ICRA SERVICE BULLETIN

7 May 2007

Recent discussions among members that remanufacture the 5H120 / 126 compressor revolved around a problem that has existed when using the 5H120-A773 oil pump assembly, and failure rate at first start up or early in it's life.

This prompted one member to provide a correction (as well as an explanation of what was causing the failure) that has been used in his shop (successfully) for several years now. That procedure is enclosed as a separate sheet to this bulletin.

Right now let's look at the oil pump history, and some of the items of possible concern. Looking at the history of the oil pumps used on these compressors

Prior to 1960, The 5H120 used bearing head part # 5H120-747, this bearing head had a housing bore of 1.75" and used the 5H120-A372 oil pump, and all know the problems that ensued with that item. This bearing head will accept the 06LA660-008 oil pump and works very well.
Then in 1960 the OEM began replacing the 747 bearing head with the 5H120-837 bearing head (this is the current head that the OEM will ship for replacement). This bearing head has a housing bore of 2.19" and ONLY the 5H120-A773 oil pump will work in this application.(This is the pump that needs very close inspection see repair note enclosed)

Now to add some confusion to the above conditions, the OEM has issued two bulletins that are somewhat contradictory, (both are enclosed, OEM-99 dated 5/20/86, and PMB89-128 dated 8/25/89) However, note, that you can use the 6L bearing head (6L120-223) on either the 5H or the 6L using the 06LA660-008 oil pump (6gpm)
Thus if you have bearing heads (either 6L or 5H) with a housing bore of 1.75", they can be used on the 5H120/126 compressors (using the 06LA660-008 pump)

If the bearing heads you have in hand, have the 2.19" housing bore, the only pump you can use there is the5H120-A773 pump assy. (5gpm)

Should you have in hand some of the older 6L bearing housings that have a 1.5" bore, these can be bored to 1.75", and used , using the 06LA660-008 pump assy.
Enclosed
OEM bulletin 99
PMB89-128
Fig 35 5H120-837 bearing head data
Fig 1 5H120-A372 Oil Pump (Obsolete and no longer available)
Fig 2 6L120 252 Oil Pump (Replaced by 06LA 660-008 Pump Assy.)
Fig 3 5H120-A773 Oil Pump, used in bearing head 5H120-837 with bore of 2.19"
Fig 4 6L120 252 Oil Pump, still available can be used with 6L bearing head with 1.5" bore
Fig 5 06LA 660 008 Oil pump, for use with any 5H – 6L bearing head with a 1.75" bore
Bearing heads 5H120-747 or 6L120-223
Photo's of repair procedure and sketch of outer gear with 2 holes, (latest gear has 4 holes)

ICRA SERVICE BULLETIN

5H120-A773 OIL PUMP INSPECTION AND TEST METHOD

1. Pump inspection
   a. With the bushing (5H120-7052) driving disc (5H120-A352) and outer gear (5H120-7022) in place in the housing, there should be between .002 and .003" clearance between the outer gear and the housing assembly
   b. If this clearance is not present, you have a defective pump

2. With a black marker, blacken the outside edge of the outer gear(5H120-7022) see figure 3, reassemble the pump, then using needle nose pliers, turn the disc assembly a few turns, remove the outer gear, and where the black has been rubbed off, is the offset area.

3. Using a fine grit sander, carefully grind outer gear down to desired clearance of .002 to .003"

This procedure has been proven many times in both shop and field action.

Later information from the field, indicates that the replacement part # 5H120-7022, is now appearing with four (4) drive holes in the segment, with two of them having an X, indicating not to use those for positioning. (will not fit into housing properly)

OEM Bulletin

Carrier Corporation | Carlyle Compressor Sales

Carlyle Compressor Sales, 6376 Wavel Street, Syracuse, New York 13206

OEM BULLETIN: OEM-99

DATE: 5/20/86

NEW 5H120, 126 OIL PUMP

Carlyle Compressor will be converting the oil pump on the 5H120 and 5H126 compressor to standardize on the same oil pump that has been used in the 6L semi-hermetic compressors for the past 10 years. This oil pump standardization will result in several improvements in performance when installed in the 5H120/126 compressors:

(1) The oil pump is automatically reversible. This eliminates the requirement of ensuring the oil pump operates in the same direction as the compressor driver (motor, diesel engine, etc.).

(2) The oil pump has a higher gpm capacity and will deliver greater flow to the bearings. It will maintain proper oil pressure at even lower operating speeds.

The complete oil pump and bearing head assembly are interchangeable between the new 06L assembly and the old 5H120 assembly. Either complete assembly could be installed on a 5H120/126 compressor interchangeably. The new 06L oil pump (by itself--see Figure 2) can not be installed in an old 5H120 bearing head assembly and vise versa. For service purposes, shown below are the parts involved:

CHART I

- SERVICE OIL PUMP PACKAGE HISTORY & SPECS -

Oil Pump Replacement Pkg.:	06LA660-008	5H120-A773
Complete Bearing Head Assy.:	6L120-223	5H120-837
Compressor	5H120/126	5H120/126
Date Manufactured	1960-1968 AND Starting March, 1986	1969-1986
Serial Number Break: 1960/68:	Starting 0447119 to A901765 AND	Starting A901765 to 1086J
1986:	Starting 1086J01967	
Oil Pump Specs		
Oil Pump Package	6L120-397 Pump Assy. (2) 6L120-2672 Gasket (1) 6L120-2032 Adapter (½ thick)	5H120-A773 Pump Assy.

