

# **BRADEN**

## **SWING DRIVES**

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### **MODELS**

**SD66A-35CBS and SD80A-35CBS**

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### **PART NUMBERS**

**04713**

**04714**

**04865**

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**SERVICE,  
PREVENTIVE MAINTENANCE  
AND PARTS MANUAL**

## EXPLANATION OF MODEL NUMBER

SD 66 A - 35 C B S - 04713

SD Designates Swing Drive

66 Designates Maximum Output Torque (66 = 66,000 lb-in.)

A Designates Model Series Relating to Design Changes

35 Designates Overall Gear Reduction

C Designates Center Input (Motor shaft is on same center line as output shaft)

B Designates Unit is Equipped with a Brake

S Designates Unit is Equipped with 1 or more Special Features

04713 BRADEN Part Number of the Unit

## GENERAL INFORMATION

Three specific units are described in this section. They are BRADEN part numbers 04713, 04714 and 04865. Refer to the Specifications section for more detailed information on each unit.

All units are made up of the following sub-assemblies and parts:

1. Hydraulic motor
2. Static brake assembly and mechanical actuating mechanism
3. Two planetary gear sets sharing a common stationary ring gear.
4. Output pinion and bearing assembly

The static brake assembly is a multiple disc pack that is applied and/or released through a rotating mechanical actuator. On the 04713 and 04714 units, a cable attached to the brake housing controls the internal actuating mechanism. The brake is released when there is slack in the cable, and is applied by pulling on the cable. The 04865 unit is equipped with a spring loaded air cylinder in place of the cable. The brake is applied by the spring and released by pressurizing the air cylinder.

The motor on all units is directly coupled to the input sun gear. The friction discs are splined to the input sun gear and the solid spacer plates are pinned to the brake housing. In operation, the brake must be released for the hydraulic motor to operate the drive in either direction. The motor drives through two planetary gear sets. The planet carrier of the second stage gear set drives the output pinion. The ring gear for the planetary gear sets is stationary, resulting in the output pinion turning in the same direction as the motor shaft.

## SPECIFICATIONS

### Part No. 04713

Maximum Output Torque Rating ..... 66,000 lb-in.  
Overall Gear Ratio..... 35:1  
Motor ..... Char-Lynn 6.0 cu in.  
Brake Actuation ..... Mechanical Cable

### Part No. 04714

Maximum Output Torque Rating ..... 80,000 lb-in.  
Overall Gear Ratio..... 35:1  
Motor ..... Char-Lynn 8.0 cu in.  
Brake Actuation ..... Mechanical Cable

### Part No. 04865

Maximum Output Torque Rating ..... 66,000 lb-in.  
Overall Gear Ratio..... 35:1  
Motor ..... Char-Lynn 6.0 cu in.  
Brake Actuation ..... Applied by Spring in Air Cylinder  
Released by Air Pressure  
Maximum Working Pressure – 125 psi  
Pressure Required to Fully Release Brake – 40 psi  
Brake Actuation Port – ¼ in. tube fitting (7/16 – 20)

### Oil Type

Texaco Meropa 150 Gear Oil or Equivalent AGMA 4 EP

### Oil Capacity

04713	7.5 pints plus 5 oz glycol (antifreeze)
04714	10.5 pints plus 8 oz glycol (antifreeze)
04865	7.5 pints plus 5 oz glycol (antifreeze)

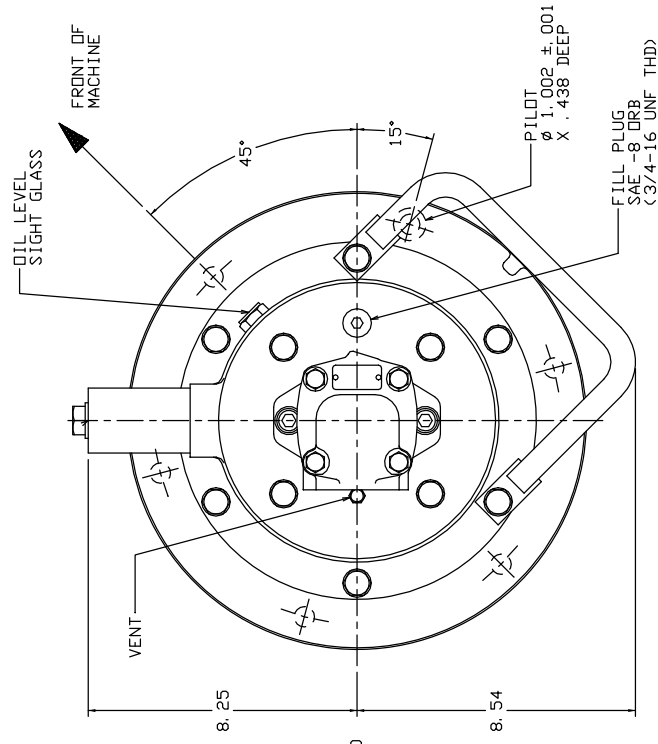
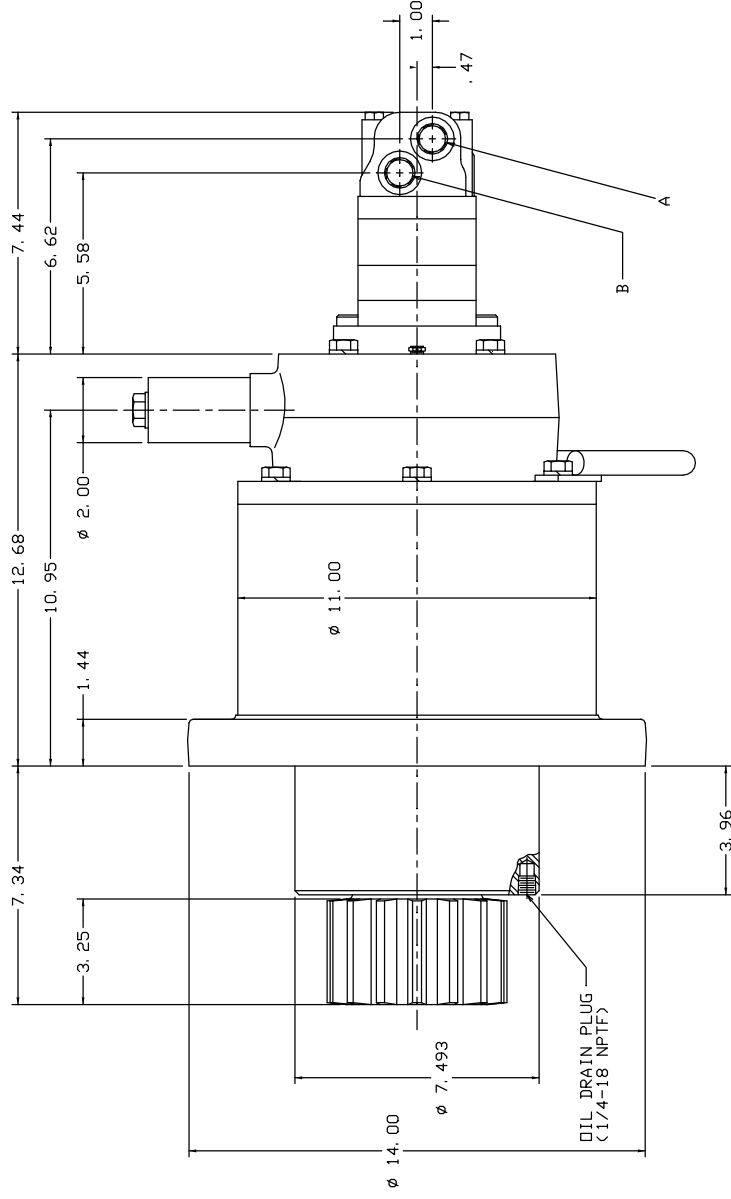
### Approximate Unit Weights

04713	326 lbs (148 kg)
04714	386 lbs (175 kg)
04865	340 lbs (154 kg)

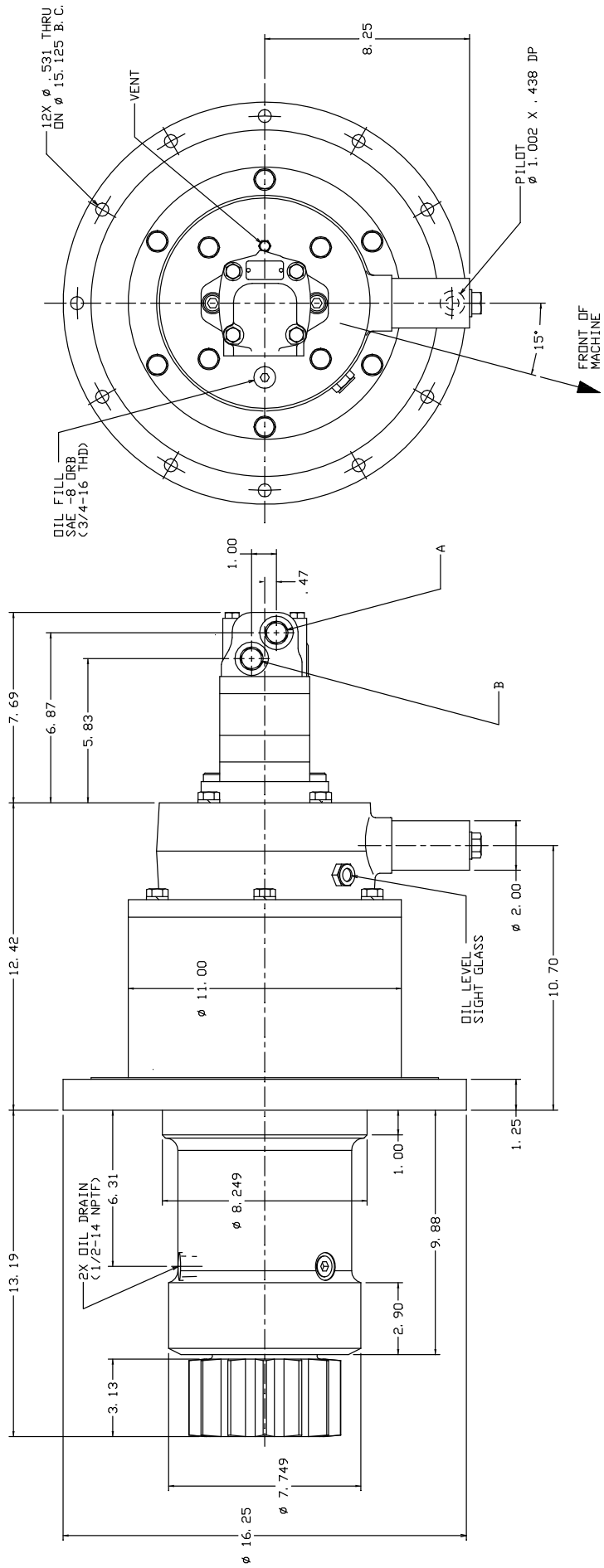
All units designed for pinion down installations ONLY.

