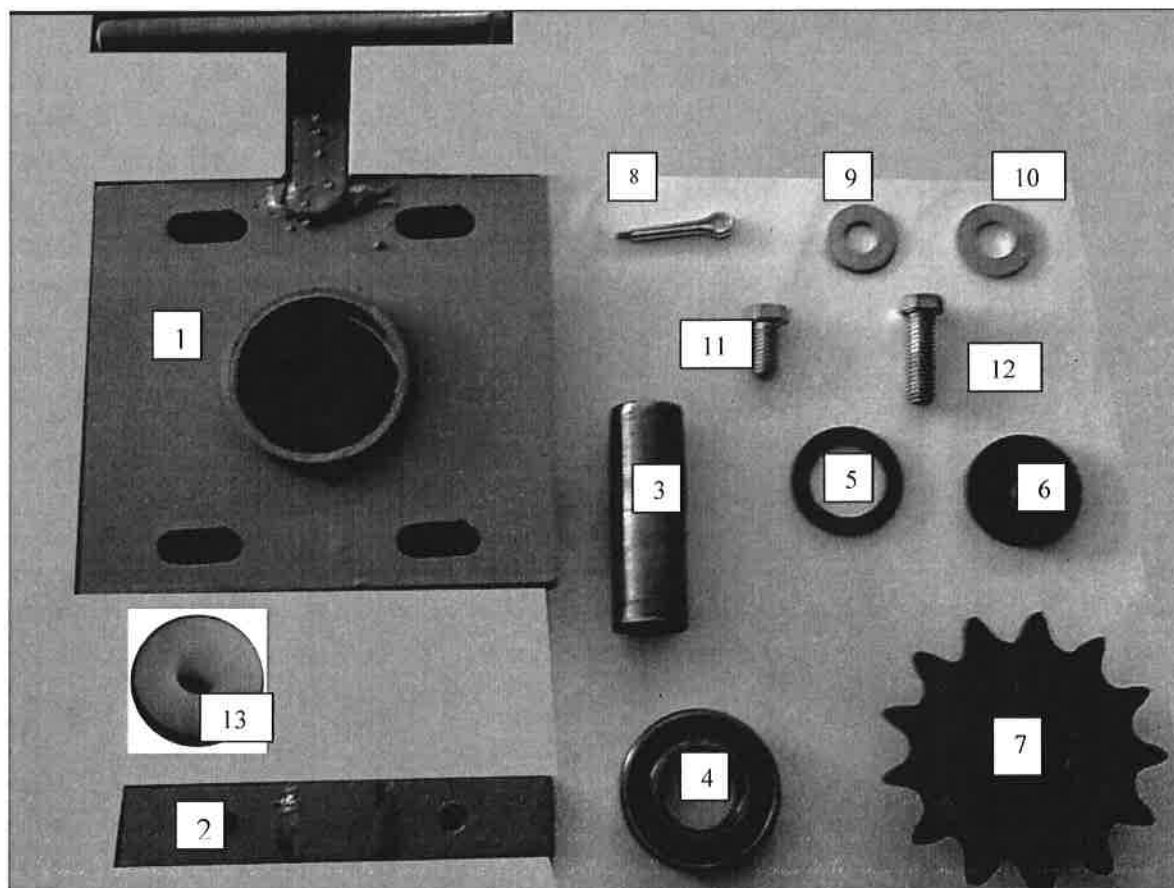
QUANTITY	PART #	DESCRIPTION
2	ZCF132-A	DOUBLE SPROCKET BASE PLATE
2	ZCF134	SPROCKET TIGHTENED PLATE
1	ZCF147	20/50 CONNECTOR w/PIN
2	ZCF1612	5015 DOUBLE SPROCKET w/BUSHING
8	1BHS7161	7/16" x 1" HEX BOLT
2	1BHS716114	7/16" x 1-1/4" HEX BOLT
4	X04-A	3/16" x 1" COTTER KEY
2	X65	2050 ROLLER CHAIN
2	X66	2050 CONNECTOR LINK
4	ZC162527	* 1-1/2" NYLON ROLLER
2	ZCF103	* 1/8" STREET ELBOW
2	ZCF118	* 1/8" x 12" GREASE HOSE
4	ZCF133	IDLE SPROCKET RAILS
2	ZCF134-A	* DOUBLE SPROCKET TIGHTEN PLATE
2	ZCF135	* IDLE SPROCKET SHAFT
4	1BCB38114	* 3/8" x 1-1/4" CARRIAGE BOLT
8	1BFW12	* 1/2" FLAT WASHER
4	1BFW38	* 3/8" FLAT WASHER
4	1BHN38	* 3/8" HEX NUT
4	1BHS381	* 3/8" x 1" HEX BOLT
4	X22	* 1" x 10 GA. STEEL SHIM
2	X33	* 1/8" PIPE ZERK (STRAIGHT)
2	X41	* 1" EXT SNAP RING

- MEANS – ASSEMBLED PARTS F/DOUBLE SPROCKET ASSY.

PACKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

12/2011





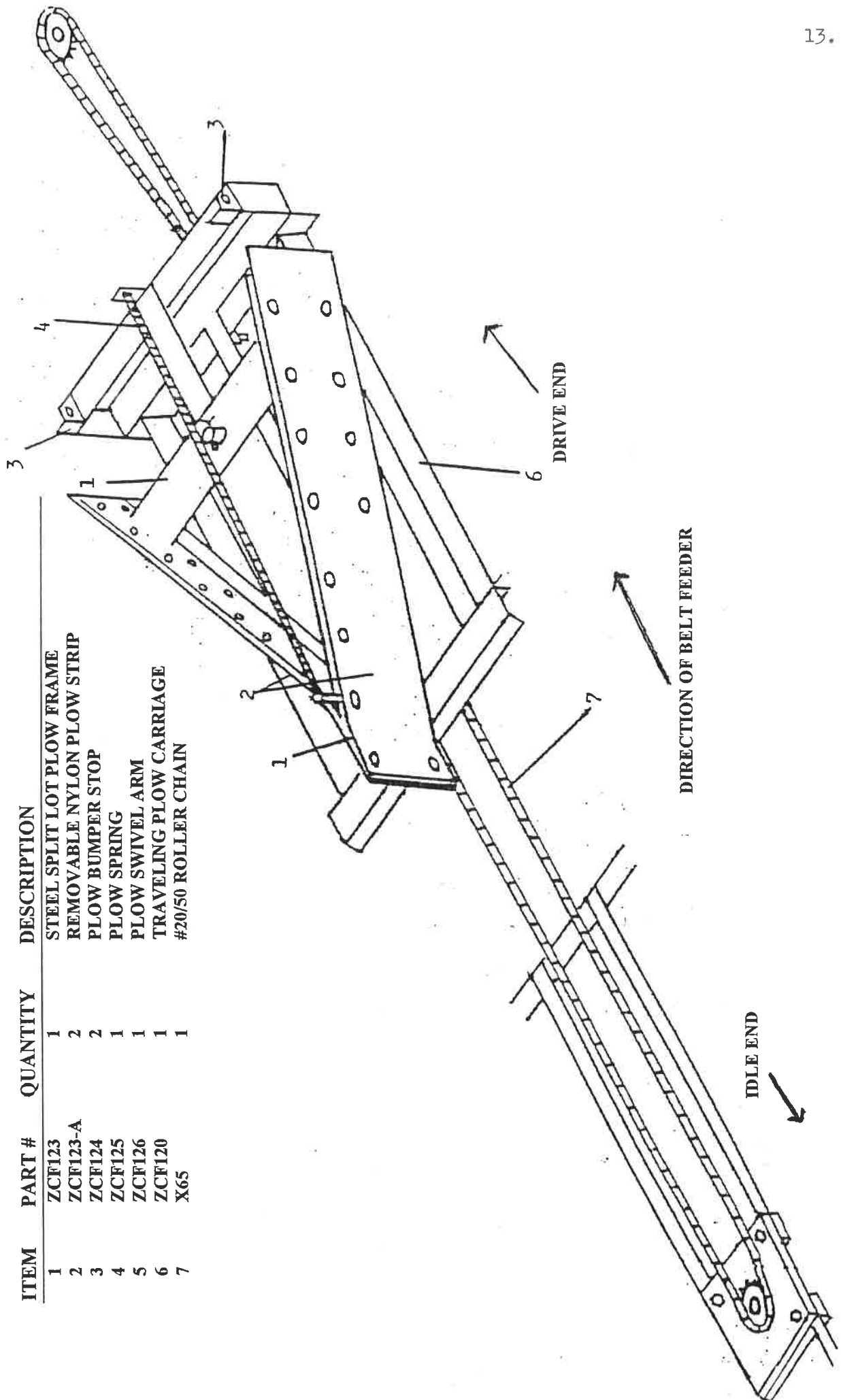
## NEW STYLE 16" CENTERFILL SPROCKET ASSEMBLY (7-16)