Oil Pump Type:	Spenex Gear Rotor	Gear Rotor
Oil Flow:	6 GPM	5 GPM
Reverseability:	Automatically	Manually
I.D. Bearing Head @ Pump	1 3/4	2 - 1/8
Appearance	See Figures 1 & 2	See Figure 3

Shown below are service instructions for replacing the new 06LA660-008 oil pump package:

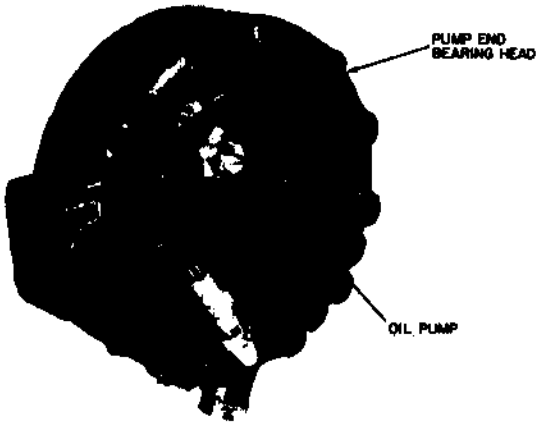


Figure 1: New 06LA660-008 Bearing Head Assy. for 5H120/126 Compressors (starting S/N 1086J01967)

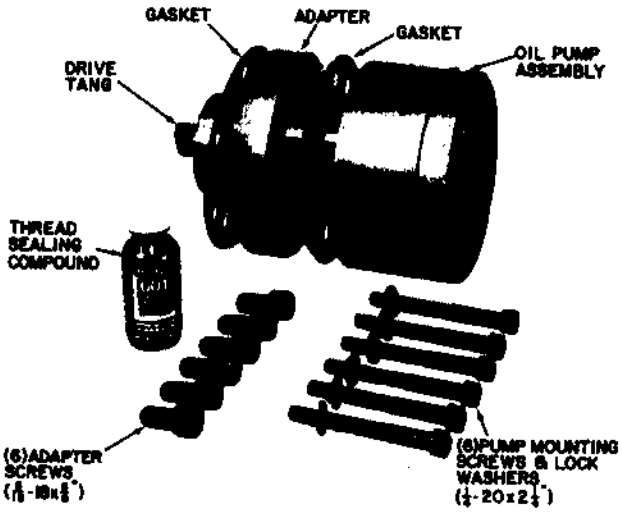


Figure 2: New 6L120 Oil Pump for 5H120/126 Compressors (starting S/N 1086J01967)

A. Disassembly of Oil Pump Shown in Fig. 1

If the pump shown in Fig. 1 is being replaced, only steps 1, 2 and 4 apply. Also, remove the adapter from the bearing head.

1. Drain oil level below level of bearing head.
2. Remove bearing head from compressor.
3. Remove oil pump cover and gasket.
4. Remove oil pump from bearing head.
5. Press out the oil pump bushing toward the main bearing to avoid scoring the bore in the bearing head. Note that this new 6L120 oil pump can not be installed on older 5H120 bearing head assemblies (prior S/N 1086J01967).

B. Inspection

1. Check the bearing head bore for scoring. If the bore is scored, the bearing head must be replaced. Be sure there are no nicks or burrs on the edge of the bore.

2. Check the main bearing for wear (see 5F,H Installation, Start-Up & Service Instructions). If wear has exceeded the maximum allowable, the compressor must be overhauled as the condition of this bearing is an indication of the general condition of the compressor.

C. Pump Installation

1. Using a new gasket, mount the bearing head on compressor. Tighten the ½ - 13 cap screws to 80 lb.-ft.

2. Put a drop of thread sealing compound (Loctite 601 or equivalent) on each of the 5/16 - 18 X 5/8 adapter mounting screws and on the threads of each mounting hole in the bearing head. Position one of the supplied gaskets over the holes in the adapter and assemble the adapter loosely to the bearing head.

   Be sure there are no nicks or burrs on the oil pump or the bores in the adapter and bearing head. Slide the oil pump thru the adapter and into the bearing head bore, allowing enough clearance to tighten the adapter mounting screws with an Allen wrench. The clearance between the oil pump housing and the bores in the adapter and bearing head is necessarily very close. DO NOT USE FORCE and do not attempt to change the clearance.

4. Hold the pump with one hand and rotate it while equally tightening the adapter mounting screws. Proper alignment between the pump and the bearing head bore is extremely important. THERE MUST BE NO BINDING.

5. When the adapter is secure, remove the pump assembly and place the second gasket on the pump housing. Insert two ¼ - 20 X 2-¼ mounting screws and lock washers, one on either side of the word TOP on the pump end cover, and position the gasket on the screws. For the remaining operations, be sure the word TOP is at the top.

6. Turn the pump shaft to align the drive tang with the slot in the end of the crankshaft. Holding the pump assembly with the thumbs on the 2 screws, slide the assembly into the bearing head until the tang engages the slot. A slight rotation should align the screws with the tapped holes in the adapter. Start the screws to hold the alignment and then install the balance of the screws to hold the alignment and then install the balance of the screws and lock washers. Tighten all the screws (¼ - 20) to a torque of 12 - 15 lb.-ft.).

7. Start the compressor and check the oil pressure. This oil pump operates in either direction of rotation. The correct oil pressure for compressors using this pump is 40 to 60 psi above suction pressure.