All motor ports are SAE –10 ORB (7/8 – 14 UNF-2B)

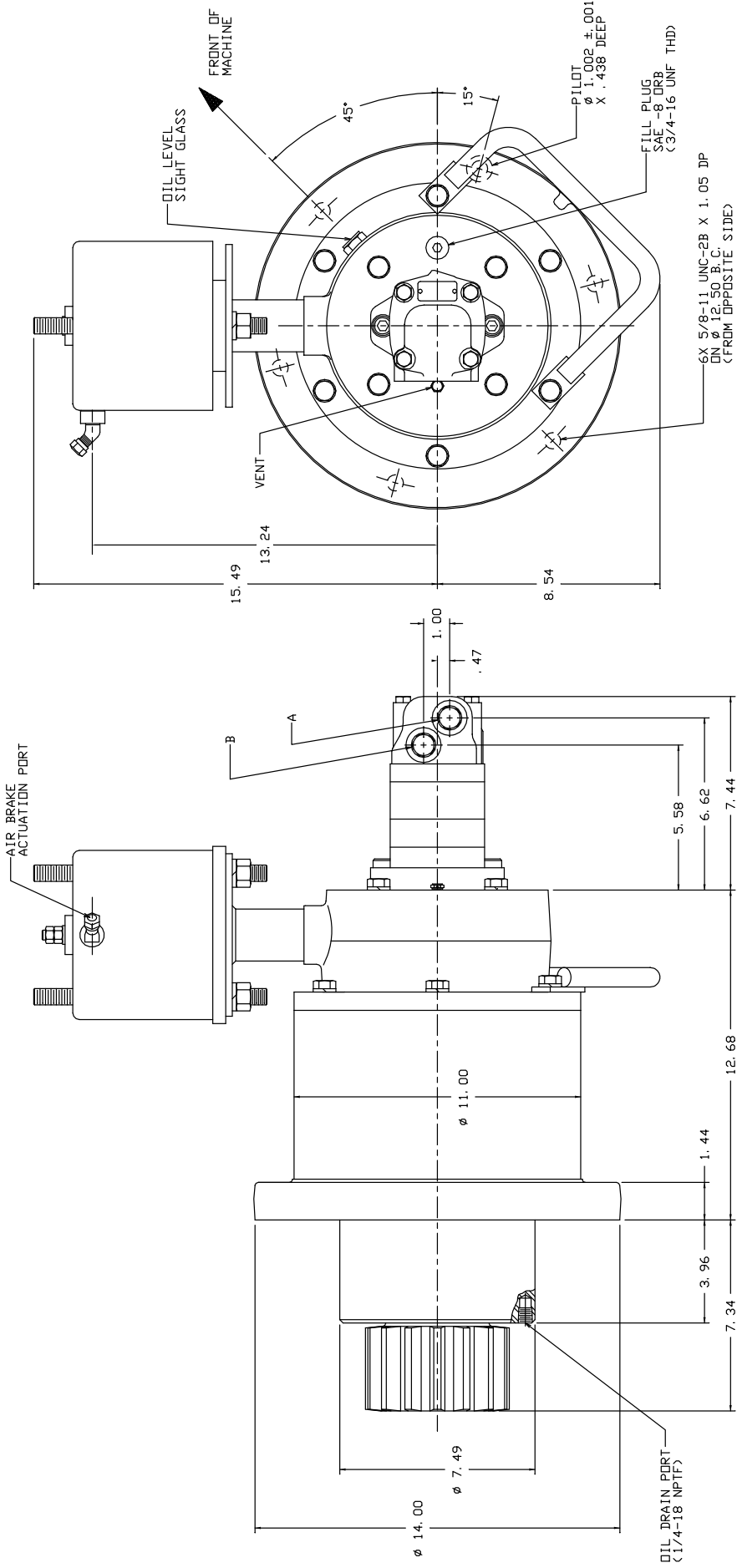
All units – Pressurize port “A” for clockwise pinion rotation when viewed from pinion end.



**SD66A-35CBS-04713**



**SD80A-35CBS-04714**



# SD66A-35CBS-04865

## PREVENTIVE MAINTENANCE

A regular program of preventive maintenance for your planetary swing drive is strongly recommended to minimize the need for emergency servicing and promote safe, reliable operation.

Field experience supported by engineering tests, indicates the two service procedures listed below are the **MOST** critical to safe, reliable operation and must be observed.

**Regular Gear Oil Changes** - every 1,000 hours or six (6) months

**Use of Proper Gear Oil** - recommended type

The following minimum service intervals are specified for operating hours of the prime mover.

### 1. Oil Level

The gear oil level should be checked every 500 hours of operation or three (3) months, whichever occurs first, or whenever there is any sign of oil leakage. Oil level should be visible in the sight glass in the brake housing. If additional oil is needed, refer to "Recommended Gear Oil".

### 2. Oil Change

The gear oil should be changed after the first one hundred (100) hours of operation, then every 1,000 operating hours or six (6) months, whichever occurs first. The gear oil must be changed to remove wear particles that impede the safe and reliable operation of the brake and erode bearings, gears and seals.

Remove the drain plug from the bottom of the pinion housing and drain the oil into a suitable container (04714 unit has a drain hose with a plug in the end). Remove the vent plug from the top of the brake housing. It is very important to keep this vent clean and unobstructed. Clean the vent in solvent, be sure it is not plugged, and re-install it in the drive. **Do not** paint over the vent or replace it with a solid plug. Refer to "Specifications" for oil capacities.

### 3. Hydraulic System

The original filter element should be replaced after the first fifty (50) hours of operation, then every 500 operating hours or three (3) months, or in accordance with the equipment manufacturer's recommendations.

### 4. Mounting Bolts

Tighten all swing drive mounting bolts to recommended torque after the first one hundred (100) hours of operation, then every 1,000 operating hours or six (6) months, whichever occurs first.

### 5. Recommended Planetary Gear Oil

Field experience, supported by extensive engineering tests, indicates the use of the proper planetary gear oil is essential to reliable and safe operation of the brake and obtaining long gear train life.

For simplicity, we have listed one (1) readily available product which has been tested and found to meet our specifications. This is not to say that other lubricant brands would not perform equally as well. If the following lubricant brand is not available in your area, make certain your lubricant vendor supplies you with oil that is equivalent to the product listed below.

#### **! CAUTION !**

Failure to use the proper type and viscosity of planetary gear oil, or the use of aftermarket gear oil additives may contribute to intermittent brake slippage. Some gear lubricants contain large amounts of EP (extreme pressure) and anti-friction additives which may contribute to brake slippage and damage to brake friction discs or seals. Oil viscosity with regard to ambient temperature is also critical to reliable brake operation. Our tests indicate that excessively heavy or thick gear oil may contribute to intermittent brake slippage. Make certain that the gear oil viscosity used in your drive is correct.

### **RECOMMENDED GEAR OIL**

**Texaco Meropa 150 or Equivalent AGMA 4 EP**



TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
<p>A. BRAKE WILL NOT HOLD</p>	<p>1. Brake cable or air cylinder spring out of adjustment. (NOTE: On units with cable controlled brake, brake is applied when cable is under tension and released when cable is slack. On units with air cylinder, brake is applied by a spring in the cylinder and released by air pressure.)</p>	<p>Check for broken brake cable. Replace or adjust cable as required. On units equipped with an air cylinder, be sure the two hex nuts and bushing are in place on the end of the threaded shaft in the center of the cylinder. Be sure there is no air pressure applied to the cylinder when the brake is to be applied. Refer to "Air Cylinder Adjustment And Service" section for adjustment procedure.</p>
	<p>2. Brake friction discs may be worn beyond service limits.</p>	<p>Disassemble brake and inspect friction and brake discs. Replace as required. Refer to "Static Brake Service" section for procedures.</p>
<p>B. BRAKE WILL NOT RELEASE</p>	<p>1. Brake cable out of adjustment</p>	<p>There must be slack in the brake cable for the brake to release. Adjust cable as required.</p>
	<p>2. Air pressure not applied to cylinder, or faulty air cylinder.</p>	<p>Check for air pressure at cylinder. A minimum of 40 psi is required for full brake release. The threaded shaft in the center of the cylinder will extend slightly as air pressure is applied. If air leakage is detected, the cylinder may be defective and should be replaced.</p>
<p>C. OIL IS LEAKING OUT OF THE VENT PLUG AT THE TOP OF THE UNIT, NEAR THE MOTOR</p>	<p>1. Motor shaft seal may be damaged, leaking hydraulic oil into the drive.</p>	<p>Remove the motor and inspect the shaft seal. Replace motor shaft seal as required.</p>
<p>D. OIL IS LEAKING OUT OF THE BOTTOM OF THE DRIVE</p>	<p>1. Worn or damaged pinion shaft seal.</p>	<p>Replace shaft seal as required. Refer to "Drive Disassembly" and "Pinion Service" sections for procedures.</p>
<p>E. OIL IS LEAKING FROM THE BASE OF THE AIR CYLINDER, OR AROUND THE BUSHING AND THREADED SHAFT THAT ACTUATE THE BRAKE</p>	<p>1. Worn or damaged seal around the shaft that actuates the swing drive brake.</p>	<p>Replace the seal as required. Refer to "Air Cylinder Adjustment and Service" section for procedure.</p>

## SWING DRIVE SERVICE

### Foreword to Drive Service

Before any part is removed from the swing drive, all service instructions should be read and understood. Work in a clean, dust free area as cleanliness is of utmost importance when servicing hydraulic equipment. Inspect all replacement parts prior to installation to detect any damage which might have occurred in shipment.