ITEM #	PART #	DESCRIPTION	QUNTY
1	ZCF132-B2016	IDLER SPROCKET BASE PLATE N/S 2016	1
2	ZCF134	IDLER SPROCKET SNUB PLT, THRD	1
	ZCF134-A	IDLER SPROCKET SNUB PLT, N/THRD	1
3	ZCF135-B	IDLER SPROCKET SHAFT, N/S	1
4	EMR103-1DLG	7516DLG 1" CYLINDRICAL BEARING	2
5	X07-D	1"x10ga. MACHINERY BUSHING	AR
6	ZCF135-BW	3/8" HEAVY FLAT WASHER	1
7	ZCF1612-B	DOUBLE 50BS15x1" SPROCKET	1
8	X04-A	3/16"x1" COTTER KEY	2
9	1BFW38	3/8" FLAT WASHER	2
10	1BFW12SAE	1/2" SAE FLAT WASHER	4
11	1BHS3834	3/8"x3/4" HEX HEAD BOLT	1
12	1BHS38114	3/8"x1-1/4" HEX HEAD BOLT	2
	1BCB38114	3/8"x1-1/4" CARRIAGE BOLT	2
	1BHN38	3/8" HEX NUT	2
13	ZC162527	RETURN ROLLER, 1-1/2"x1"x17/32" B	2