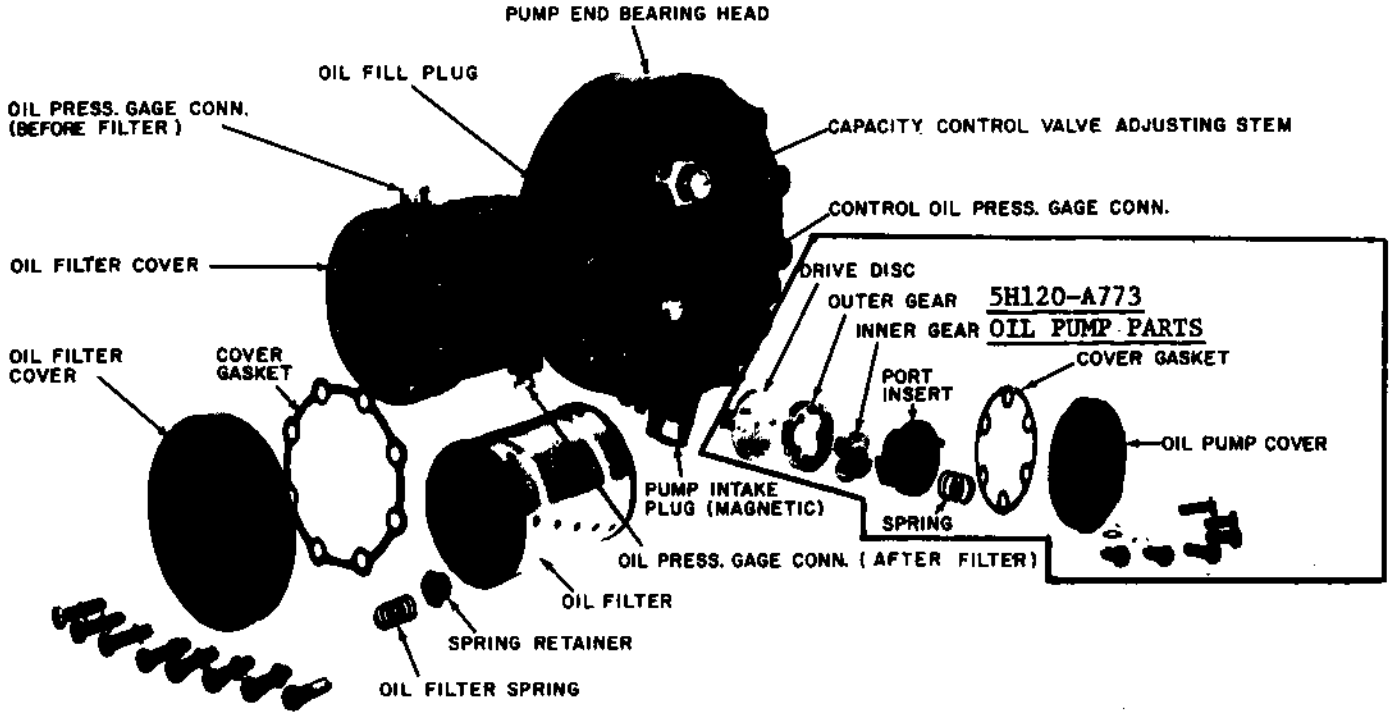


Figure 3: Oil Pump & Filter Assembly (5H120/126, used 1969 - 1986)

TECHNICAL

REPLACEMENT COMPONENTS DIVISION

Subject: 5H120/126, 6L AND 06L OIL PUMP CLARIFICATION

File: PMB89-128 Date: 8/25/89 Author: GARY DECARR

This PMB supersedes PMB87-32.

Over the years the 5H120/126, 6L and 06L compressors have established themselves as workhorses in the air conditioning and refrigeration industry. These designs have seen relatively few changes since their inception. However, one area, selecting an oil pump for the subject compressors, can be confusing. The confusion may be the result of a change which occurred when the compressor was remanufactured or field repaired. (The parts catalogs for these compressors reflect only production serial number data, whereas remanufactured compressors are assigned current day serial numbers. Therefore, it is difficult to track compressor oil pump changes through the use of serial numbers.)

The purpose of this PMB is to alleviate the confusion surrounding the oil pump changes in the 5H120/126, 6L and 06L product line.

Today RCD services the majority of 5H120/126, 6L and 06L compressors with three oil pumps. These oil pumps have three different body diameters:

PART NUMBER	FIG.	*BODY DIAMETER
6L45-252	4	1.5"
06LA660008	5	1.75"
5H120-A773	3	2.187"

* These are reference dimensions as are the dimensions on the attached outline drawings.

Please note that PMB87-32 had stated that the original 5H120 oil pump, 5H120-A372, is replaced by 06LA660008 This is not the case. The 06LA660008 will not mount to the original 5H120 bearing head. The 5H120-A372 oil pump is replaced by the 5H120-837 bearing head assembly. (5H120-837 contains the 5H120-A773 oil pump.)

FIGURE 1

The 5H120-A372 is the original 5H120 oil pump (manually reversible). It was used on compressors manufactured prior to 1960. This oil pump is no longer available from service parts. The service replacement for this pump is the 5H120-837 bearing head assembly. This assembly contains the 5H120-A773 oil pump.

FIGURE 2

The 6L120-252 automatically reversible oil pump was used on 8 and 12 cylinder 6L/06L compressors until October 1976. It was also used on the 5H120/126 compressors from 1960 to 1968. This pump is no longer available from service parts. The current service replacement is 06LA660008. See Fig. 5.

FIGURE 3

The 5H120-A773 manually reversible oil pump was used in 5H120/126 compressors manufactured from 1968 to 1986. This pump is currently available from service parts.

FIGURE 4

All 6L and 06L four and six cylinder compressors have been built with the 6L45-252 oil pump. This is an automatically reversible pump. It is currently available from service parts.

FIGURE 5

The 06LA660008 is an automatically reversible oil pump. It has been used in the manufacture of 06L eight and twelve cylinder compressors since 1976. 5H120/126 compressors began to use this pump in production in 1986. It is used when changing out a 6L120-252 pump.

All attempts have been made to present past history as accurately as possible. If you should have any questions regarding this PMB, please do not hesitate to contact me.

File this PMB in your Compressor Handbook for future reference.