Use only genuine BRADEN replacement parts for optimum results. Never reuse expendable parts such as oil seals and O-rings.

Inspect all machined surfaces for excessive wear or damage before beginning to reassemble the drive.

Lubricate all O-rings and oil seals with gear oil prior to installation.

Use a non-hardening sealing compound on the outside surface of oil seals and a light coat of thread sealing compound on pipe threads. Avoid getting thread compound inside parts or passages that conduct oil.

Thoroughly clean all parts in a good grade of non-flammable safety solvent. Wear protective clothing as required.

Refer to cross-section drawings in this manual for item numbers used in service procedures.

**! WARNING !**

**DO NOT CLEAN BRAKE FRICTION DISCS IN SOLVENT. SOLVENT MAY CAUSE DAMAGE TO FRICTION MATERIAL WHICH MAY RESULT IN BRAKE FAILURE AND LOSS OF CONTROL.**

### DRIVE DISASSEMBLY

1. Remove and plug the two hydraulic lines from the motor. On units equipped with a mechanical cable brake actuator, remove the cable from the drive. On units equipped with an air cylinder brake release, remove and protect the air line from the cylinder.
2. Remove the fasteners securing the drive to the crane. On 04714 drives, the oil must be drained and the hose removed from the pinion housing before the drive can be removed. Use an adequate lifting device to remove the drive from the crane (NOTE: approximate unit weight is from 326 to 386 pounds [148 to 175 kg]). All units have a bushing that fits into a counter-bore on the mounting surface. Remove this bushing and retain it for use when the unit is re-installed.
3. If the oil has not already been drained, remove the drain plug and drain the oil into an adequate container. Recycle or dispose of the used oil in an environmentally responsible manner. Contact your local government agency for information concerning proper disposal. Remove the vent plug from the top of the brake housing. It is very important to keep this vent clean and unobstructed. Clean the vent in solvent, be sure it is not plugged, and re-install it in the drive. **Do not** paint over the vent or replace it with a solid plug.

*NOTE: Before beginning to disassemble the drive, it is advisable to mark the relative position of connecting parts in order to reassemble the drive with the correct orientation. Mark the position of the motor to the brake housing. Mark the housing adapter (item 19) in relation to the ring gear, and the ring gear in relation to the pinion housing.*

4. Remove the two capscrews (item 35) securing the motor to the drive and remove the motor. Remove and discard the motor pilot O-Ring (item 34).
5. Remove the six capscrews and washers (items 21 and 22) holding the housing adapter (item 19) and brake assembly to the ring gear. Lift the brake sub-assembly off of the drive. Remove and discard the O-Ring (item 17) from the adapter pilot.
9. Remove the input sun gear (item 5). Lift out the primary planet carrier assembly (item 1). Remove the thrust washer (item 3) between the primary and output planet carriers. Remove the output sun gear (item 4). Remove the output planet carrier assembly (item 2). On 04714 units ONLY, remove the spacer (item 20) that holds the split ring in place around the top of the pinion shaft. (On all other units, the split ring is held in place by the output planet carrier and this spacer is not used.)
10. Turn the unit over and remove the twelve (12) capscrews (item 16) securing the ring gear to the pinion housing (item 7). Thoroughly clean and inspect the ring gear for damage. Check the ring gear teeth for nicks, spalling or excessive wear. Replace the ring gear if gear tooth wear is greater than 0.015 in. (0.4 mm) when compared to unworn area of teeth.

This completes disassembly of the drive. Refer to the following sections for sub-assembly service procedure

## STATIC BRAKE SERVICE

### Disassembly

1. Remove the four capscrews and sealing washers (items 31 & 32). Turn the assembly over and remove the housing adapter (item 19). Remove and discard the O-Ring (item 24).

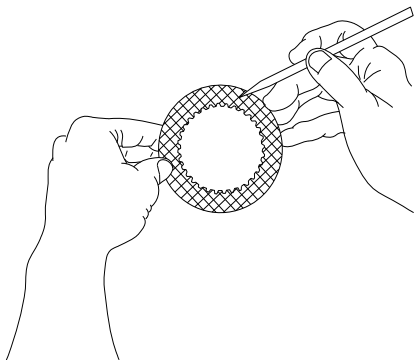
2. Remove the friction and steel brake discs (items 26 & 27). Remove the pressure plate (item 28).

3. Remove the brake actuating assembly and clevis (items 30 & 33) and the two thrust bearings (item 29).

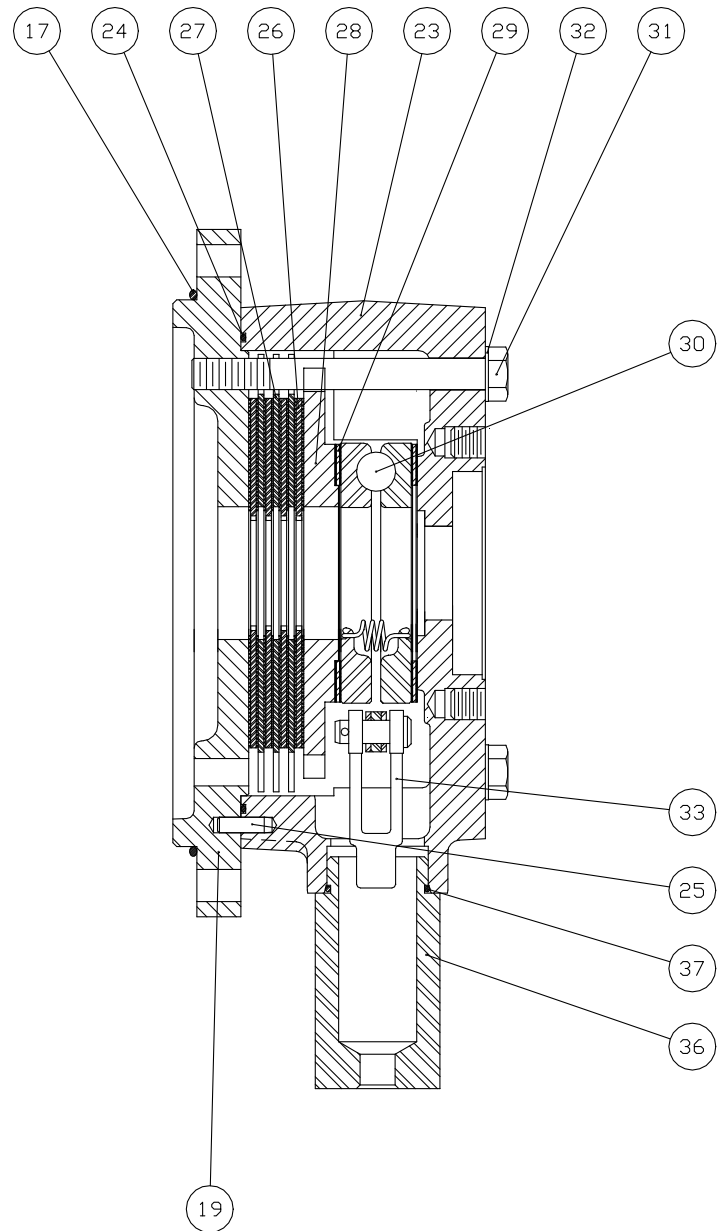
#### **! WARNING !**

**DO NOT CLEAN BRAKE FRICTION DISCS IN SOLVENT. SOLVENT MAY CAUSE DAMAGE TO FRICTION MATERIAL WHICH MAY RESULT IN BRAKE FAILURE AND LOSS OF LOAD CONTROL.**

Thoroughly clean and inspect all parts at this time. Be sure the brake release mechanism operates smoothly and is not damaged. There are no serviceable parts in the actuating mechanism. If it is damaged in any way, the entire assembly must be replaced. Inspect the two teflon impregnated thrust washers for signs of excessive wear and/or mechanical damage. Nominal thickness of these washers is 3/32 in. when new. If worn to less than 1/16 in. thickness, they should be replaced.



Place each friction disc on a flat surface and check for distortion with a straight edge. Friction material should appear even across entire surface with groove pattern visible. Replace friction disc if splines are worn to a point, disc is distorted, friction material is worn unevenly, groove pattern is worn away or friction material is burned. Place each steel disc on a flat surface and check for distortion with a straight edge. Check surface for signs of material transfer or heat. Replace steel disc if disc is distorted or heat discolored.