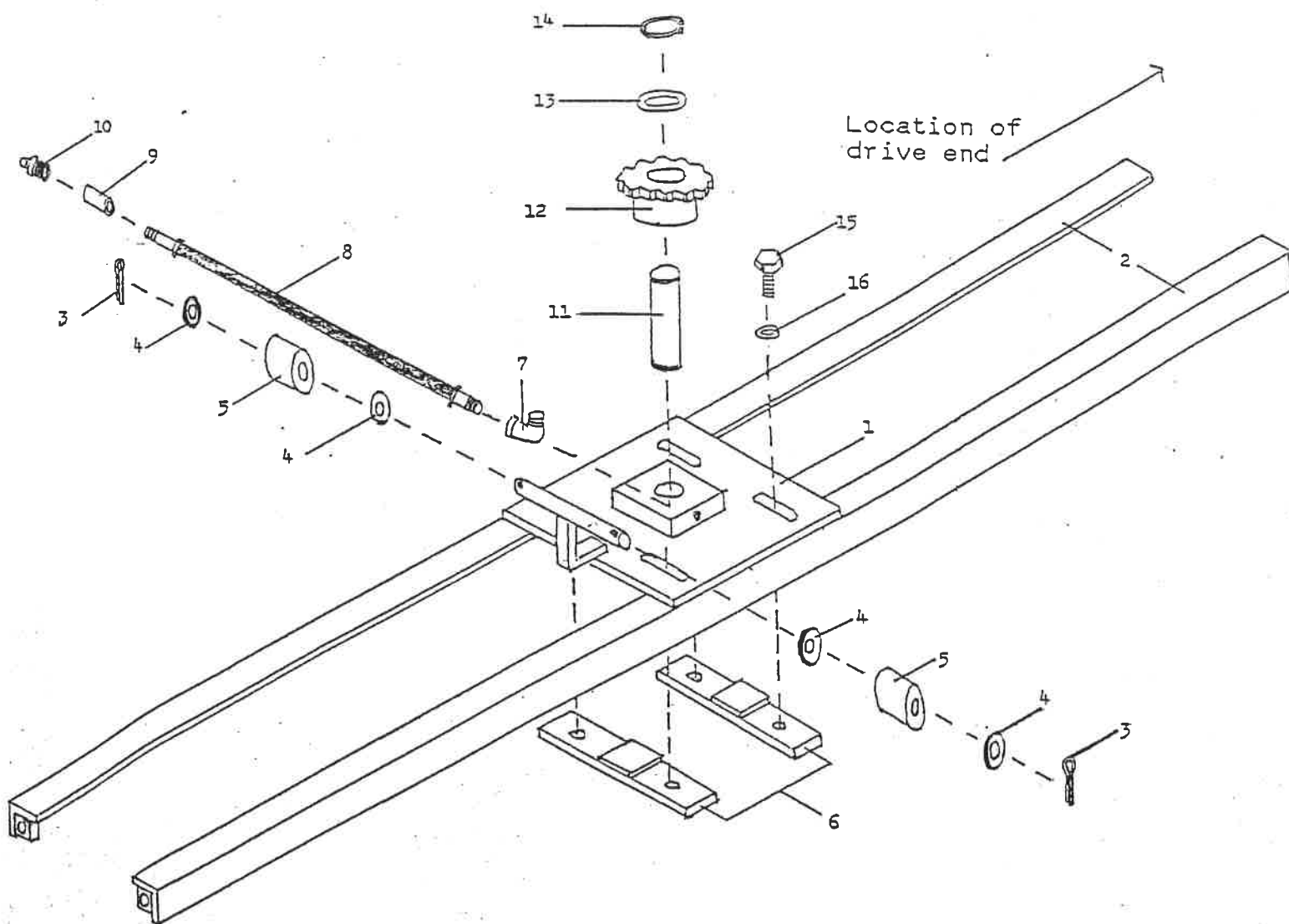
## TRAVELING PLOW ASSEMBLY

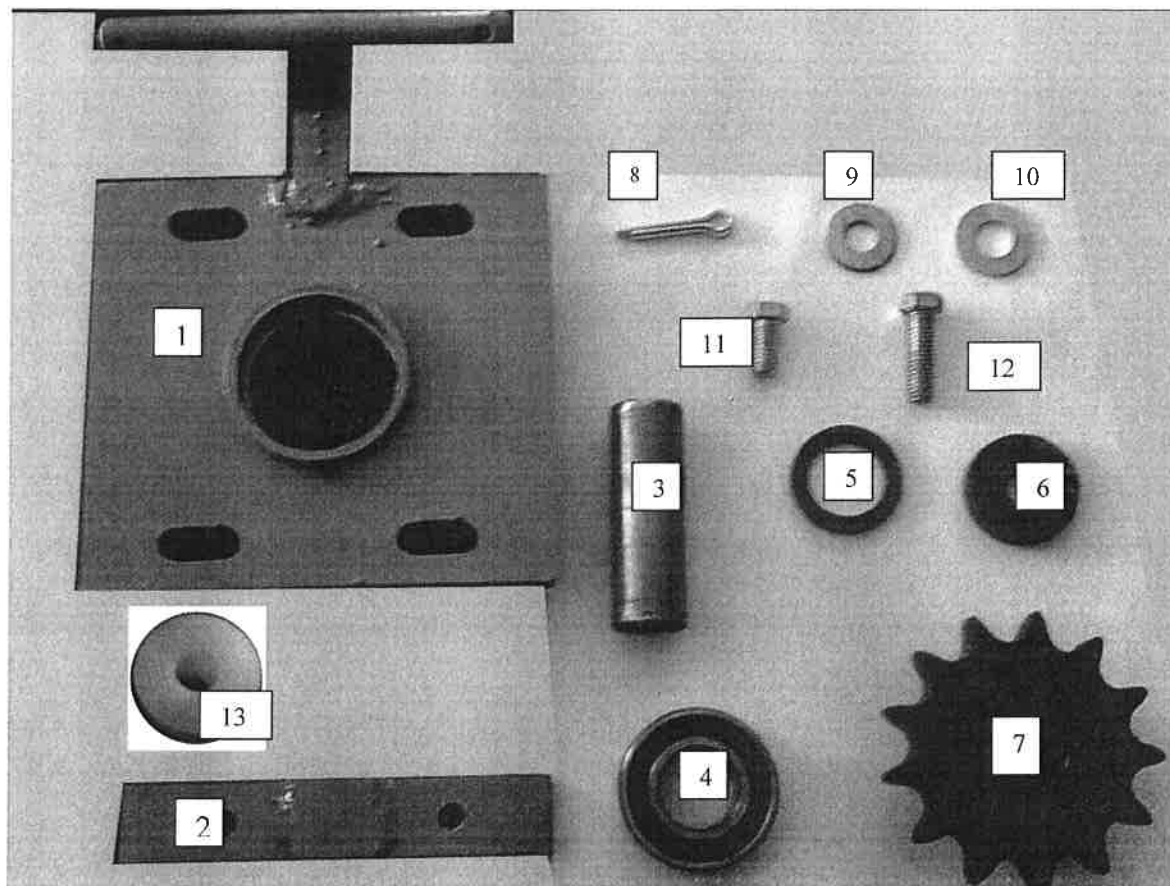
ITEM	PART #	QUANTITY	DESCRIPTION
1	ZCF123	1	STEEL SPLIT LOT PLOW FRAME
2	ZCF123-A	2	REMOVABLE NYLON PLOW STRIP
3	ZCF124	2	PLOW BUMPER STOP
4	ZCF125	1	PLOW SPRING
5	ZCF126	1	PLOW SWIVEL ARM
6	ZCF120	1	TRAVELING PLOW CARRIAGE
7	X65	1	#20/50 ROLLER CHAIN



# **IDLER SPROCKET ASSEMBLY** **PART # ZCF131**

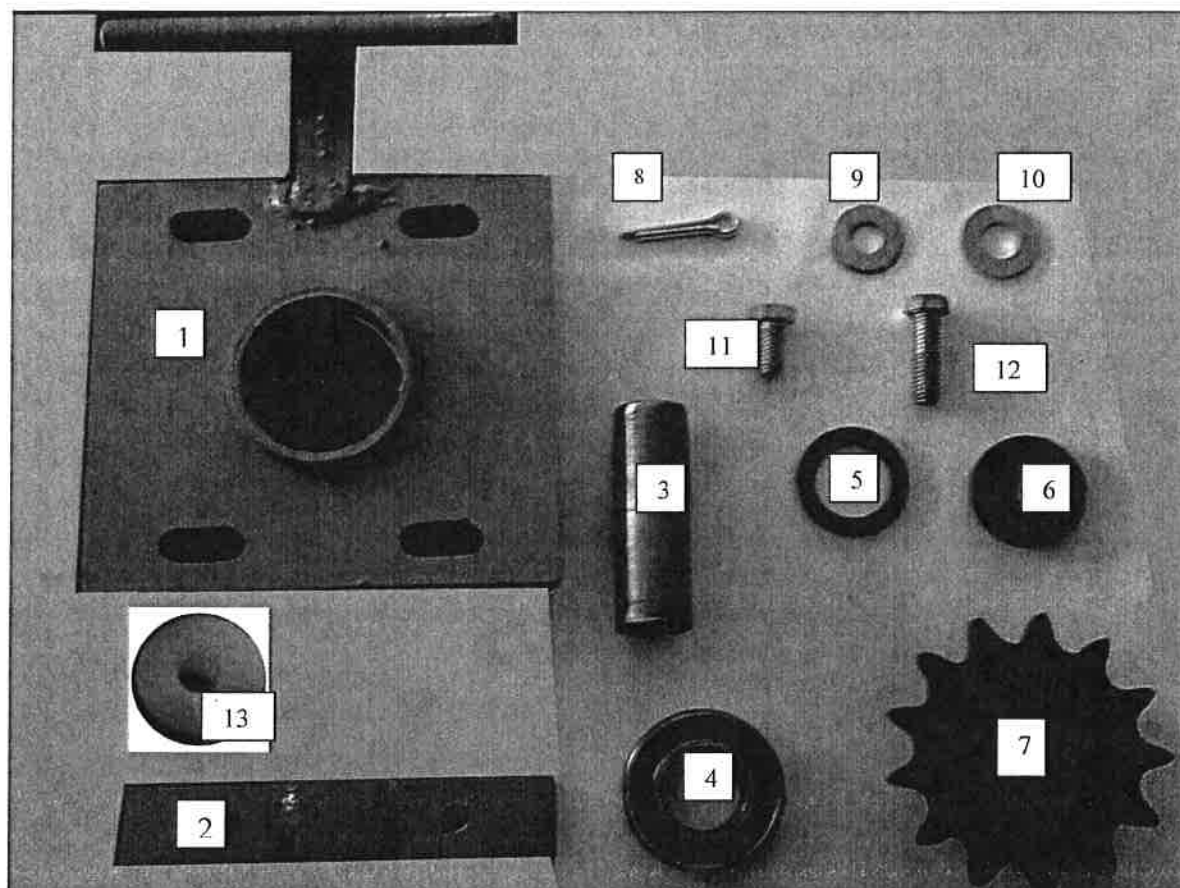
ITEM	PART#	QUANTITY	DESCRIPTION
1	ZCF132	1	IDLER SPROCKET BASE PLATE
2	ZCF133	2	IDLER SPROCKET SUPPORT ANGLES
3	X01	2	3/4x3/16" COTTER KEY
4	1BFW12	4	1/2" FLAT WASHER
5	ZC162527	2	1-1/2" NYLON ROLLER
6	ZCF134	2	IDLER SPROCKET TIGHTENER PLATE
7	ZCF103	1	1/8" STREET ELBOW
8	ZCF118	1	1/8 x 12" GREASE HOSE
9	ZCF119	1	1/8" COUPLING
10	X32	1	1/8" WHIPGREASE ZERK
11	ZCF135	1	1" x 2-3/4" IDLER SHAFT
12	ZC162516-A	1	50C15T, 1" B IDLE SPROCKET w/BUSHING
13	<del>X01</del> - A	1	1" BY 10 GAUGE STEEL SPACER
14	X41	1	1" SNAP RING
15	1BHS381	4	3/8" x 1" HEX HEAD BOLT
16	1BFW38	4	3/8" FLAT WASHER