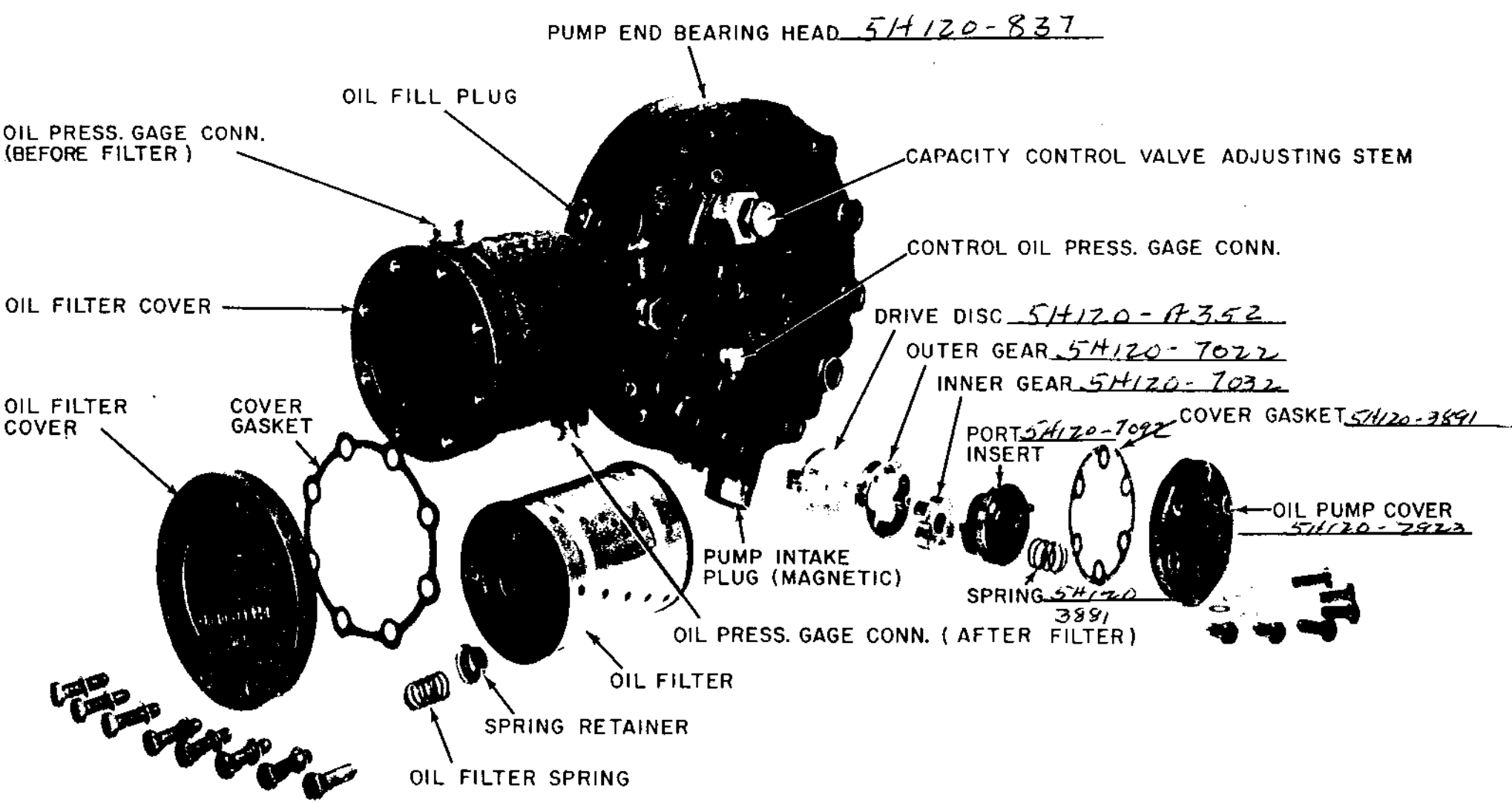
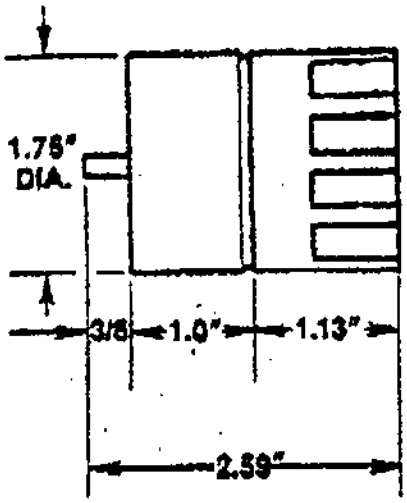
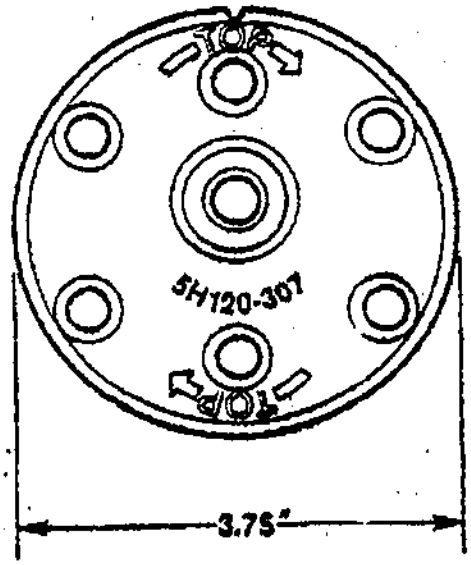


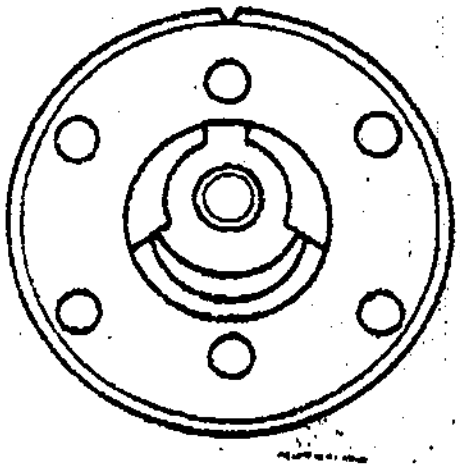
Fig. 35 — Oil Pump and Filter Assembly (5H120,126)



5H120-A372 OIL PUMP
(SIDE VIEW)



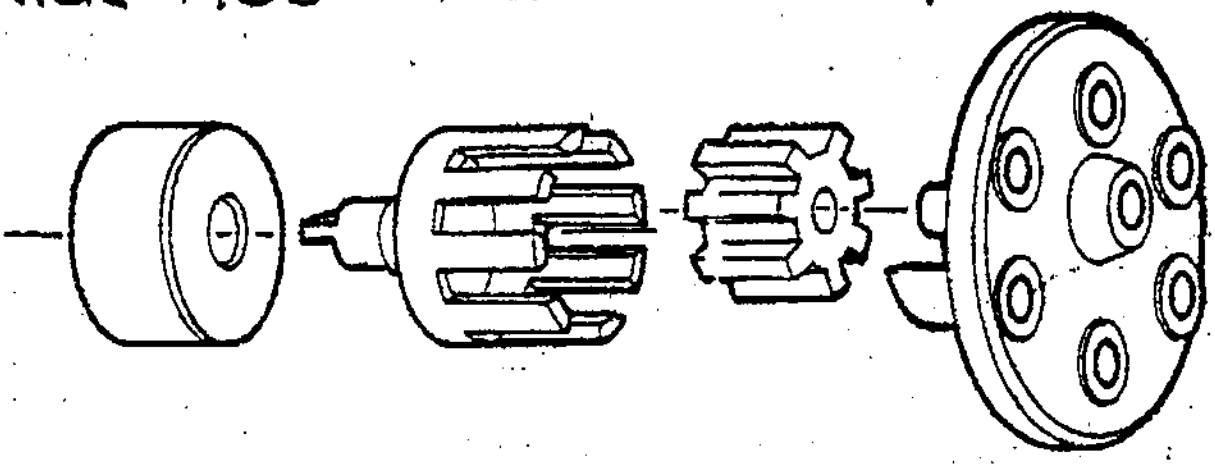
OIL PUMP COVER
(FRONT VIEW)