## Assembly

1. Place the brake housing on a work bench with the motor mounting surface down. Lightly lubricate and install one of the thrust washers into the housing. Install the brake actuating assembly, with the clevis attached to it, into the housing. The clevis must fit into the opening on the side of the housing.
2. Tilt the housing and install two capscrews and sealing washers (items 31 & 32) into two holes in the housing, 180° apart. These capscrews will align the pressure plate and steel discs when they are installed. Apply an oil soluble grease or petroleum jelly to the other thrust washer and install it onto the pilot of the pressure plate (item 28). The grease will hold it in position while the pressure plate is installed. Install the pressure plate onto the actuating mechanism. Alternately install a friction disc and a steel brake disc into the housing. *NOTE: There are 4 friction and 3 steel discs. Start and end with a friction disc.*
3. Install a new O-Ring (item 24) into the groove on the brake housing. Install the housing adapter onto the brake housing. There is a dowel pin between these two parts for correct orientation. Turn the assembly over and install the two remaining capscrews and sealing washers and tighten all four capscrews. *NOTE: The brake plates must be free to move in the housing at this point. If they are clamped in place and immovable, the thrust washer between the pressure plate and actuating mechanism may be out of position.*
4. If the brake is cable operated, the cable adapter (item 36) and cable are installed after the unit is installed on the crane. If the brake is air operated, install the threaded shaft and locknut (items 46 & 49). Thread the shaft into the clevis ¾ in. (19 mm) and tighten the locknut. Lightly lubricate the threaded shaft and install the air brake adapter (item 36) onto the brake housing. Refer to "AIR CYLINDER ADJUSTMENT AND SERVICE" to install and adjust the cylinder.

## AIR CYLINDER ADJUSTMENT AND SERVICE

Units with part number 04865 use an air cylinder to release the static brake in the drive.

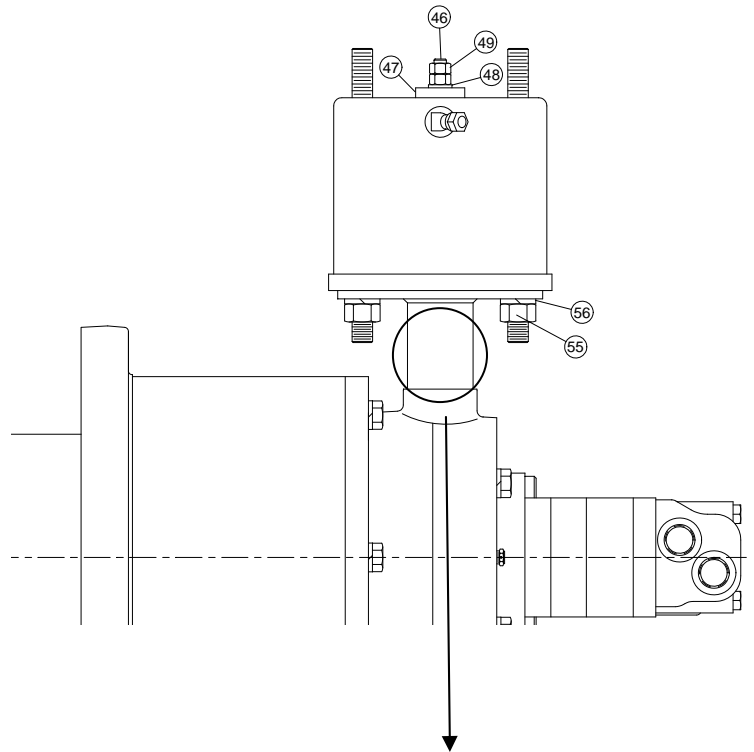
The air cylinder has no user serviceable parts. If the cylinder is leaking air, or otherwise not functioning properly, it should be replaced as a unit.

**! WARNING !**  
**THE AIR CYLINDER CONTAINS A LARGE SPRING UNDER COMPRESSION. UNDER NO CIRCUMSTANCES SHOULD YOU REMOVE THE EIGHT (8) CAPSCREWS AROUND THE BASE OF THE CYLINDER. PROPERTY DAMAGE AND/OR SERIOUS PERSONAL INJURY COULD RESULT.**

### To Remove The Cylinder From The Drive

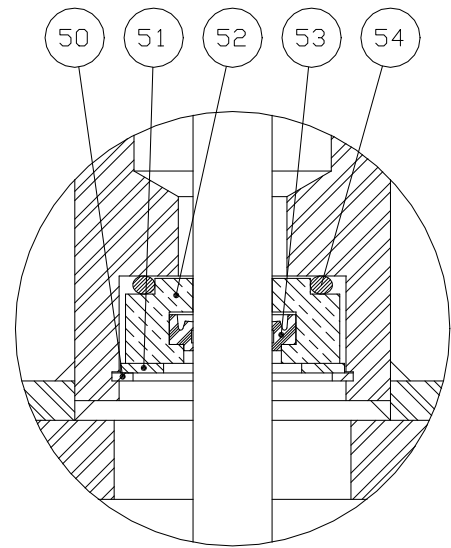
*NOTE: When there is no air pressure applied to the cylinder, the threaded shaft (item 46) is under tension, applied by the spring in the cylinder.*

1. Apply a minimum of 50 psi, but not more than 125 psi, of air pressure to the cylinder to release tension on the threaded shaft (item 46).
2. Remove the two hex nuts (item 49), the hardened washer (item 48) and the brake pull bushing (item 47).
3. Slowly release the air pressure from the cylinder.
4. Remove the two hex nuts and lockwashers (items 55 and 56) and lift the cylinder from the drive.



**The shaft seal can now be serviced.**

5. Remove the retaining ring (item 50).
6. Remove the washer (item 51), seal retainer (item 52) and O-Ring (item 54). Inspect the seal (item 53) and replace as required.
7. Install a new O-Ring, the seal retainer, washer and retaining ring.



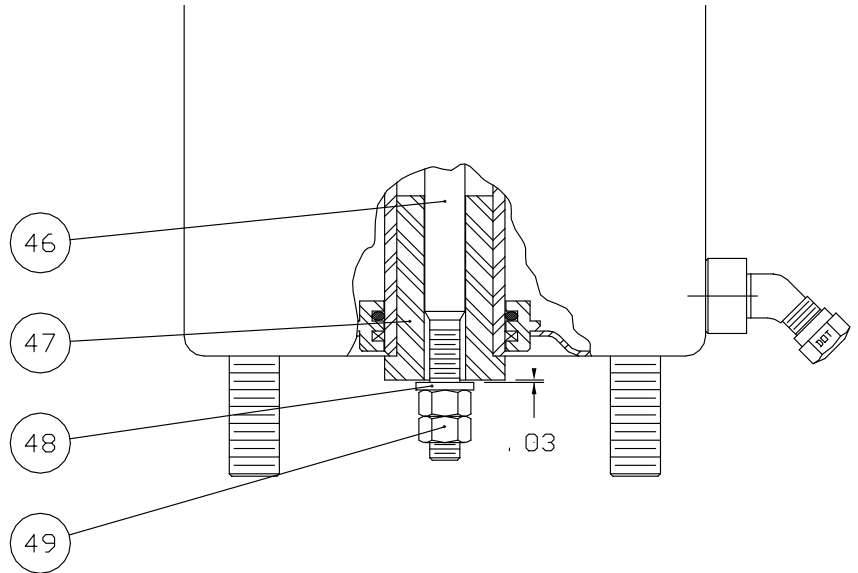
## To Install and Adjust an Air Cylinder

1. Set the cylinder in place on the drive. Be sure the air connection is at the opposite end of the cylinder from the mounting surface, as shown. Install the two hex nuts and lockwashers (items 55 and 56).

2. Apply a minimum of 50 psi, but not more than 125 psi, of air pressure to the cylinder. This will retract the piston and expose the end of the threaded shaft (item 46).

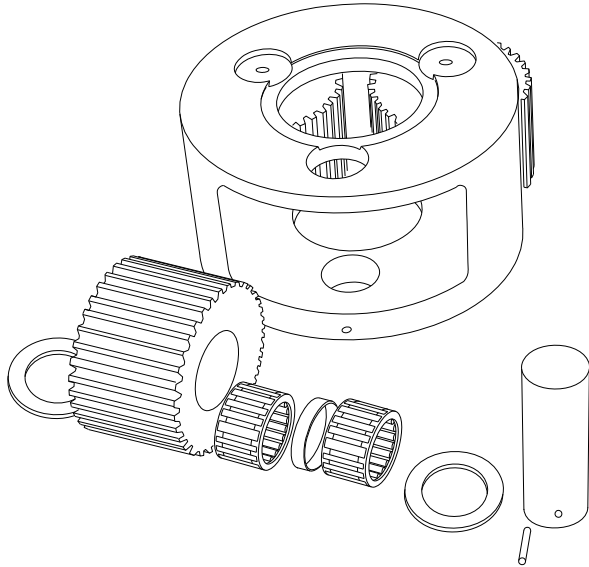
3. Install the brake pull bushing (item 47), the washer (item 48) and the two hex nuts (item 49). Lock the two hex nuts together to allow 0.030 in. (0.76 mm) clearance between the washer and the bushing.

4. Slowly release the air pressure from the cylinder. The internal spring in the cylinder will apply tension to the threaded shaft, which will apply the static brake in the swing drive. Alternately apply and release air pressure to cycle the brake several times. With pressure applied, check to be sure there is still clearance between the washer and bushing.



