

## DIRECT DRIVE GEARBOX PUMP UNITS Models 349,519

### PUMP FEATURES

- Polished solid ceramic plungers to last long and resist abrasion.
- Triplex plunger design providing low pulsation and quiet operation.
- Internally lubricated and cooled packings for extended life.

### GEARBOX UNIT FEATURES

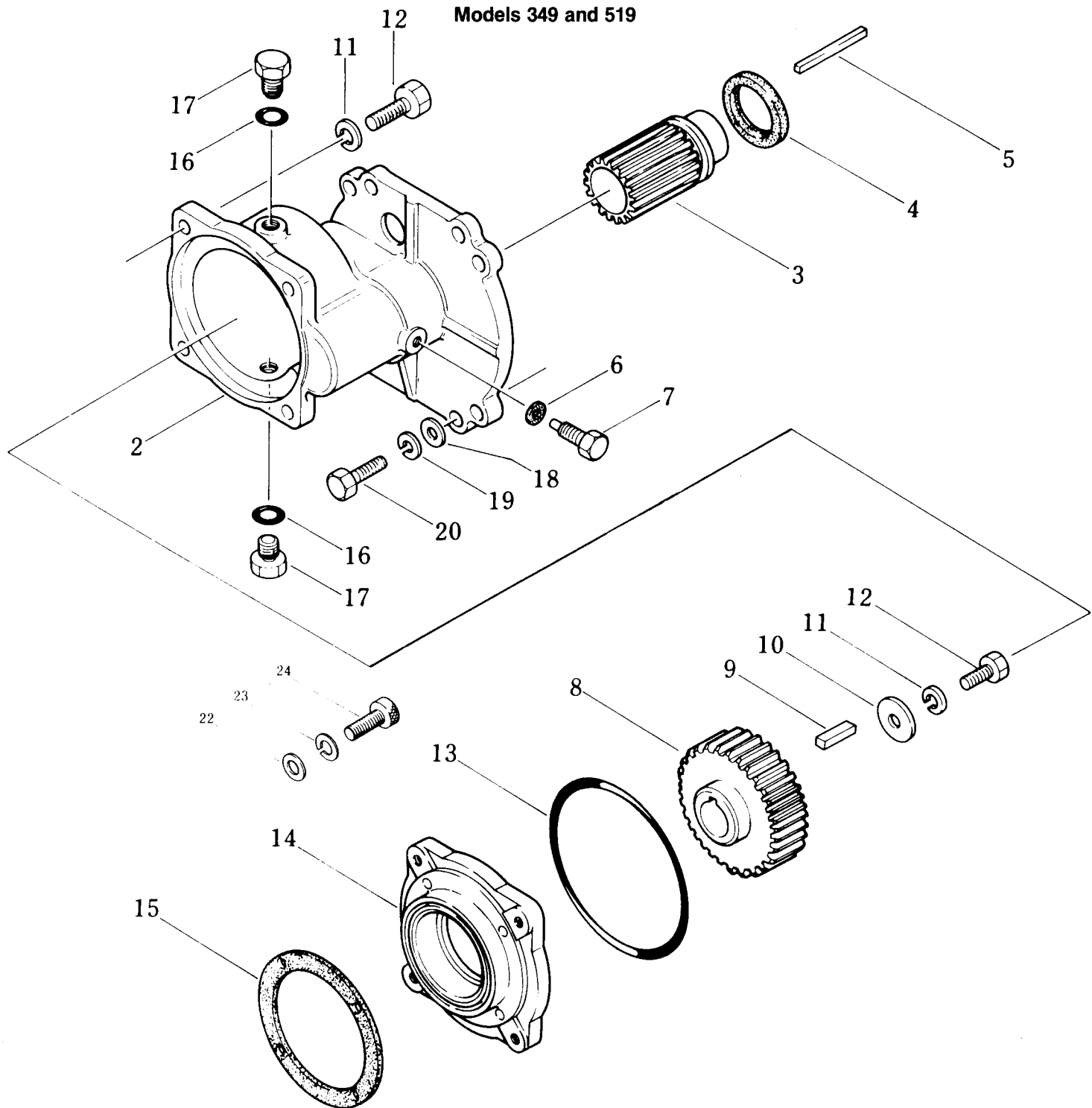
- No Pulley selection and sizing.
- No belt slippage and adjustment
- No bulky belt guards.
- No wasted assembly time.
- No multiple source purchases.