## ZCF131-NS NEW STYLE IDLER SPROCKET ASSEMBLY (9-15)

ITEM #	PART #	DESCRIPTION	QUNTY
1	ZCF132-B	IDLER SPROCKET BASE PLATE N/S	1
2	ZCF134	IDLER SPROCKET SNUB PLT, THRD	2
3	ZCF135-B	IDLER SPROCKET SHAFT, N/S	1
4	EMR103-1	1" CYLINDRICAL BEARING	2
5	X07-D	1"x10ga. MACHINERY BUSHING	AR
6	ZCF135-BW	3/8" HEAVY FLAT WASHER	1
7	ZCF145-C	50BS15x1" SPROCKET	1
8	X04-A	3/16"x1" COTTER KEY	2
9	1BFW38	3/8" FLAT WASHER	4
10	1BFW12SAE	1/2" SAE FLAT WASHER	4
11	1BHS3834	3/8"x3/4" HEX HEAD BOLT	1
12	1BHS38114	3/8"x1-1/4" HEX HEAD BOLT	4
13	ZC162527	RETURN ROLLER, 1-1/2"x1"x17/32" B	2

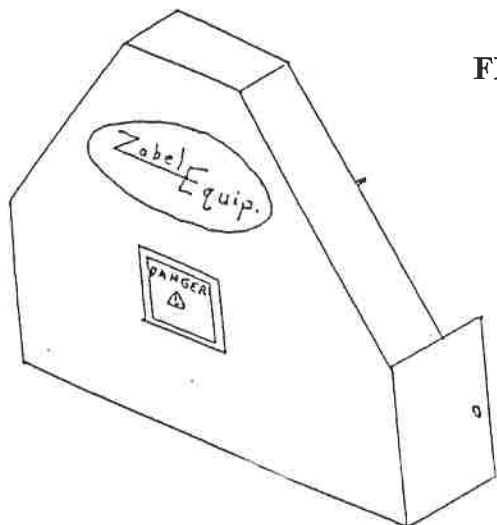


## ZCF131-NS2016 NEW STYLE IDLER SPROCKET ASSEMBLY (7-16)

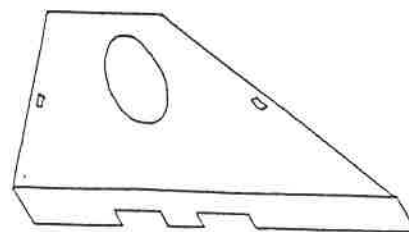
ITEM #	PART #	DESCRIPTION	QUNTY
1	ZCF132-B2016	IDLER SPROCKET BASE PLATE N/S	1
2	ZCF134	IDLER SPROCKET SNUB PLT, THRD	2
3	ZCF135-B	IDLER SPROCKET SHAFT, N/S	1
4	EMR103-1DLG	7516DLG 1" CYLINDRICAL BEARING	2
5	X07-D	1"x10ga. MACHINERY BUSHING	AR
6	ZCF135-BW	3/8" HEAVY FLAT WASHER	1
7	ZCF145-C	50BS15x1" SPROCKET	1
8	X04-A	3/16"x1" COTTER KEY	2
9	1BFW38	3/8" FLAT WASHER	4
10	1BFW12SAE	1/2" SAE FLAT WASHER	4
11	1BHS3834	3/8"x3/4" HEX HEAD BOLT	1
12	1BHS38114	3/8"x1-1/4" HEX HEAD BOLT	4
13	ZC162527	RETURN ROLLER, 1-1/2"x1"x17/32" B	2



## FEEDER SHIELD CARTON PART #ZCF400



MAIN SHIELD SECTION



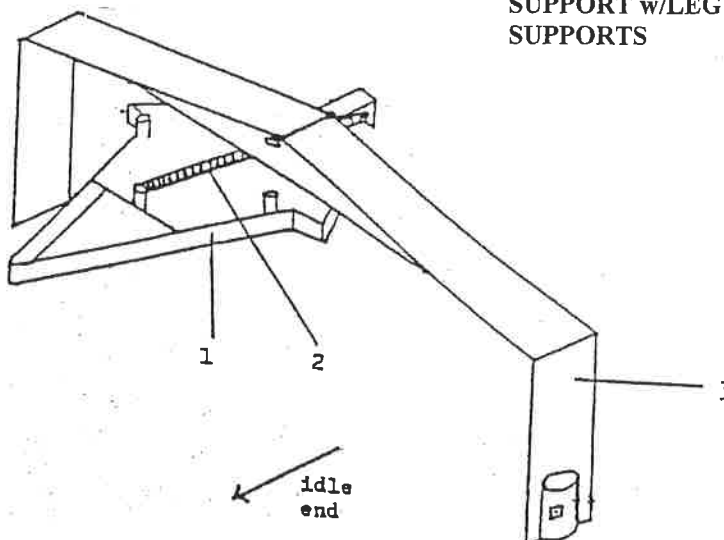
BACK SHIELD SECTION

### SHIELD INSTALLATION INSTRUCTIONS

- STEP 1:** Place shield back section over the motor pulley so it looks as shown. You may now put the drive belt on both pulleys and tighten by adjusting the 1/2" belt tightener bolt until the belt has the proper tension.
- STEP 2:** Place the main shield section over the belt and drive chain., fasten it to the feeder frame using two 3/8" x 1" bolts and flat washers.
- STEP 3:** Bolt shield back section to the back of the main shield section using two- 1/4" wing nuts.
- STEP 4:** Place STICKERS on the main shield as shown.