## PLANET CARRIER SERVICE

### Disassembly



*NOTE: The drawing above and the following instructions are for the output planet carrier assembly. The input planet carrier assembly follows the same procedure, except, there is only one bearing and no spacer, under each planet gear.*

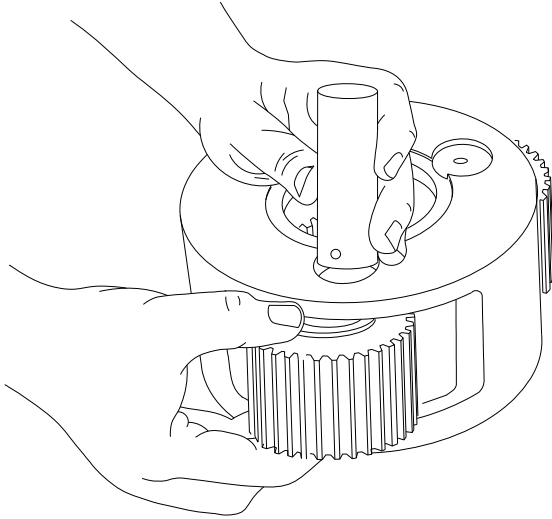
1. Each planet gear is removed by first driving the rollpin into the planet gear shaft. The planet gear shaft can then be pushed through the planet carrier. Drive the rollpin out of the shaft and discard. Remove the planet gear and two thrust races from the carrier. Remove the two roller bearings and bearing spacer from the planet gear.

Repeat this procedure for each of the other two gears.

Thoroughly clean all parts and inspect for damage and wear. The bearing rollers should not exhibit any irregularities. If the rollers show any sign of spalling, corrosion, discoloration, material displacement or abnormal wear, the bearing should be replaced. Likewise, the cage should be inspected for unusual wear or deformation, particularly the cage bars. If there is any damage that will impair the cage's ability to separate, retain and guide the rollers properly, the bearing should be replaced. The thrust washer contact areas should be free from any surface irregularities that may cause abrasions or friction. The gears and shafts should be inspected for abnormal wear or pitting and replaced if necessary.

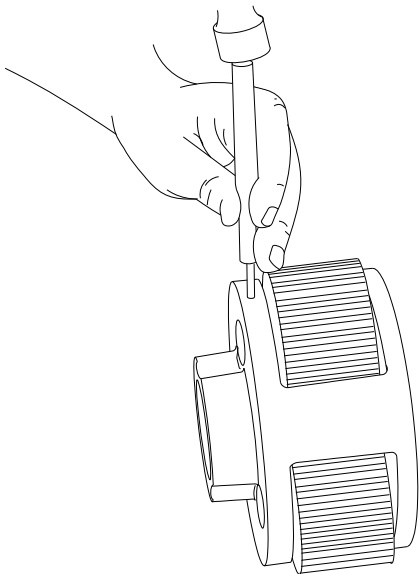


## Assembly

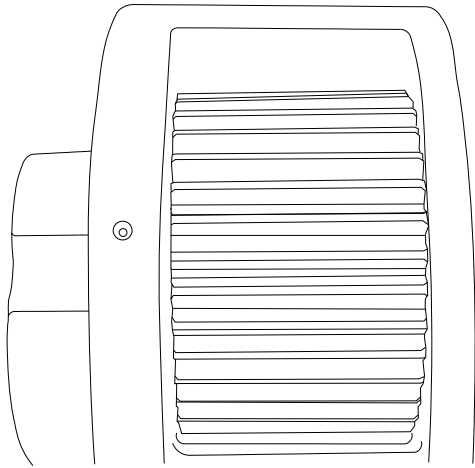


*NOTE: The input planet assembly has a thrust plate (item B) that must be installed into the planet carrier BEFORE the planet gears are installed.*

1. Insert two bearings with a spacer between them into a planet gear (only one bearing and no spacer for input planet gears). Place a thrust race on each side of the gear and position this assembly in the planet carrier. Slide the planet gear shaft through the carrier and gear assembly, aligning the pin hole in the shaft with the hole in the carrier.



2. Drive a **NEW** rollpin into place. **Always use NEW rollpins.** When properly positioned, the rollpin will be slightly below the surface of the carrier. When properly positioned, 50% of the rollpin length should be engaged in the planet gear shaft with the remaining 50% in the carrier.



3. With a center punch, stake the carrier next to the rollpin hole. This will distort the hole in the carrier so the rollpin will not back out when in service. Repeat steps 1 through 3 for each of the other two planet gears.

## PINION SERVICE

### Disassembly

1. Separate and remove the two halves of the split ring (item 13).
2. Remove the pinion (item 8) from the housing.
3. Remove the seal (item 18) from the housing.

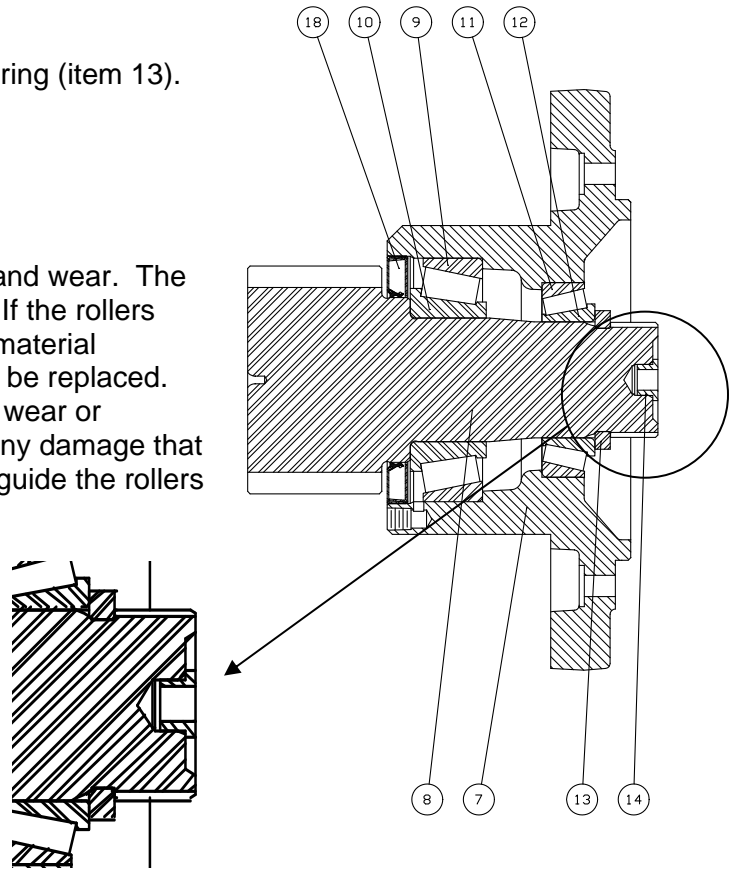
Thoroughly clean all parts and inspect for damage and wear. The bearing rollers should not exhibit any irregularities. If the rollers show any sign of spalling, corrosion, discoloration, material displacement or abnormal wear, the bearing should be replaced. Likewise, the cage should be inspected for unusual wear or deformation, particularly the cage bars. If there is any damage that will impair the cage's ability to separate, retain and guide the rollers properly, the bearing should be replaced.

Inspect the thrust bushing (item 14) in the end of the pinion shaft. If the flange thickness is worn to less than 1/16 inch (1.6 mm), the bushing should be replaced.

### Assembly

1. If the bearings are being replaced, press the small bearing cup (item 11) into the housing. Press the large bearing cup (item 9) into the bearing housing until it is fully seated in the housing. Install the large bearing cone (item 10).
2. Apply a non-hardening sealant to the threads of the oil drain plug and install it into the housing.
3. Apply a non-hardening sealant to the outside diameter of the seal (item 18) and press it into the housing with the spring side toward the bearings. Use a flat plate to avoid distorting the seal. The outside surface of the seal should be even with the housing.
4. Lightly lubricate the sealing surface of the pinion and install it into the housing. Carefully turn the assembly over. Lubricate the smaller bearing cone (item 12) and install it onto the pinion. The housing should rotate smooth and freely on the pinion.
5. Using a hydraulic press, apply approximately 11 tons (22,000 lbs) force to the bearing cone (item 12). Release the press and install the split ring (item 13).

The pinion sub-assembly is now complete.



## DRIVE ASSEMBLY

1. Place the ring gear on your work surface with pinion housing mating surface facing up. This end of the ring gear has twelve (12) tapped holes.
2. Lightly lubricate and install a new O-Ring (item 17) onto the pilot of the pinion housing. Set the pinion housing onto the ring gear. Align the ring gear and housing, using the marks made during disassembly. Apply Loc-Tite 242 to the twelve (12) capscrews (item 16) and install them into the ring gear. Torque to  $106 \pm 10$  lb-ft ( $144 \pm 14$  N-m). *NOTE: It is more convenient to torque these capscrews when the unit is completely assembled and placed on its side.*
3. Turn the assembly over with the pinion gear down. It is advisable to support the pinion housing on its mounting surface for increased stability.
4. Install the output planet carrier assembly into the ring gear. It may be necessary to rotate the planet carrier to engage the splines on the pinion shaft.
5. Install the output sun gear (item 4) into the center of output planet gears.

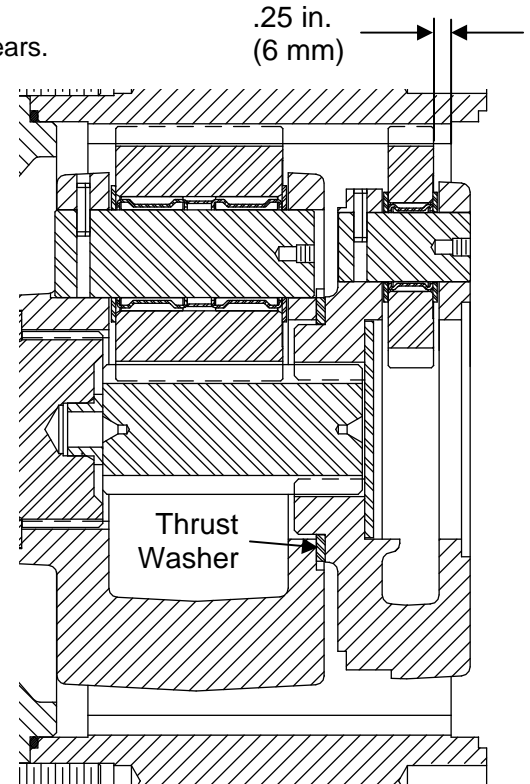
6. Apply a liberal coating of oil soluble grease or petroleum jelly to the thrust washer (item 3) and install it onto the pilot of the primary planet carrier. Install the primary planet assembly into the ring gear. It may be necessary to rotate the planet carrier to engage the output sun gear. Be sure the thrust washer remains in its proper position. When all components are properly installed, the primary planet gears will be approximately 0.25 in. (6 mm) below the top of the ring gear teeth (see drawing).