## SPECIFICATIONS

	U.S. Measure	Metric Measure	U.S. Measure	Metric Measure
<b>GEARBOX PUMP UNIT</b>	<b>349</b>		<b>519</b>	
Weight .....	26.05 lbs.	(11.8 Kg)	31.75 lbs.	(14.3 Kg)
Dimensions .....	11.5" x 11.13" x 5.3"	(292 x 283 x 134)	12.9" x 10.75" x 5.9"	(328 x 273 x 149)
<b>PUMP</b>	<b>349</b>		<b>519</b>	
Volume .....	4 GPM	(15 L/M)	3.7 GPM	(14 L/M)
Discharge Pressure .....	2000 PSI	(140 BAR)	3000 PSI	(210 BAR)
Max. Inlet Pressure .....	Flooded to 60 PSI	(Flooded to 4 BAR)	Flooded to 60 PSI	(Flooded to 4 BAR)
Maximum RPM .....	1725 RPM	(1725 RPM)	1725 RPM	(1725 RPM)
Bore .....	0.787"	(20 mm)	0.630"	(16 mm)
Horsepower-Electric .....	5.5 H.P.	5.5 H.P.	7.6 H.P.	7.6 H.P.
Stroke .....	0.394"	(10 mm)	0.728"	(18.5 mm)
Crankcase Capacity .....	18 oz.	(0.55 L)	25 oz.	(0.75 L)
Max. Fluid Temperature .....	160°F	(71°C)	160°F	(71°C)
Shaft Diameter .....	0.787"	(20 mm)	0.945"	(24 mm)
Inlet Ports (2) .....	1/2" NPT	(1/2" NPT)	1/2" NPT	(1/2" NPT)
Discharge Ports (2) .....	3/8" NPT	(3/8" NPT)	3/8" NPT	(3/8" NPT)
Maximum Weight .....	19.8 lbs.	(9.0 Kg)	25.5 lbs.	(11.5 Kg)
Dimensions .....	11.5" x 8.45" x 5.28"	(292 x 212 x 134)	12.9" x 8.45" x 5.86"	(328 x 212 x 149)
<b>GEARBOX</b>	<b>8012</b>		<b>8013</b>	
Gear Ratio .....	2.1 to 1	2.1 to 1	2.1 to 1	2.1 to 1
Max. Horsepower-Gas/Elec. ....	See Engine Mfg.	See Engine Mfg.	See Engine Mfg.	See Engine Mfg.
Mounting Face-Gas/Elec. ....	6-1/2"	6-1/2"	6-1/2" NA	6-1/2" NA
Eng. Shaft Dia.-Gas/Elec. ....	1"	1"	1" / NA	1" / NA
Eng. Shaft Lgth.-Gas/Elec. ....	3-1/4"	3-1/4"	3-1/4" NA	3-1/4" NA
Maximum R.P.M. of Engine .....	3600 RPM	3600 RPM	3600 RPM	3600 RPM
Weight .....	6.25 lbs.	(2.8 Kg)	6.25 lbs.	(2.8 Kg)
Dimensions .....	8.19" x 4.53" x 6.41"	(208 x 115 x 163)	8.19" x 5.04" x 6.41"	(208 x 128 x 163 mm)