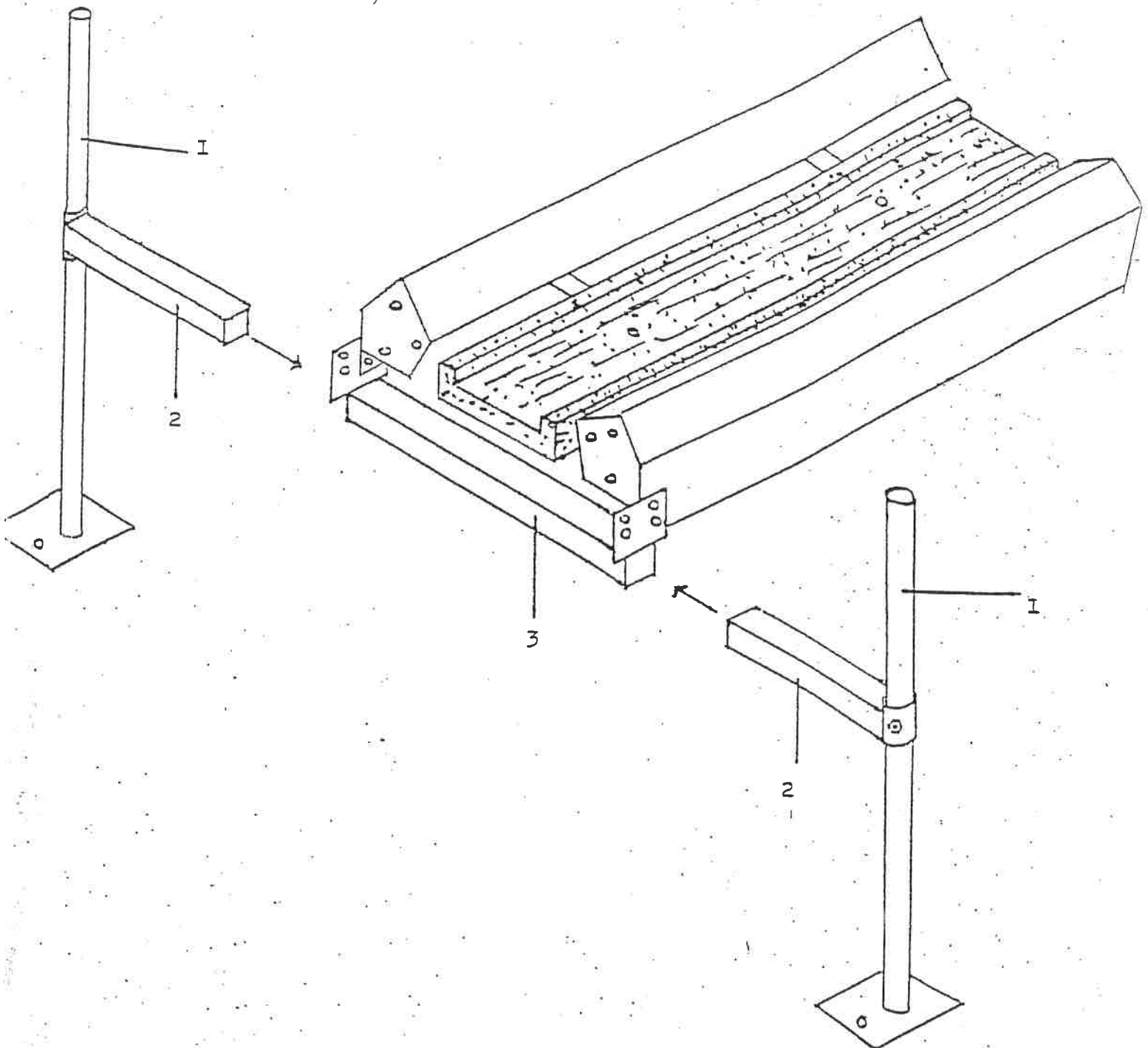
## PLOW TRIP MECHANISM ASSEMBLY PART # ZCF127

ITEM	PART #	QUANTITY	DESCRIPTION
1	ZCF128	1	PLOW TRIP MECHANISM
2	ZCF129	1	PLOW TRIP MECHANISM SPRING
3	ZCF130	1	PLOW TRIP MECHANISM SUPPORT w/LEG SLIDE SUPPORTS



**LEG SUPPORT AND SPLICE BRACKET ASSEMBLY**  
**PART # ZCF137**

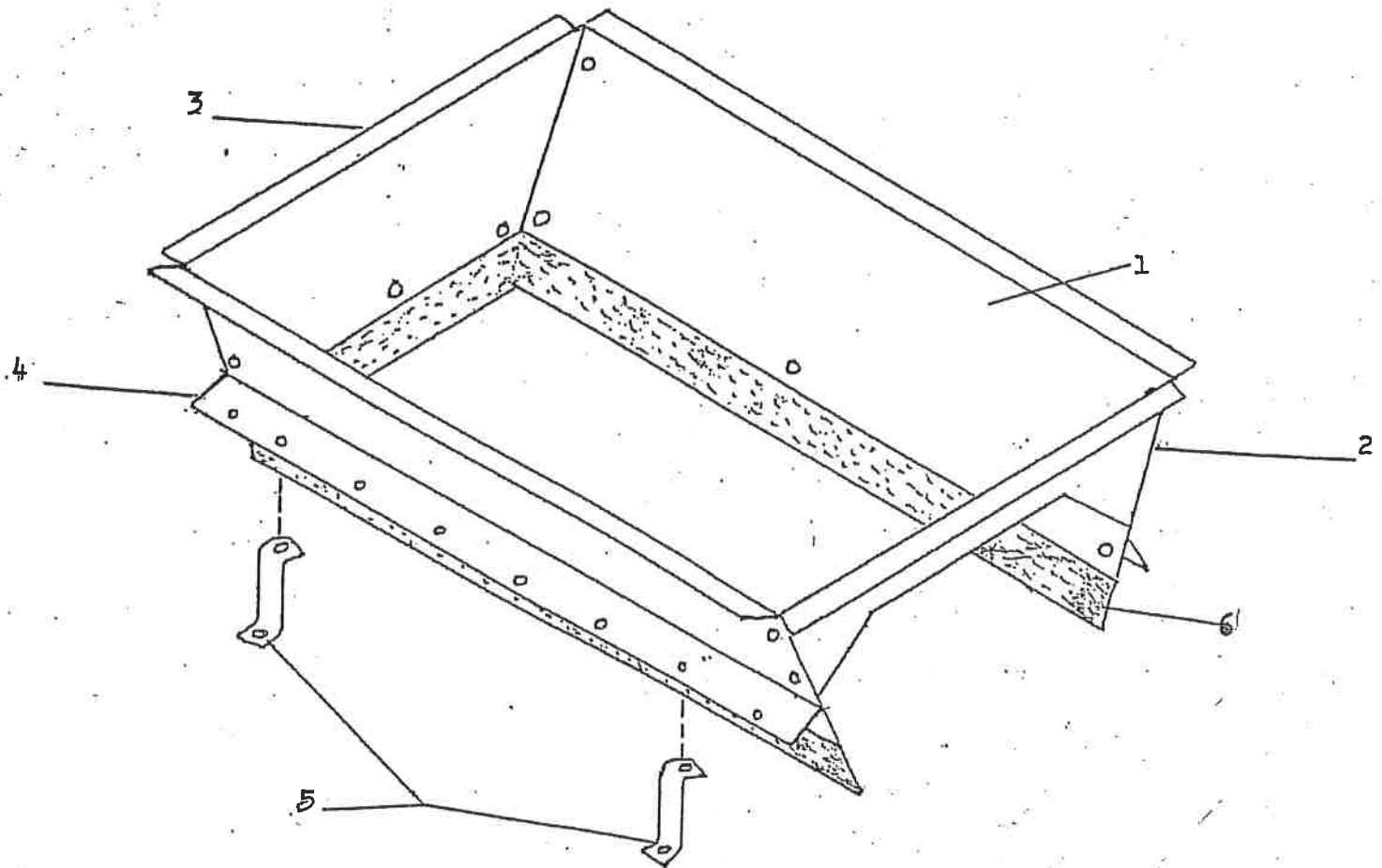
ITEM	PART#	QUANTITY	DESCRIPTION
1	ZCF138	2	FEEDER/CONVEYOR LEGS
2	ZCF139	2	LEG BRACKETS
3	ZCF140	1	SPLICE BRACKET