7. Install the input sun gear (item 5) into the center of the primary planet gears.

8. Lightly lubricate and install a new O-Ring (item 17) onto the pilot of the housing adapter (item 19). Set the brake sub-assembly over the sun gear. Use a large flat blade screwdriver to rotate the input sun gear as required to align the splines in the brake discs. Orient the housing adapter with the ring gear, using the marks made during disassembly. Install the six capscrews and lockwashers (items 21 and 22) securing the adapter to the ring gear. *NOTE: on part numbers 04713 and 04865, there is a handle (item 20) that is attached to the top of the adapter with two of the capscrews used in this step.*

9. Install a new O-Ring onto the motor pilot, and install the motor. Install the two capscrews (item 35) securing the motor to the housing.

The drive is now completely assembled and ready to be installed on the crane.

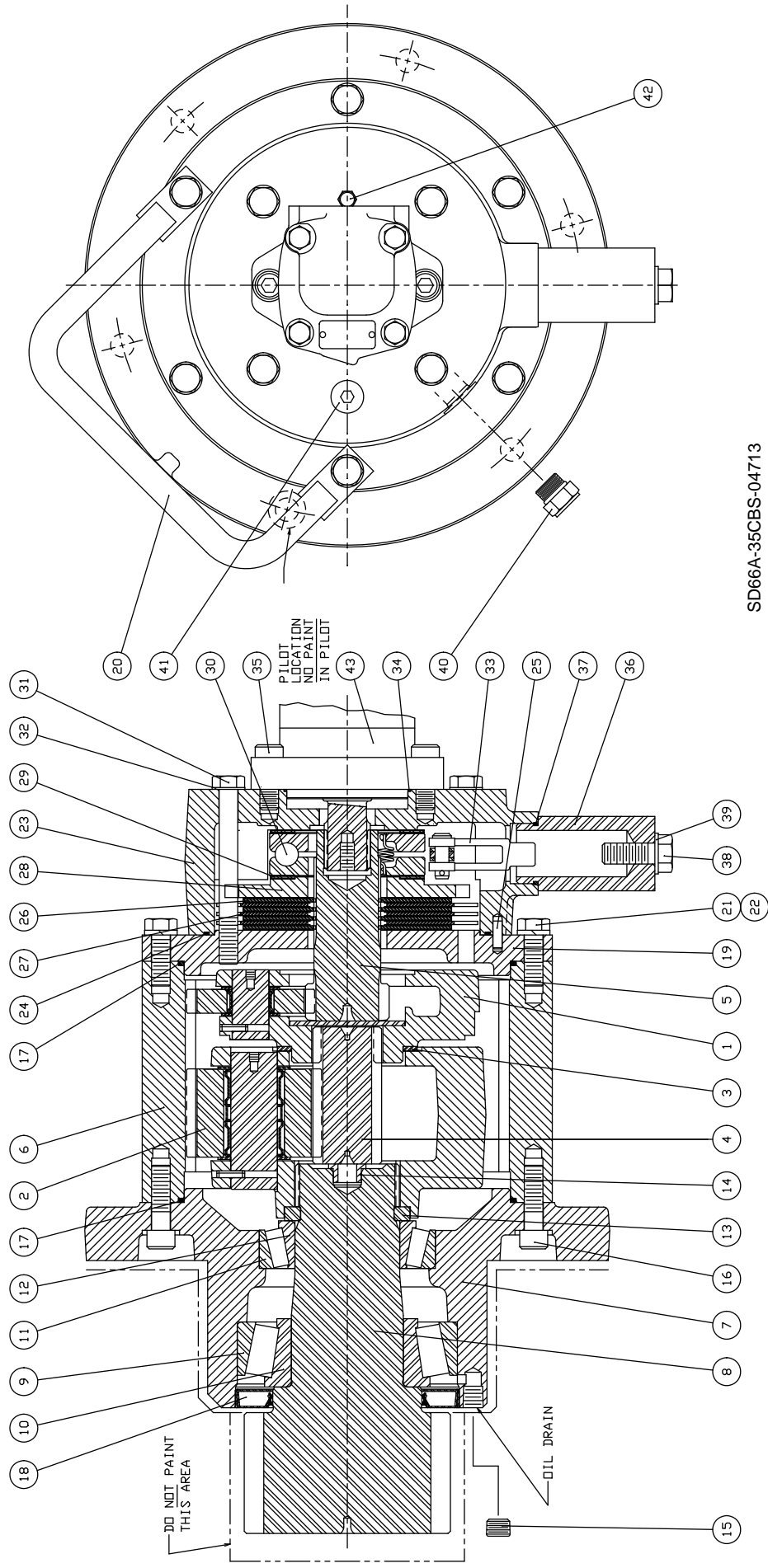


**PARTS LIST**  
**SD66A-35CBS-04713**

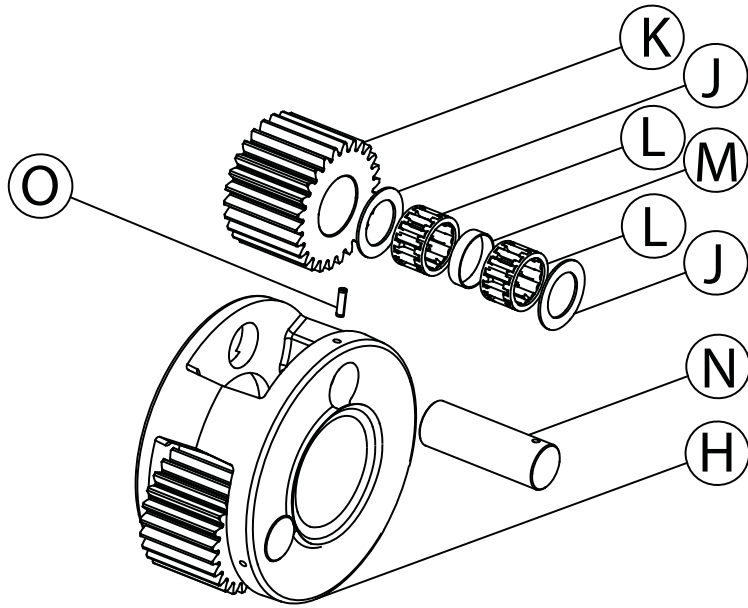
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>PART NO.</b>	<b>QTY.</b>
1	Primary Planet Carrier Assembly	82343	1
A	Primary Planet Carrier	100853	1
B	Thrust Plate	25729	1
C	Thrust Washer	25361	6
D	Primary Planet Gear	40237	3
E	Roller Bearing	24175	3
F	Planet Gear Shaft	25614	3
G	Rollpin	24113	3
2	Output Planet Carrier Assembly	82705	1
H	Output Planet Carrier	101748	1
J	Thrust Washer	24306	6
K	Output Planet Gear	26467	3
L	Roller Bearing	25292	6
M	Bearing Spacer	25443	3
N	Planet Gear Shaft	25613	3
O	Rollpin	24113	3
3	Thrust Washer	40129	1
4	Output Sun Gear	100854	1
5	Input Sun Gear	101747	1
6	Ring Gear	101749	1
7	Pinion Housing	101753	1
8	Pinion Gear	101752	1
9	Bearing Cup	11848	1
10	Bearing Cone	11847	1
11	Bearing Cup	101992	1
12	Bearing Cone	101993	1
13	Split Ring	101843	1
14	Thrust Bushing	101994	1
15	Plug	70120	1
16	Capscrew	23044	12
17	O-Ring	25108	2
18	Oil Seal	101995	1
19	Housing Adapter	101751	1
20	Handle	101845	1
21	Capscrew	13413	6
22	Lockwasher	11026	6
23	Brake Housing	101750	1
24	O-Ring	101996	1
25	Dowell Pin	70149	1
26	Friction Disc	101997	4
27	Brake Disc	101998	3

28	Brake Pressure Plate	101827	1
29	Thrust Bearing	101999	2
30	Brake Actuating Assembly	102000	1
31	Capscrew	25877	4
32	Sealing Washer	72144	4
33	Clevis	102001	1
34	O-Ring	25727	1
35	Capscrew	25818	2
36	Cable Adapter	101842	1
37	O-Ring	31608	1
39	Sealing Washer	102263	1
40	Sight Gauge	26705	1
41	O-Ring Flush Plug (-8)	32411	1
42	Vent	18062	1
43	Hydraulic Motor	102002	1
	Pilot Bushing *	102421	1
	Stud *	102422	5
	Lockwasher *	102423	6
	Capscrew *	102424	1
	Hex Nut *	102425	5

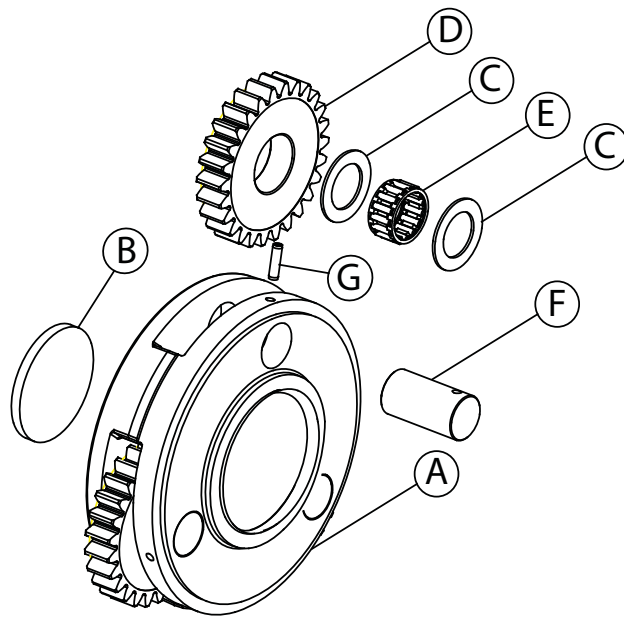
\* These items used to mount drive to crane, and are not shown.