*"Customer confidence is our greatest asset"*

**EXPLODED VIEW**  
**Models 349 and 519**



**PARTS LIST**

ITEM	PART NO.	DESCRIPTION	MODEL USED	QTY.	ITEM	PART NO.	DESCRIPTION	MODEL USED	QTY.
—	8012	Gearbox Assembly	349	1	14	44457	Seal Case Flange	519	1
—	8013	Gearbox Assembly	519	1	15	44462	Seal Case Flange	349	1
2	44450	Housing	349,519	1	16	44456	Gasket, Flange	519	1
3	44451	Pinion Gear 1"	349,519	1	17	44461	Gasket, Flange	349	1
4	44453	Oil Seal, Pinion (Buna-N)	349,519	1	18	23170	O-ring, Plug	349,519	2
5	44455	Key (1/4 x 1/4 x 2-1/8 349,519)	349,519	1	19	25625	Plug	349,519	2
6	17764	Gasket, Pinion Ret Screw	349,519	1	20	12490	Washer	349,519	4
7	44295	Pinion Gear Ret Screw	349,519	1	21	12503	Spring Washer	349,519	4
8	44458	Spur Gear	519	1	22	44454	Hex Head Screw (3/8)	349,519	4
	44463	Spur Gear	349	1	23	87818	Hex Socket Screw (M6 x 20)	349	4
9	44459	Key Spur Gear (M8 x 7 x 24)	519	1	24	87817	Hex Socket Screw (M6 x 16)	519	4
10	101814	Key, Spur Gear (M6 x 6 x 27)	349	1	—	12488	Washer (M6)	349,519	4
11	26118	Flat Holding Washer	349,519	1		12502	Lockwasher (M6)	349,519	4
12	15845	Spring Washer (M8)	349,519	5		34042	Spacer (Optional as required for longer engine shaft length.)		
13	80126	Hex Head Screw (M8 x 20)	349,519	1					
	14045	O-ring, Flange (Buna-N)	349,519	1					

## DISASSEMBLY OF GEAR BOX

1. **Completely drain oil** from pump crankcase and gearbox crankcase.
2. Remove the four hex head screws which fasten the gear box to the seal case flange and separate gear box housing from pump.
3. Place gear box housing on work surface with engine mounting down.
4. Remove pinion gear retaining screw from gear box housing.
5. Press pinion gear from backside driving both pinion gear and pinion seal from housing. Set housing aside.
6. Slip oil seal from pinion gear.
7. Next remove hex machined retaining screw, lockwasher and flat holding washer from center of spur drive gear.
8. Remove spur drive gear from crankshaft.
9. Remove key from keyway in pump crankshaft.

At this point the gear box has been disassembled. Now begin examination of the gear box parts for wear and reassembly.

While the gear box is in this state of disassembly, it is advisable to examine your pump for any indication of drive end wear:

If any of the following conditions are present, **removal of the seal case flange** is necessary:

- Leakage between seal case flange and pump crankcase.
- Evidence of water in pump crankcase.
- Evidence of water in gear box crankcase.

## REMOVING SEAL CASE FLANGE:

1. Remove four socket head cap screws, lockwashers and washers.
2. Tap flange with soft mallet to separate from pump crankcase.
3. Examine pump crankshaft bearing and replace if worn.
4. Examine gasket on outside of seal case flange and replace if cut or cracked.
5. Examine o-ring on inside outer groove of seal case flange and replace if cut or worn.

If further pump servicing is needed, refer to your pump servicing manual and parts list.

## REPLACING SEAL CASE FLANGE:

1. Line up the four holes and mount gasket on outside of seal case flange.
2. Replace o-ring in outer groove of sealcase flange.

**Install seal case flange over pump crankshaft and seat in housing. Keep the two outer "flange" mounting holes to the top rear and lower front.**

4. Replace four socket head screws, lockwashers and washers and torque to 50 in./lbs. (55 kg/cm).

## ASSEMBLY OF GEAR BOX:

1. Insert key into pump crankshaft keyway.
2. Examine spur gear teeth for wear and replace if necessary. Line up notch on gear with pump shaft and key and slide onto shaft. Be certain **long neck is installed toward pump crankcase**.
3. Then install flat holding washer, lockwasher and retaining screw onto shaft and torque to 110 in./lb. (125 kg/cm).
4. Examine gear box crankcase oil drain plug for any evidence of leaking and replace gasket if necessary.
5. Examine pinion gear teeth for wear and replace if necessary.
6. Lubricate I.D. and O.D. of pinion seal and mount on to pinion gear with garter spring toward the gears.
7. Next insert pinion gear into housing port and carefully press seal into position until it completely seats on shoulder of pinion gear. Exercise caution to assure seal is squarely seated.
8. Install pinion gear retaining screw and gasket into gear box housing and torque to 110 in./lbs. (125 kg/cm).
9. Rotate pinion gear so key is up and engine mounting flange is forward.
10. Install four hex machined screws to fasten gear box to seal case flange and torque to 50 in./lbs. (55 kg/cm).