OIL PUMP COVER
(REAR VIEW)

5H120-343 PUMP COVER GASKET
-1653 P.T.O. BRG H'D GASKET

PRIOR 1960 PRIOR C 447119

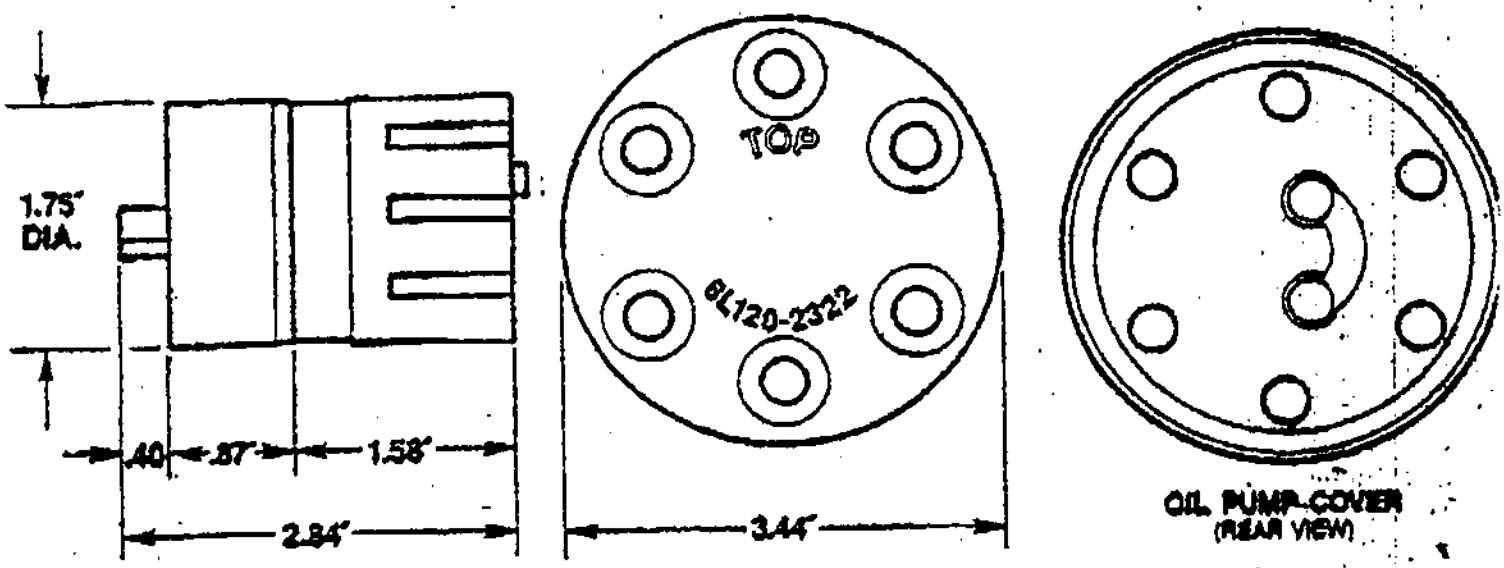


BUSHING ROTOR IDLER COVER

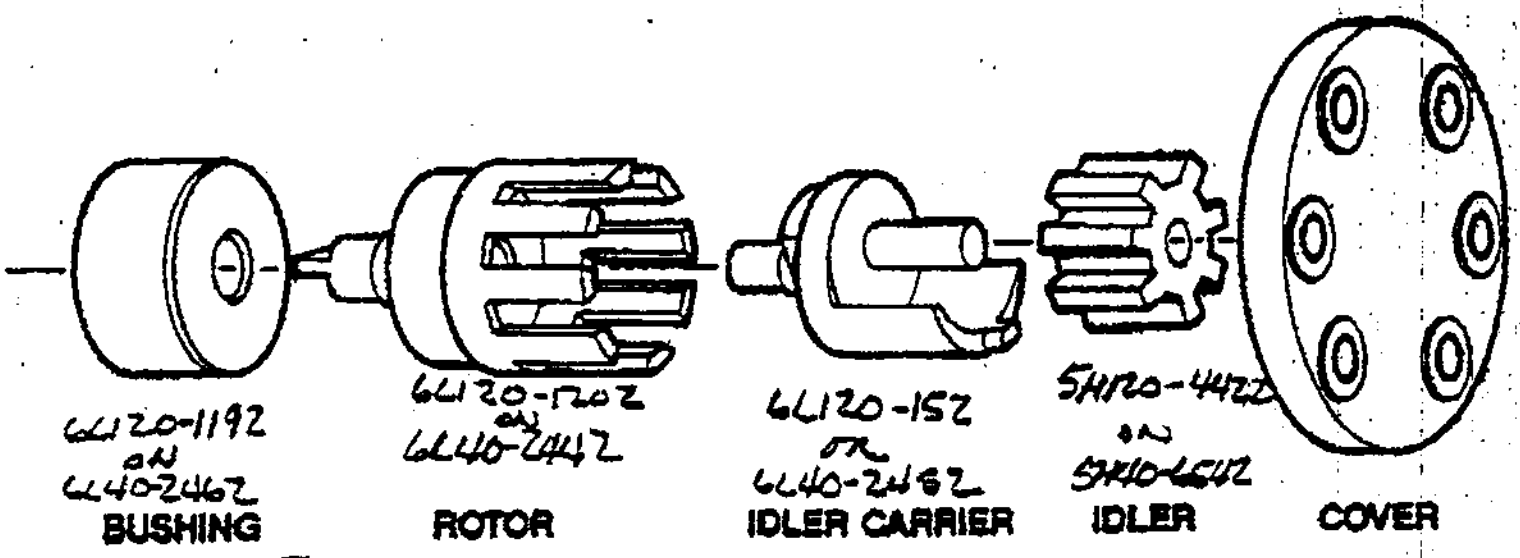
5H120-150 PUMP ASSY

5H120-A372 OIL PUMP

FIG. 1



6L120-252 OIL PUMP
(SIDE VIEW)