**ZC164**  
**HOPPER ASSEMBLY, 2',3',4',6', & 8'**  
**CHOOSE FROM STANDARD OR FLOW THROUGH HOPPER'S**  
**FEEDER HOPPER**

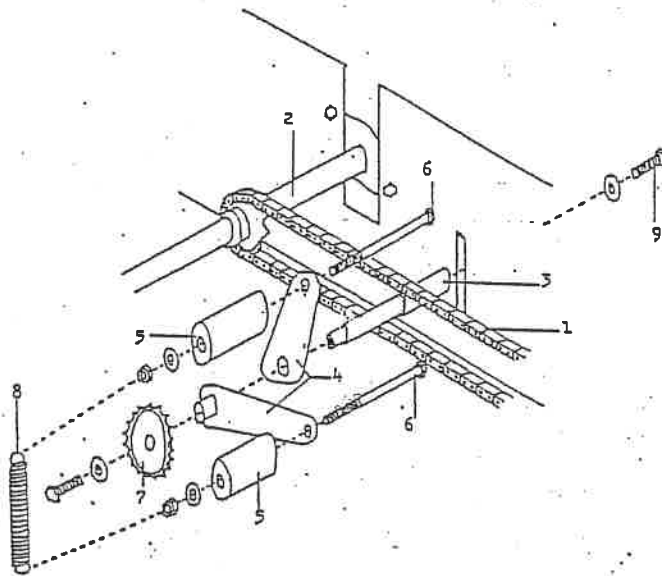
ITEM #	PART #	QUANTITY	DESCRIPTION
1.	ZC164-F	2	Galv. Hopper Side
2.	ZC164-H	1	Galv. Hopper Front
3.	ZC164-G	1	Galv. Hopper Back
4.	ZC164-J	2	Galv. Hopper Angle
5.	ZC164-L	2 Pr.	Hopper Support Leg. Brkt.
6.	ZC060	2/L-1/S	2" Belt Sealing Strip

**NOTE:** Please specify the type of Hopper you need.



# FEEDER TRANSMISSION CHAIN TIGHTENED ASSEMBLY ZCF420 INSTALLATION INSTRUCTIONS

- STEP 1:** Turn off power to feeder and lock out !!!
- STEP 2:** Remove main shield and motor belt. (Feeder belt may be unlaced for easier working Conditions.)
- STEP 3:** Remove existing chain tightener. (Part # ZCF167)
- STEP 4:** Cut 5" x 1-1/2" of existing nylon chain tightener roller in half with a hack saw.
- STEP 5:** Install 2-1/2" X 1-1/2" nylon tightener (from STEP 4) on pivot arms as shown in the Diagram below.
- STEP 6:** Bolt base shaft to side of feeder using one (1) 3/8" x 3/4" bolt as shown. DO NOT tighten bolt down all the way at this time. NOTE: Make sure one tightener is over the chain and one is under the chain.
- STEP 7:** Slide the entire assembly up or down to mesh chain in the teeth of the Idler sprocket. Tighten the 3/8 x 3/4" bolt securely at this time.
- STEP 8:** Thread spring through excess threads on the end of the pivot arm bolts.
- STEP 9:** Adjust all sprockets to align chain with Idler sprocket. NOTE: Main belt pulley and Drive sprockets may also have to be re-aligned if you move main shaft.
- STEP 10:** Re-install motor belt and main shield. (Re-place feeder belt and tighten if needed.)



ZCF420  
PLOW DRIVE CHAIN TIGHTENER ASSY.

ITEM	PART#	QUANTITY	DESCRIPTION
	1BFW38	4	3/8" FLAT WASHER
	1BHN38	2	3/8" HEX NUT
	1BHLN38	2	3/8" LOCK NUT
	1BHN381	1	3/8" x 1" HEX BOLT
9	1BHS38114	1	3/8"x1-1/4" HEX BOLT
6	1BHS38312	2	3/8"x3-1/2" HEX BOLT
5	ZCF166	2	1-1/2"x2-1/2" NYLON CHAIN TIGHTENER
8	ZCF216	1	SPRING F/PLOW DRIVE TIGHTENER
4	ZCF421	2	PIVOT ARM, SHORT
7	ZCF422	1	17 TOOTH IDLER SPROCKET w/1/2" B or (old 5/8" B)
2	ZCF107	1	23-3/4" x 1" JACK SHAFT
3	ZCF425	1	BASE SHAFT, 3/4"x4" f/TIGHTENER
1	ZCF407	1	#40-102 PITCH ROLLER CHAIN
	X51	1	#40 CONNECTOR LINK
	X06	1	5/8"x 14 GA. SHIM

EPT

# WORM GEAR SPEED REDUCERS MAINTENANCE INSTRUCTIONS

## PREVENTATIVE MAINTENANCE

1. After first week, check all external cap screws and plugs for tightness.
2. Periodically, check oil level when gears are at rest. Add oil if needed. Do not fill above Mark indicated by level, because leakage and overheating may occur.

## STORED AND INACTIVE UNITS

1. All units are shipped with oil that will protect parts against rust for a period of four (4) months in an outdoor shelter or twelve (12) months in a dry building after shipment from the factory. Indoor dry storage is recommended.
2. If a unit is to be stored or is to be inactive after installation beyond the above periods, fill the unit completely with oil.

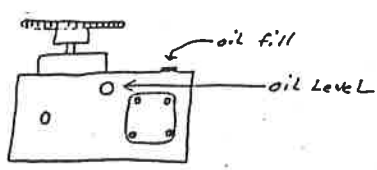
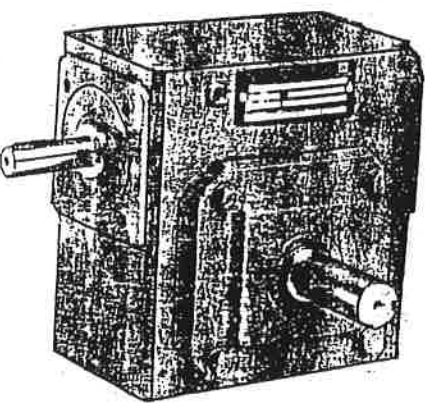
## CAUTION

**BEFORE STARTING A STORED UNIT OR RE-STARTING AN INACTIVE UNIT, THE OIL LEVEL SHOULD BE RETURNED TO THE PROPER VALVE AS INDICATED BY THE OIL LEVEL.**

## LUBRICATION

Normal operating temperature of a worm gear reducer is less than 200°F, but during initial break-in the temperature may exceed 200°F. After a break-in is completed the temperature will fall below 200°F. If temperature exceeds 200°F for greater than 100 hours contact the factory.