## MOUNTING PUMP WITH GEAR BOX ONTO ENGINE.

1. **Rotate crankshaft of engine until keyway is at top.**
2. Insert key into keyway and apply anti-sieze lubricant to engine shaft.
3. Line up keyway of pinion gear and engine shaft and carefully slip gear box onto engine shaft until flush with engine face. Install four hex machined screws and torque to 110 in./lbs. (125 kg/cm).

NOTE: Due to varying engine shaft lengths it may be necessary to install a small spacer on each of the four hex **machined screws** between gear box flange and engine face. Torque to 110 in./lbs. (125 kg/cm).

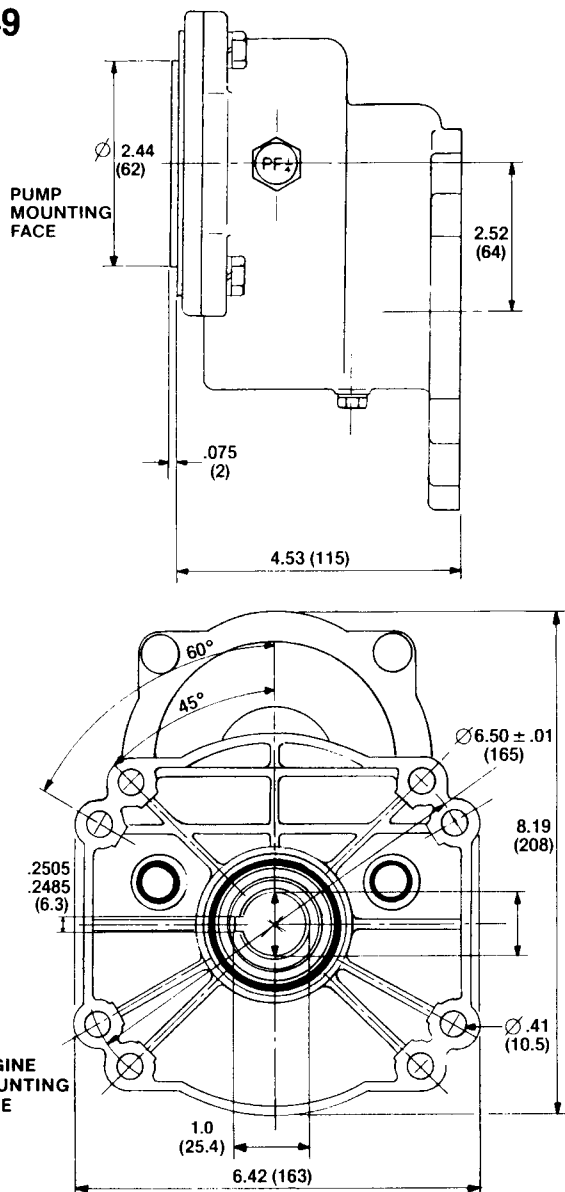
4. Before starting assembly, fill crankcase of your pump as instructed in operator's manual. Allow to drain into gear box and add additional oil to fill mark oil gauge of pump. NOTE: Change oil in gear box with same frequency as your pump.

NOTE: For conversion from standard 340 or 510 pump to 349 or 519 gearbox pump, remove existing seal case, gasket and four combination head screws. Replace with new seal case flange, gasket, and new socket head screws and proceed with **REPLACING SEAL CASE FLANGE** instructions.