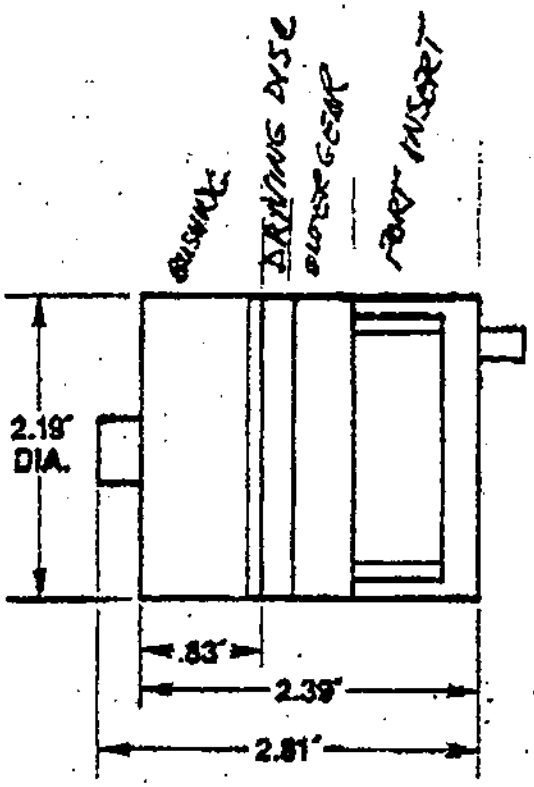


6L120-150 PUMP PKG
KK7GY 033 "O" RING

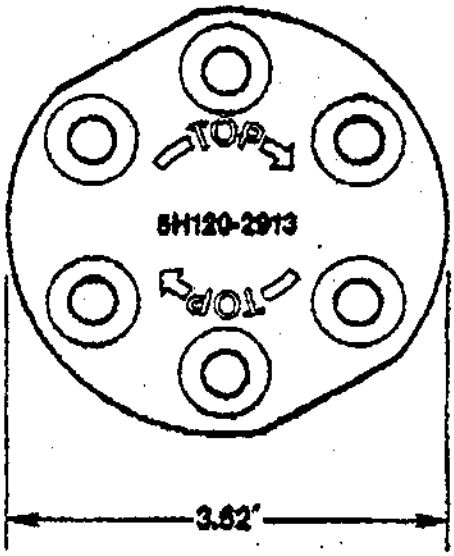
6L120-252 OIL PUMP

6L120-1051
OR
5H40-1911
PIN IDLER

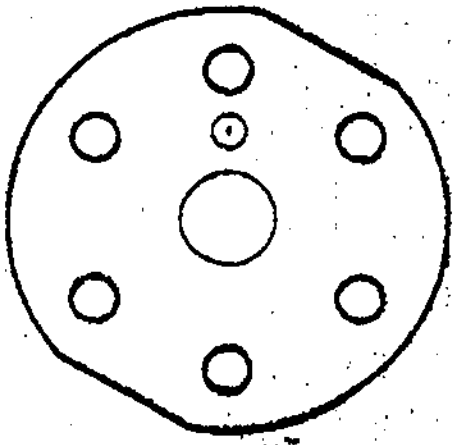
FIG. 2



5H120-A773 OIL PUMP
(SIDE VIEW)

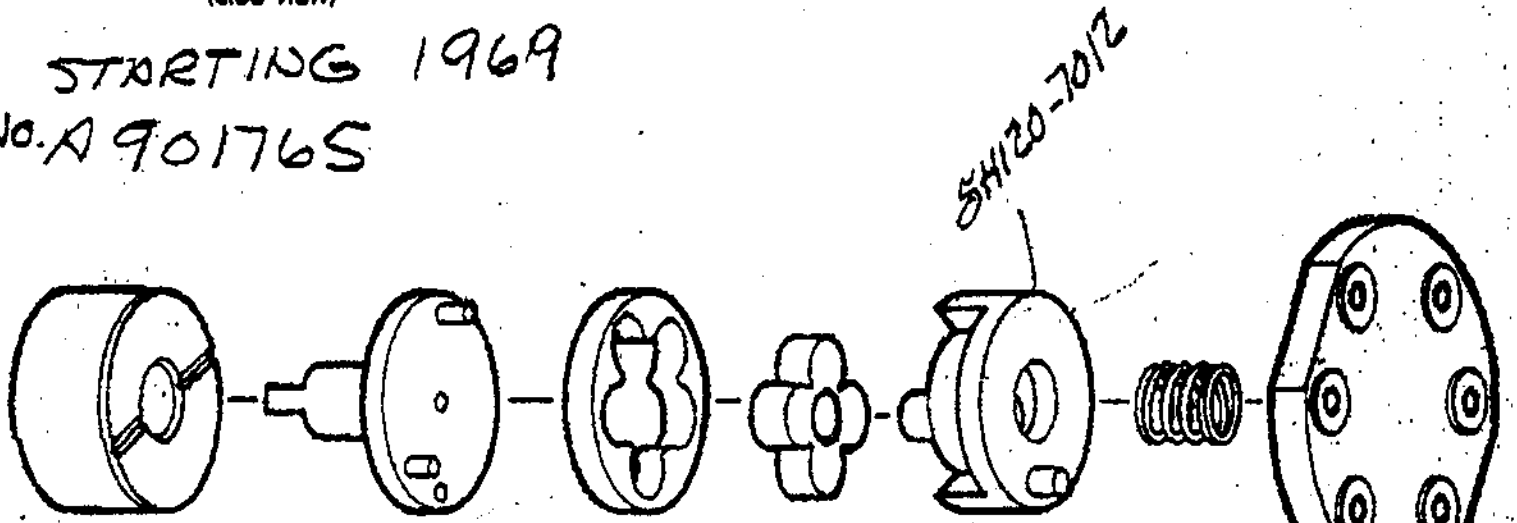


OIL PUMP COVER
(FRONT VIEW)



OIL PUMP COVER
(REAR VIEW)