SD66A-35CBS-04713



**Output Planet Assembly**



**Primary Planet Assembly**

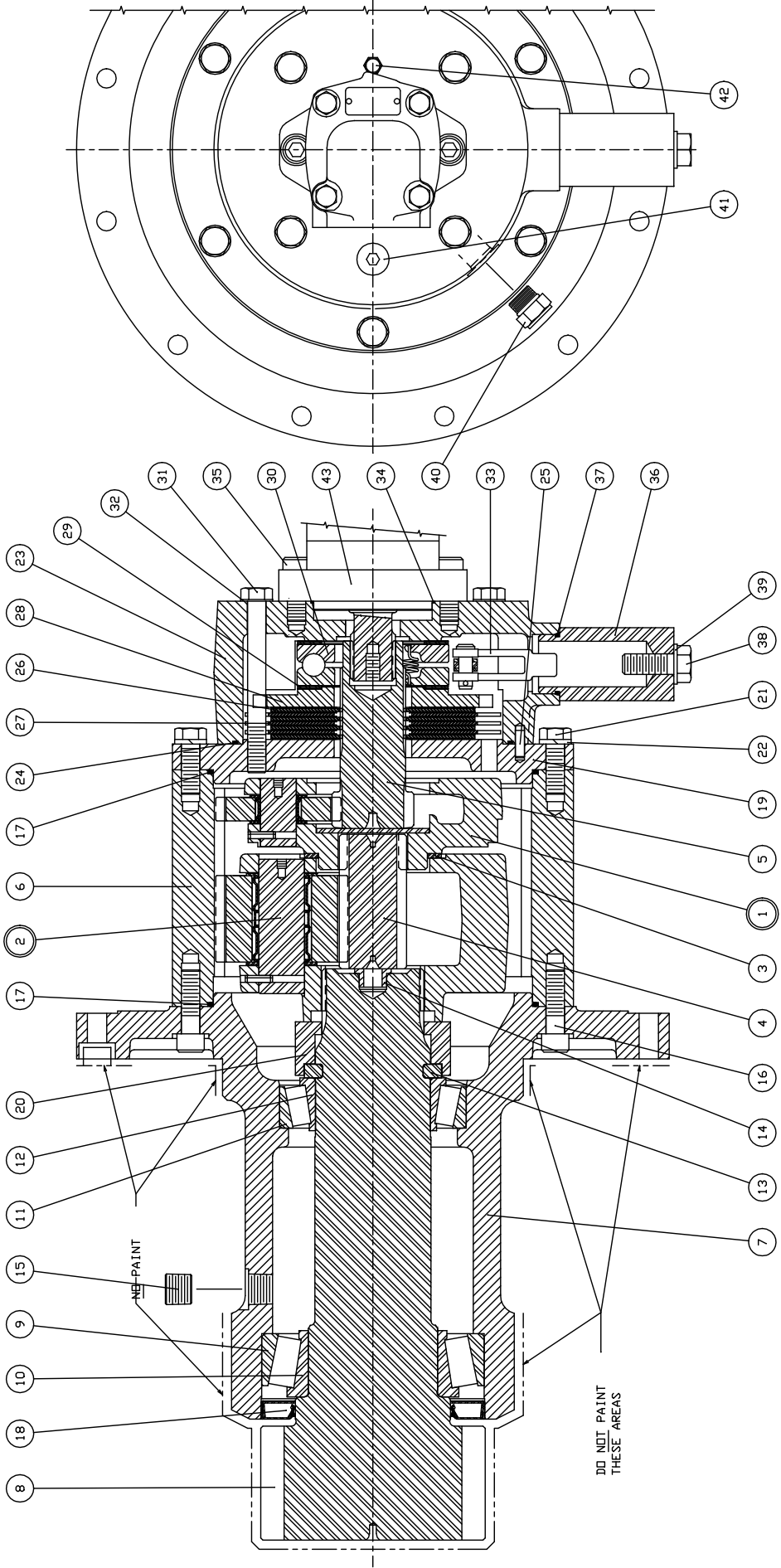


**PARTS LIST**  
**SD80A-35CBS-04714**

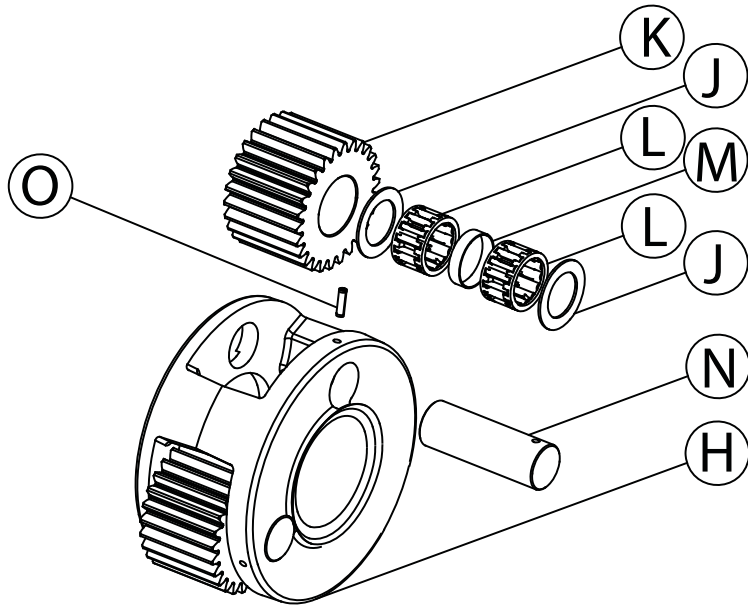
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>PART NO.</b>	<b>QTY.</b>
1	Primary Planet Carrier Assembly	82343	1
A	Primary Planet Carrier	100853	1
B	Thrust Plate	25729	1
C	Thrust Washer	25361	6
D	Primary Planet Gear	40237	3
E	Roller Bearing	24175	3
F	Planet Gear Shaft	25614	3
G	Rollpin	24113	3
2	Output Planet Carrier Assembly	82705	1
H	Output Planet Carrier	101748	1
J	Thrust Washer	24306	6
K	Output Planet Gear	26467	3
L	Roller Bearing	25292	6
M	Bearing Spacer	25443	3
N	Planet Gear Shaft	25613	3
O	Rollpin	24113	3
3	Thrust Washer	40129	1
4	Output Sun Gear	100854	1
5	Input Sun Gear	101747	1
6	Ring Gear	101749	1
7	Pinion Housing	101755	1
8	Pinion Gear	101754	1
9	Bearing Cup	102037	1
10	Bearing Cone	102038	1
11	Bearing Cup	102039	1
12	Bearing Cone	102040	1
13	Split Ring	101844	1
14	Thrust Bushing	101994	1
15	Plug	77332	1
16	Capscrew	23044	12
17	O-Ring	25108	2
18	Oil Seal	102036	1
19	Housing Adapter	101751	1
20	Spacer	101856	1
21	Capscrew	13413	6
22	Lockwasher	11026	6
23	Brake Housing	101750	1
24	O-Ring	101996	1
25	Dowell Pin	70149	1
26	Friction Disc	101997	4

27	Brake Disc	101998	3
28	Brake Pressure Plate	101827	1
29	Thrust Bearing	101999	2
30	Brake Actuating Assembly	102000	1
31	Capscrew	25877	4
32	Sealing Washer	72144	4
33	Clevis	102001	1
34	O-Ring	25727	1
35	Capscrew	25818	2
36	Cable Adapter	101842	1
37	O-Ring	31608	1
39	Sealing Washer	102263	1
40	Sight Gauge	26705	1
41	O-Ring Flush Plug (-8)	32411	1
42	Vent	18062	1
43	Hydraulic Motor	102003	1
	Hose Assembly *	102416	1
	Plug (JIC -10) *	102417	1
	Pilot Bushing *	102418	1
	Capscrew *	102419	8
	Washer *	102420	8

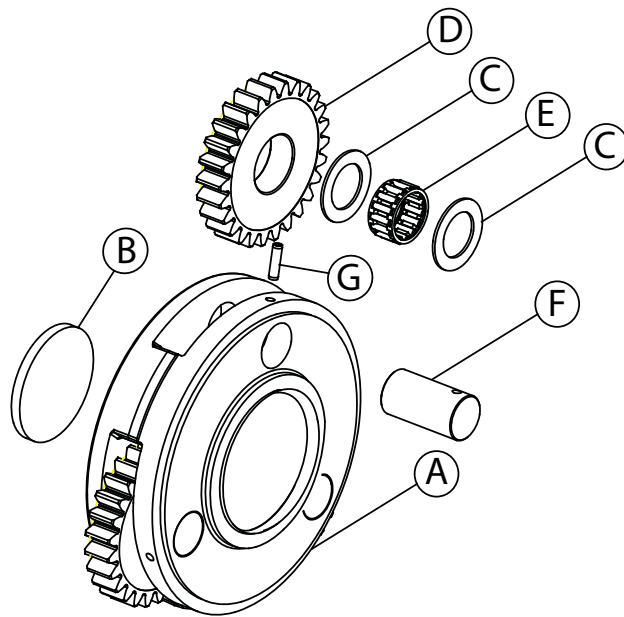
\* These items used to mount drive to crane, and are not shown.