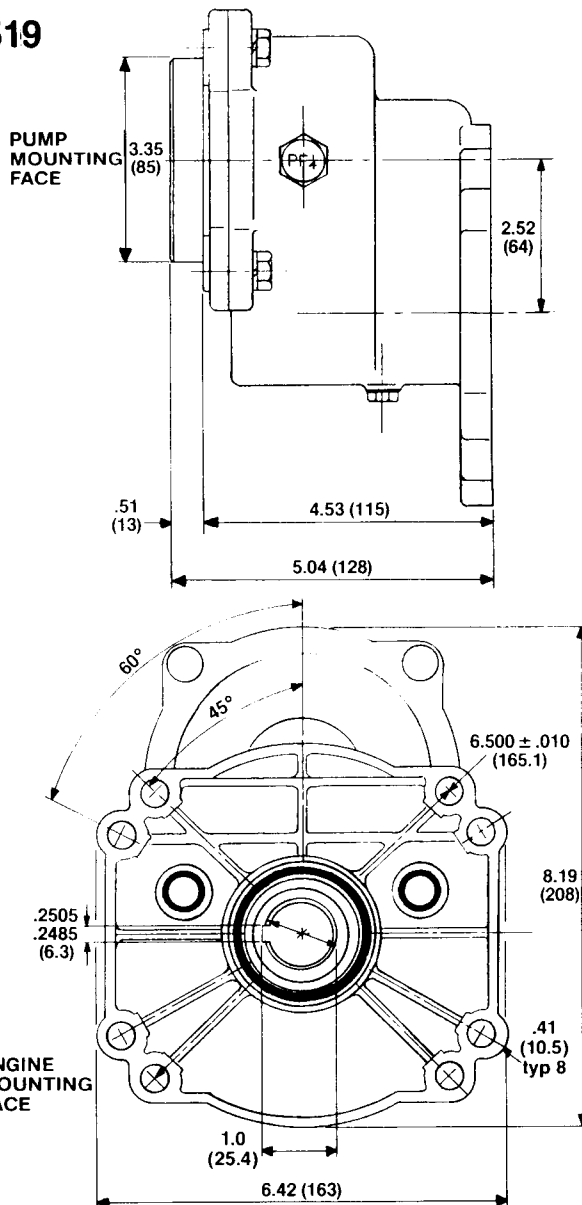
## TORQUE CHART

Seal Case Flange to pump . . . . .	50 in./lbs. (55 kg/cm)
Spur Gear Retaining Screw . . . . .	110 in./lbs. (125 kg/cm)
Pinion Gear Retaining Screw . . . . .	110 in./lbs. (125 kg/cm)
Gear Box to Seal Case Flange . . . . .	50 in./lbs. (55 kg/cm)
Engine Mounting Screws . . . . .	110 in./lbs. (125 kg/cm)

349



519



## CAT PUMP WARRANTY

This Cat Pump ("product") is warranted by the manufacturer to be free from defects in workmanship and material for two years from date of manufacturer's shipment. This warranty is limited to repairing or replacing products which manufacturer's investigation shows were defective at the time of shipment by the manufacturer. All products subject to this warranty shall be returned F.O.B. Cat Pumps Corp., Minneapolis, Minnesota for examination, repair or replacement.

The express warranty set forth herein is in lieu of all other warranties, express or implied, including without limitation any warranties of merchantability or fitness for a particular purpose and all such warranties are hereby disclaimed and excluded by the manufacturer. Repair or replacement of defective products as provided above is the sole and exclusive remedy provided hereunder and the manufacturer shall not be liable for any further loss, damages or expenses, including incidental or consequential damages, directly or indirectly arising from the sale or use of this product.

This warranty is subject to the following warranty conditions:

### IMPORTANT CONDITIONS

**LUBRICATION** — Fill crankcase to dot on oil gauge window with Cat Pump Crankcase Oil or equivalent SAE 40 weight hydraulic oil with antiwear and rust inhibitor additives. Change initial fill after 50 hours running period. Change oil every 3 months or at 500 hour intervals thereafter.

**GOOD LUBRICATION IS THE EASIEST, MOST EFFICIENT AND LEAST EXPENSIVE PREVENTATIVE MAINTENANCE.**

**RPM and PRESSURE** — Pump operation must be within RPM and pressure specifications. Pressure relief valve must be installed.

**DO NOT PUMP ACIDS OR ABRASIVE FLUIDS** with this unit! Contact Cat Pumps for additional information on questionable fluids.

**FREEZING CONDITIONS** — Pump must be protected from freezing conditions.

**USE OF OTHER THAN CAT PUMP PARTS OR THEIR EQUIVALENT VOIDS THE WARRANTY**

240/510 S-986-61 1M



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