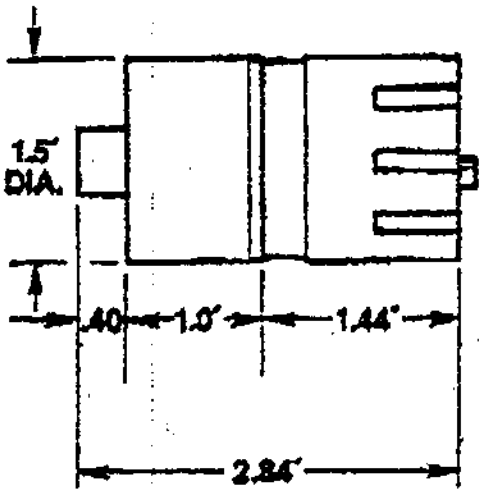
STARTING 1969
No. A901765



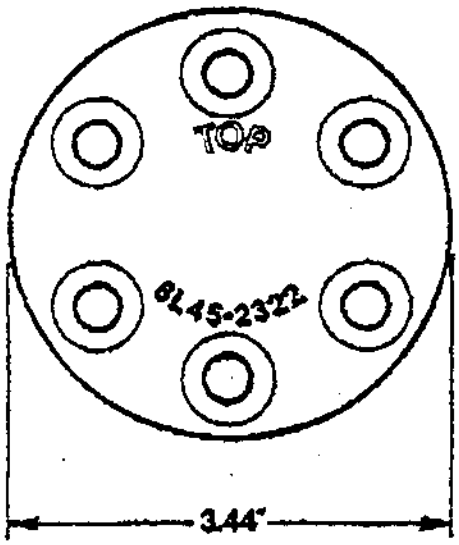
ROLL PIN AX14CA168 GASKET 5H120-3891

5H120-A773 OIL PUMP

FIG. 3

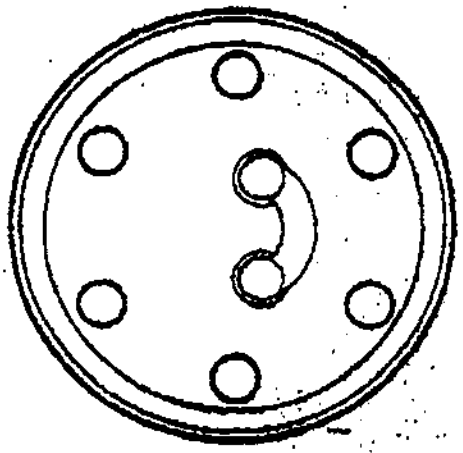


6L45-252 OIL PUMP
(SIDE VIEW)

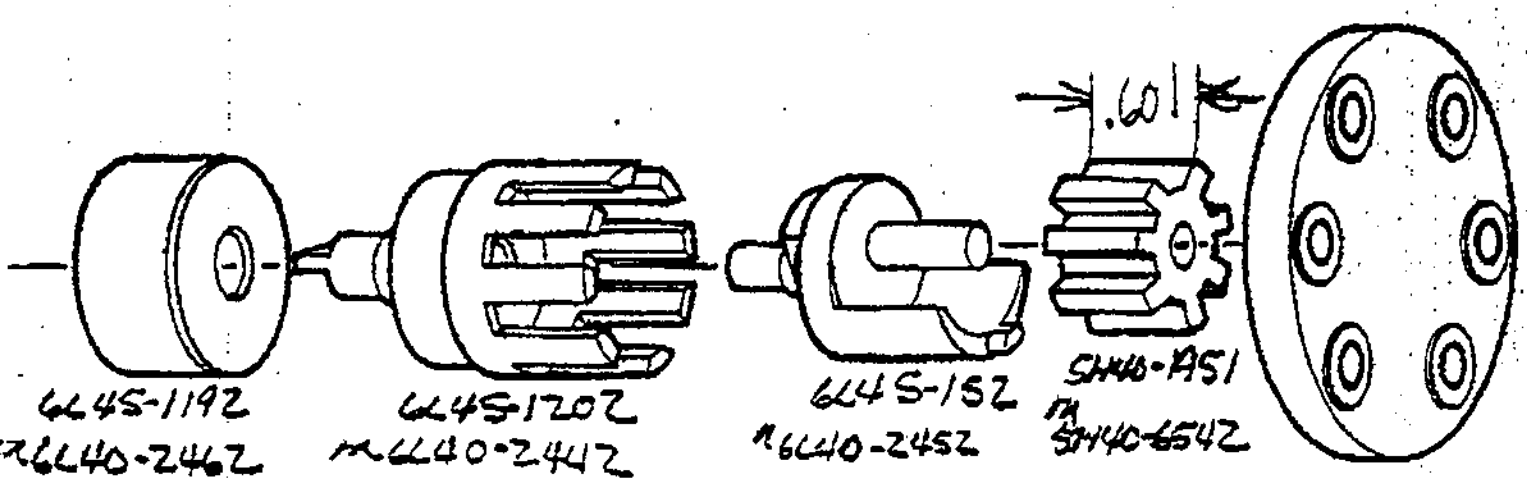


3.44"

OIL PUMP COVER
(FRONT VIEW)