SD80A-35CBS-04714



**Output Planet Assembly**



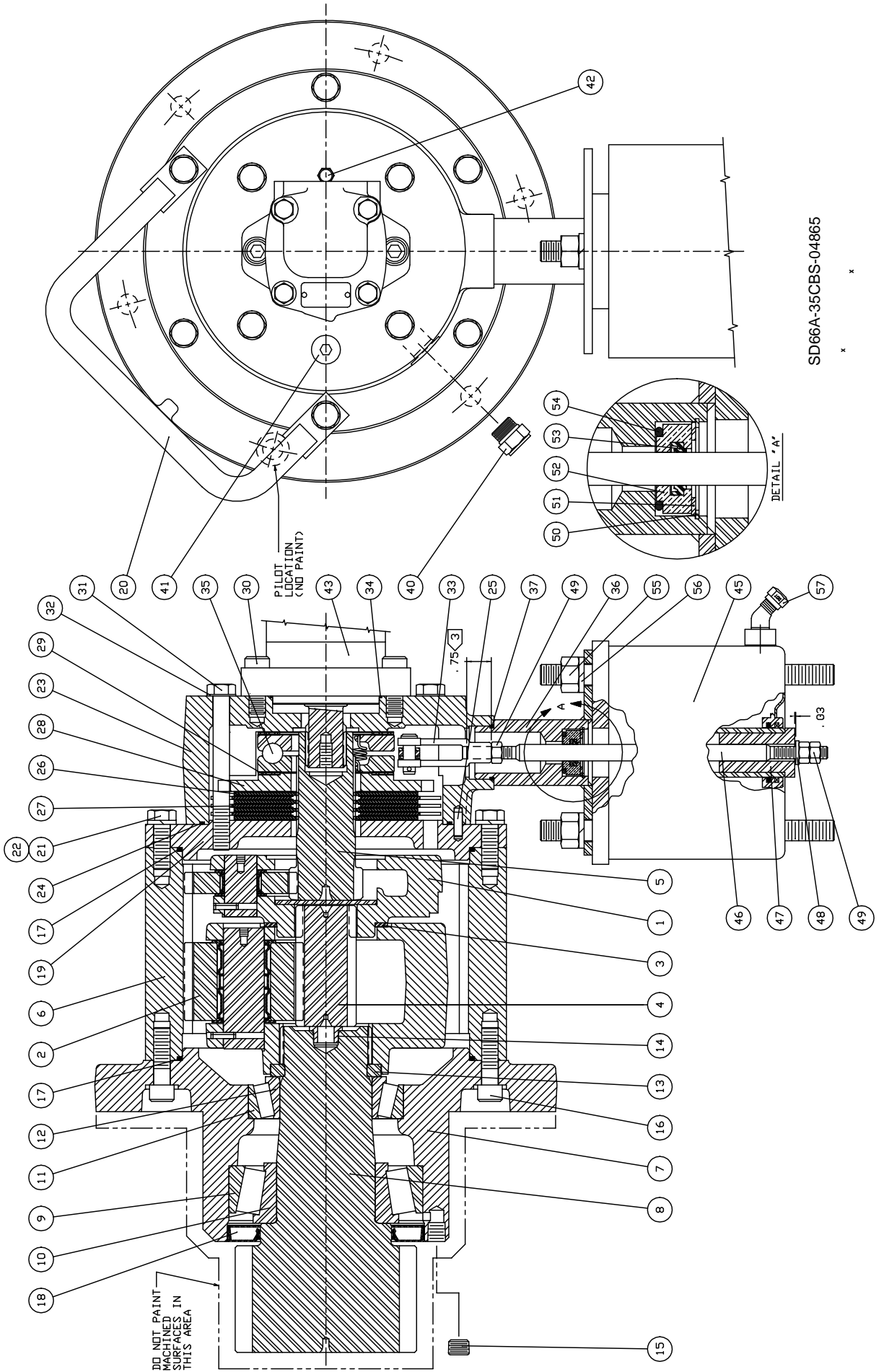
**Primary Planet Assembly**

**PARTS LIST**  
**SD66A-35CBS-04865**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>PART NO.</b>	<b>QTY.</b>
1	Primary Planet Carrier Assembly	82343	1
A	Primary Planet Carrier	100853	1
B	Thrust Plate	25729	1
C	Thrust Washer	25361	6
D	Primary Planet Gear	40237	3
E	Roller Bearing	24175	3
F	Planet Gear Shaft	25614	3
G	Rollpin	24113	3
2	Output Planet Carrier Assembly	82705	1
H	Output Planet Carrier	101748	1
J	Thrust Washer	24306	6
K	Output Planet Gear	26467	3
L	Roller Bearing	25292	6
M	Bearing Spacer	25443	3
N	Planet Gear Shaft	25613	3
O	Rollpin	24113	3
3	Thrust Washer	40129	1
4	Output Sun Gear	100854	1
5	Input Sun Gear	101747	1
6	Ring Gear	101749	1
7	Pinion Housing	101753	1
8	Pinion Gear	101752	1
9	Bearing Cup	11848	1
10	Bearing Cone	11847	1
11	Bearing Cup	101992	1
12	Bearing Cone	101993	1
13	Split Ring	101843	1
14	Thrust Bushing	101994	1
15	Plug	70120	1
16	Capscrew	23044	12
17	O-Ring	25108	2
18	Oil Seal	101995	1
19	Housing Adapter	101751	1
20	Handle	101845	1
21	Capscrew	13413	6
22	Lockwasher	11026	6
23	Brake Housing	101750	1
24	O-Ring	101996	1
25	Dowell Pin	70149	1
26	Friction Disc	101997	4

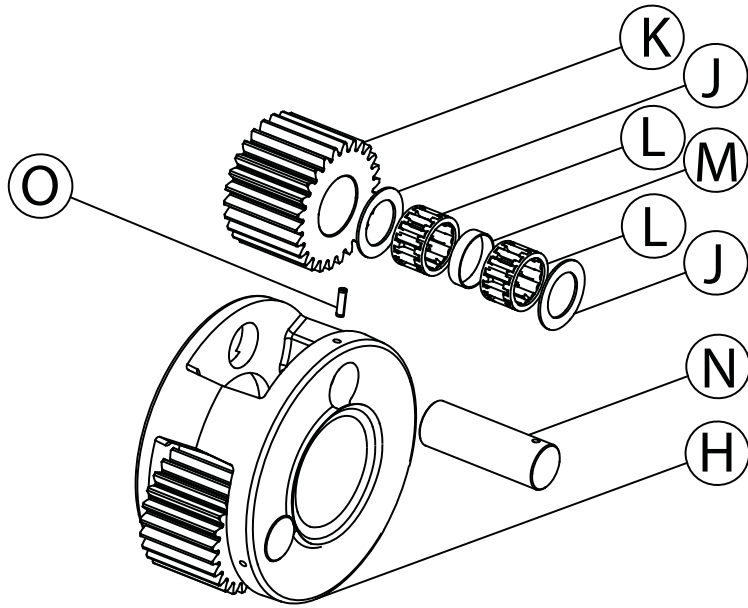
27	Brake Disc	101998	3
28	Brake Pressure Plate	101827	1
29	Thrust Bearing	101999	2
30	Brake Actuating Assembly	102000	1
31	Capscrew	25877	4
32	Sealing Washer	72144	4
33	Clevis	102001	1
34	O-Ring	25727	1
35	Capscrew	25818	2
36	Air Brake Adapter	102498	1
37	O-Ring	31608	1
40	Sight Gauge	26705	1
41	O-Ring Flush Plug (-8)	32411	1
42	Vent	18062	1
43	Hydraulic Motor	102002	1
45	Air Cylinder	102504	1
46	Threaded Shaft	102494	1
47	Brake Pull Bushing	102499	1
48	Hardened Washer	101440	1
49	Hex Nut	102510	3
50	Retaining Ring	102511	1
51	Thrust Washer	102512	1
52	Seal Retainer	102484	1
53	Seal	102500	1
54	O-Ring	12465	1
55	Hex Nut	22702	2
56	Lockwasher	22702	2
57	Elbow, 45 degree	102508	1
	Pilot Bushing *	102421	1
	Stud *	102422	5
	Lockwasher *	102423	6
	Capscrew *	102424	1
	Hex Nut *	102425	5

\* These items used to mount drive to crane, and are not shown.

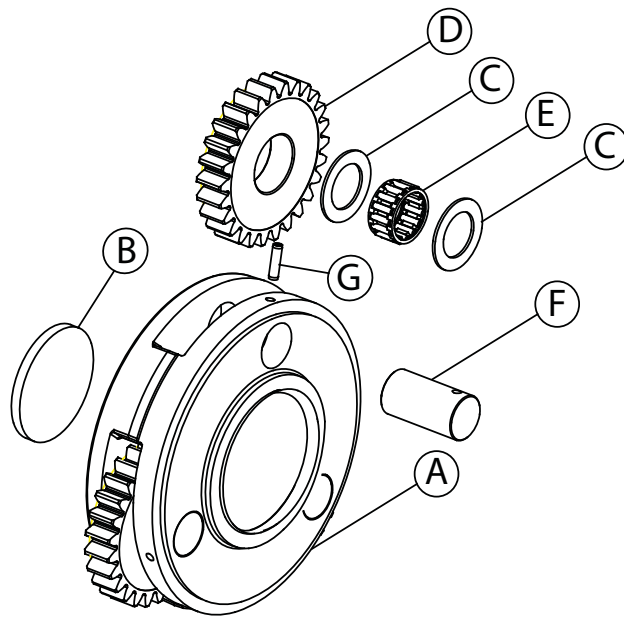


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**Output Planet Assembly**



**Primary Planet Assembly**