1. Change initial oil fill after 500 hours service or 5 weeks
2. Change oil every 2500 hours service or 6 months. If severe operating conditions exist, change the oil every 1 to 3 months.
3. 90 WEIGHT OIL AND EP OIL ARE NOT RECOMMENDED.
4. For ambient temperatures 40°F to 15°F use Mobil SHC634.
5. Units running at slow speeds (less than 100 RPM input) should carry high oil level and in ambient temperatures of 15°F to 125°F use an AGMA #8C lubricant.
6. See Table 3 for list of recommended lubrication manufactures.



### Lubrication Manufacturers

The companies and oil shown are typical. Any other make of oil meeting American Gear Manufacturers Association (AGMA) standards #7C and #8C will be satisfactory.

Table 3

Ambient Temperature	15 to 60° F	50 to 125° F
Viscosity Range MM/S at 40°C	414 - 508	812 - 748
ISO Grade	460	680
SAE Gear Lubricant (approx.)	#140	#250
Oil Company Name	AGMA #7C	AGMA #8C
Amoco Oil Co.	Amoco Worm Gear Oil	Amoco Cyl. Oil 680
Atlantic Richfield (ARCO)		Modoc 175
Chevron Oil Co.	Cylinder Oil 460X	Cylinder Oil 680X
Conoco Oil Co.	Inca Oil	
Exxon Oil Co.	Cyllessic TK460	Cyllessic TK680
Fiske Brothers	SPO 277	SPO200
Gulf Oil Co.	Senate 460	Senate 680
Gulf-Canada	Senate 460	Senate 680
Keystone-Pennwalt	Keygear K-600	
Mobile Oil Corp	Mobil 600W Cyl. Oil	Mobil 600W Super Cyl. Oil
Pennzoil	Cyl. Oil #8	Cyl. Oil No. 8
Phillips Petroleum Co.	Hector 460S	Hector 680S
Shell Oil Co.	Valvata Oil J460	Valvata Oil J680
Sohio	Enorgol DC-600C	Enorgol DC-600C
Texaco Inc.	Vanguard 460	Honor 680
Union Oil Co. of CA	Steaval B110	Steaval B165

## INDEPENDENT PLOW DRIVE KIT

### ZCF106

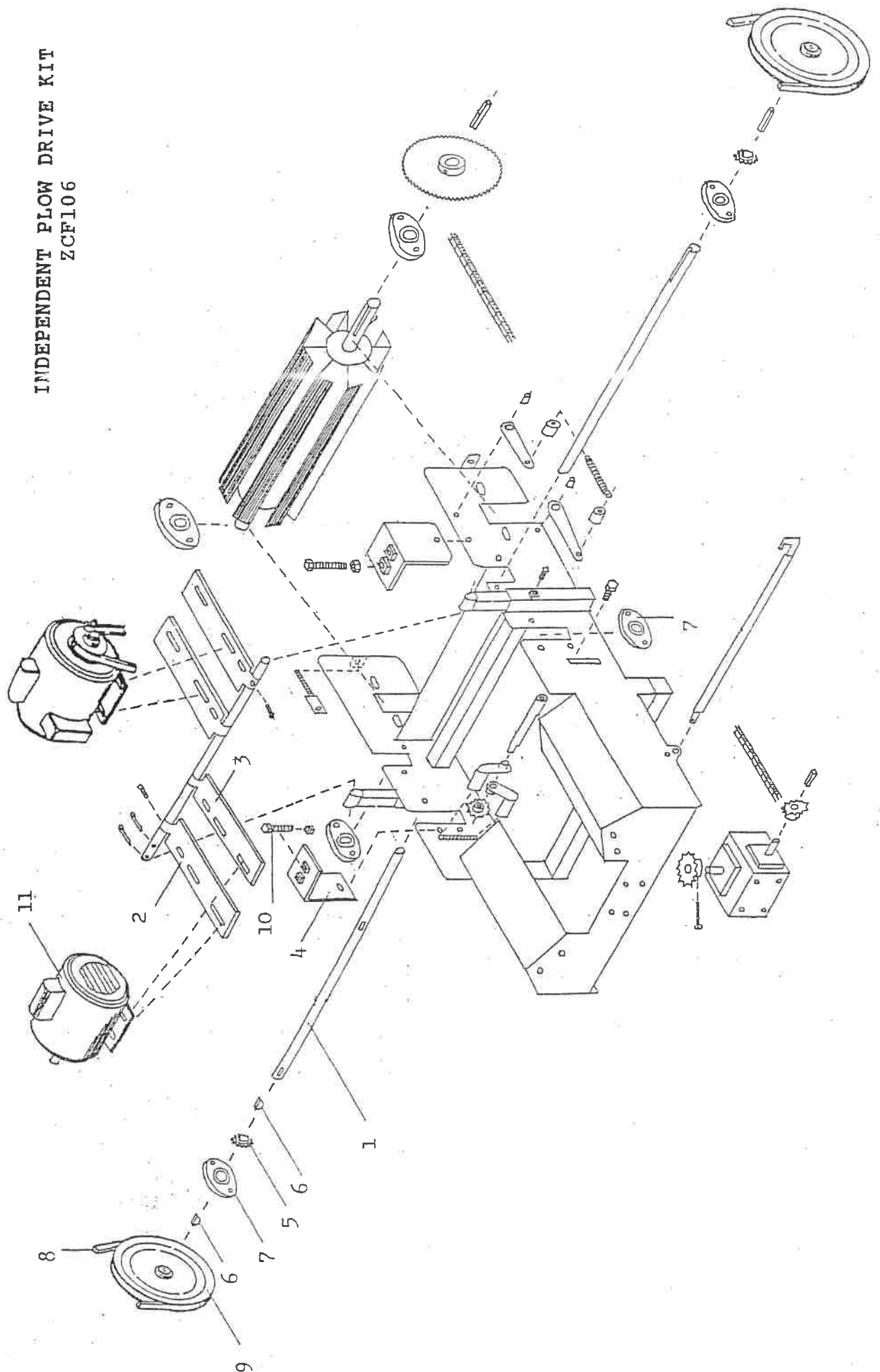
ITEM	PART #	QUANTITY	DESCRIPTION
1	ZCF107-A	1	PLOW DRIVE JACK SHAFT
2	ZC162523-A	1	MOTORMOUNT BRKT. W/S.S.
3	ZC162523-B	1	MOTORMOUNT BRKT. L/S.S.
4	ZCF114	1	BELT TIGHTENER PLATE
5	ZCF143	1	12 T, #40C, 1" B SPROCKET
6	X05	2	1/4" HALF MOON KEY
7	ZC-FC2251	2	1" FLANGE BLK & BEARING
8	BBB43	1	B43 BELT
9	ZC208	1	10" PULLEY W/1" B
10	ZCF229	1	1/2" x 3-1/2" TIGHTENER BOLT
11	EMOO	1	ELECTRIC MOTOR

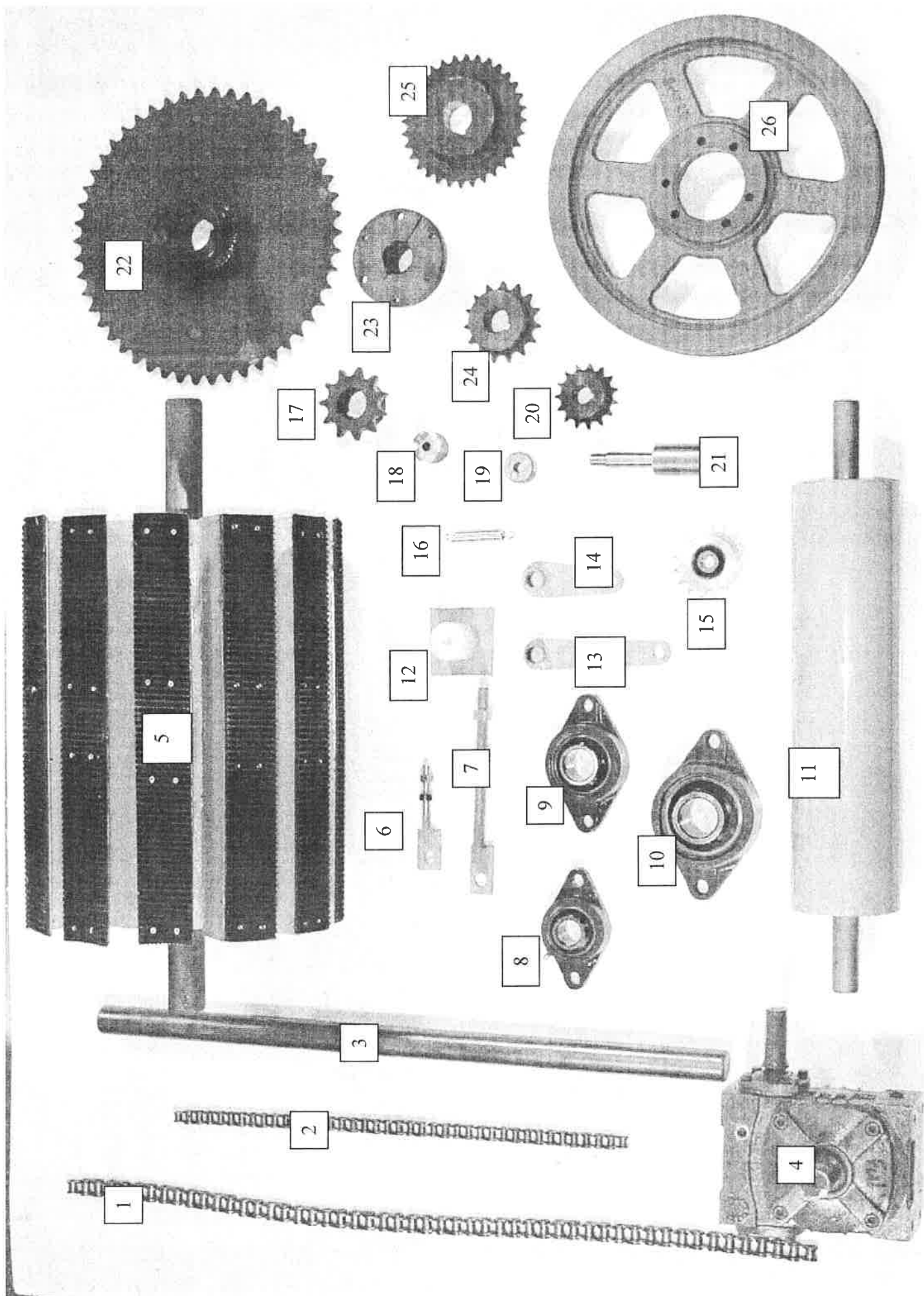
## INSTALLATION INSTRUCTIONS

- STEP 1:** Slide the 12 tooth, # 40 C, 1" B sprocket and half moon key on to the shaft. Do not tighten.
- STEP 2:** Mount shaft on to the feeder Drive frame as shown using two 1" flange block bearings. Tighten The bearings to the frame using four 3/8" x 1-1/4" bolts.
- STEP 3:** Align the sprocket on shaft with the sprocket on chain tightener assembly . Tighten set screw on Sprocket, also tighten set screws on bearings.
- STEP 4:** Shorten # 40 chain so that it rides on the sprocket you just installed, chain tightened sprocket, and The sprocket on gearbox.
- STEP 5:** Mount belt tightened bracket to feeder Drive frame using on e 3/8" x 1" hex head bolt.
- STEP 6:** Remove motor mount shaft from frame and attach motor mount brackets to it as shown. Re-attach motor mount shaft to frame.
- STEP 7:** Mount motor to motor mount brackets. See electrical precautions in installation manual!
- STEP 8:** Mount 10" x 1" B pulley and key to end of shaft. Align with pulley on motor.
- STEP 9:** Mount belt on pulley and tighten sufficiently.
- STEP 10:** Mount shield to frame.

**WARNING: DO NOT** operate machine without having all shields in place on the feeder.

INDEPENDENT PLOW DRIVE KIT  
ZCF106







## ZCF1608-H Drive Parts List

Item #	Part #	Description	Qty
1	ZF240	Drive Chain; #60 x 66p. w/ Connector	1
2	ZCF407-H	Gear Reducer Chain; #40 x 87p. w/Connector	1
3	ZCF107-H	Jack Shaft; 1-1/4" x 26"	1
4	ZF229	Worm Gear Reducer; U60, 10:1	1
5	ZC162518-12	Drive Roller; 12" O.D. x 1-1/2" Shaft	1
6	ZCF108	3/8" x 2 Tracking Bolt	2
7	ZF222	1/2" x 3 Tracking Bolt	2
8	ZC-FC2251	1" Flange Block Bearing	2
9	ZC-FC225114S	1-1/4" Flange Block Bearing	2
10	ZC-FC225112	1-1/2" Flange Block Bearing	2
11	ZC162518-P	4" Pinch Roller w/1" Shaft	1
12	ZCF166-A	1-1/2" x 1-3/4" Nylon Tightener Block	4
13	ZC214	Pivot Arm, Long	1
14	ZCF421	Pivot Arm, Short	3
15	ZCF422	4017 Idler Sprocket, 1/2" Bore	1
16	ZC216	Pivot Arm Spring, Long	2
17	ZF201	60BS11 x 1-1/4" Sprocket	1
18	ZC241626R	Pivot Arm Backer, 7/8"L	1
19	ZC241626S	Pivot Arm Backer, 5/8"L	1
20	ZC205	40BS15 x 1-1/4" Sprocket	1
21	ZCF425	Plow Drive Tightener Base Shaft	1
22	ZF201-A	60BS50 x 1-1/2" Sprocket	1
23	PHQ114	Q1 x 1-1/4" Taper Hub	1
24	ZC145-C	2050BS15 x 1" Sprocket	1
	ZF200-A	2060BS13 x 1" Sprocket	1
25	ZF232	40BS32 x 1-1/4" Sprocket	1
26	ZF202	2TB124 Sheave	1
	ZC162545	1/4"x1/4"x2-3/4" Key Stock	1
	ZC162545-A	1/4"x1/4"x1-1/4" Key Stock	2
	ZCF426	Pivot Arm Bushing	2
	ZF236	3/8"x3/8"x2" Key Stock	1
	BBB56	B56 Belt	2
	ZCF111-HD	Heavy-Duty Drive Frame Weldment	1
	PP2BK36118	2BK36 x 1-1/8" Bore Sheave	1