OIL PUMP COVER
(REAR VIEW)
6L45-122



6L45-119Z
or 6L40-246Z
BUSHING

6L45-120Z
or 6L40-244Z
ROTOR

6L45-152
or 6L40-245Z
IDLER CARRIER

SH40-A51
or SH40-654Z
IDLER

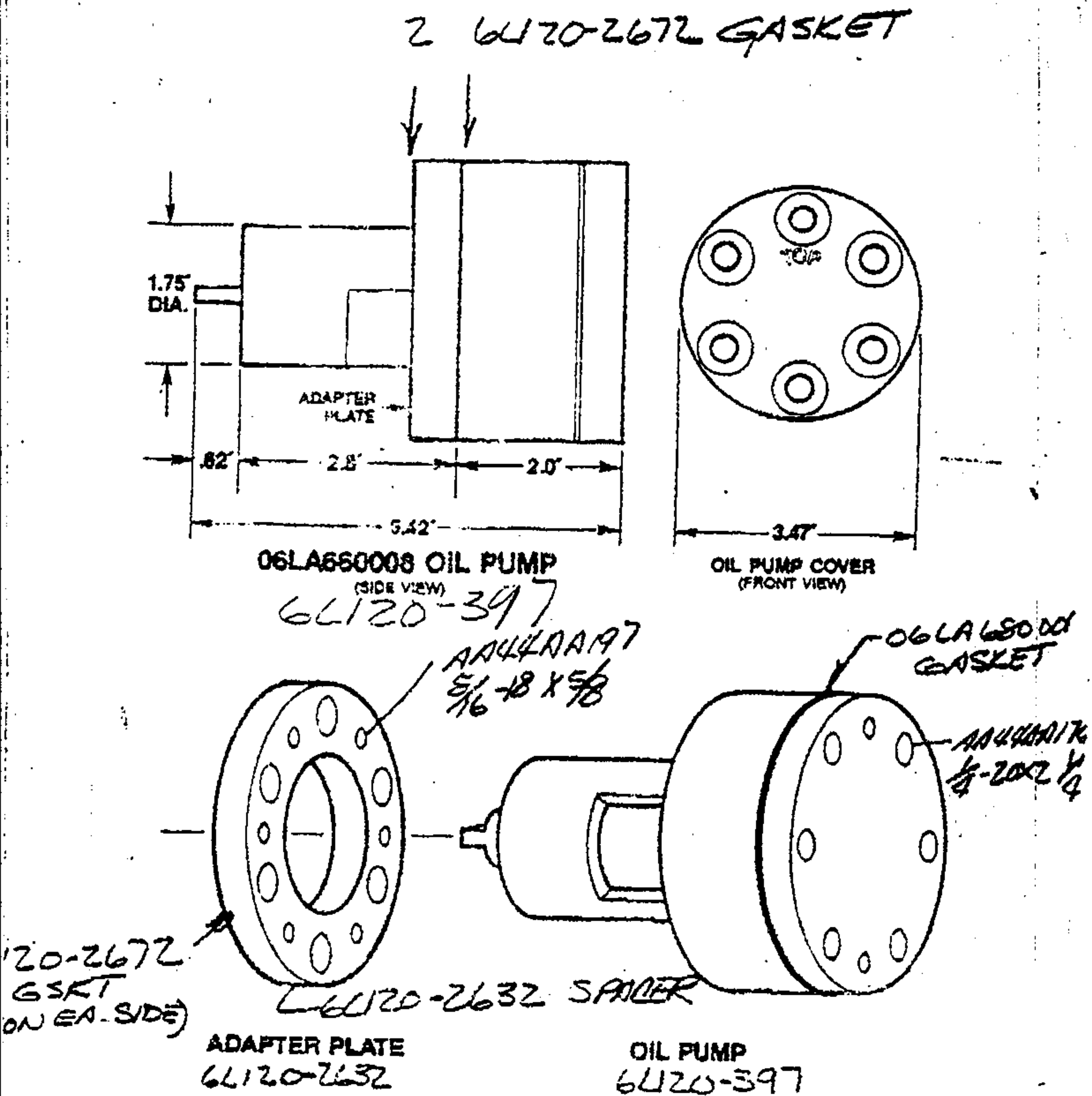
COVER

6L45-150 OIL PUMP
KK19Y033 "O" RING

6L45-252 OIL PUMP

FIG. 4

6L45-AA



06LA660008 OIL PUMP

FIG. 5

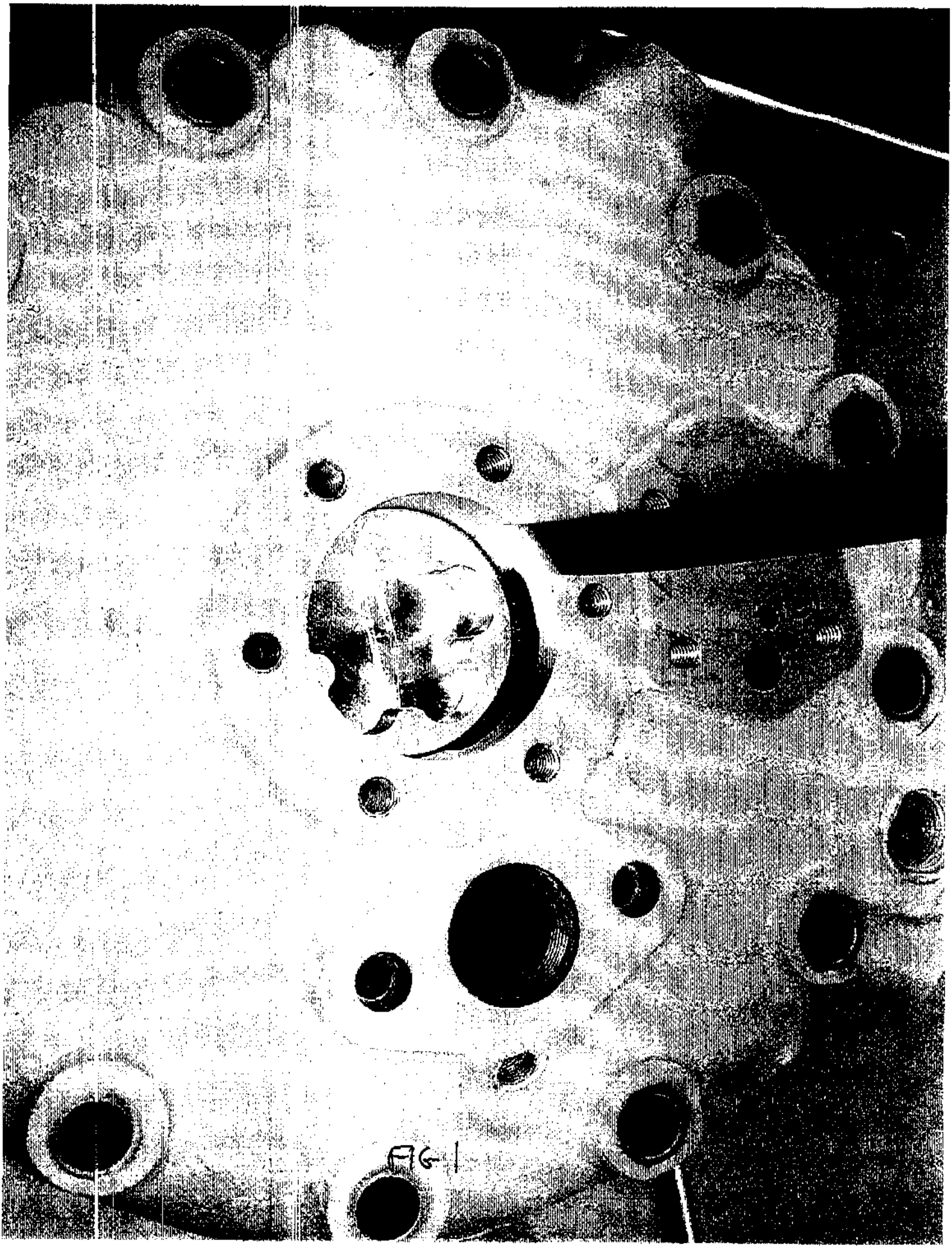


FIG-1

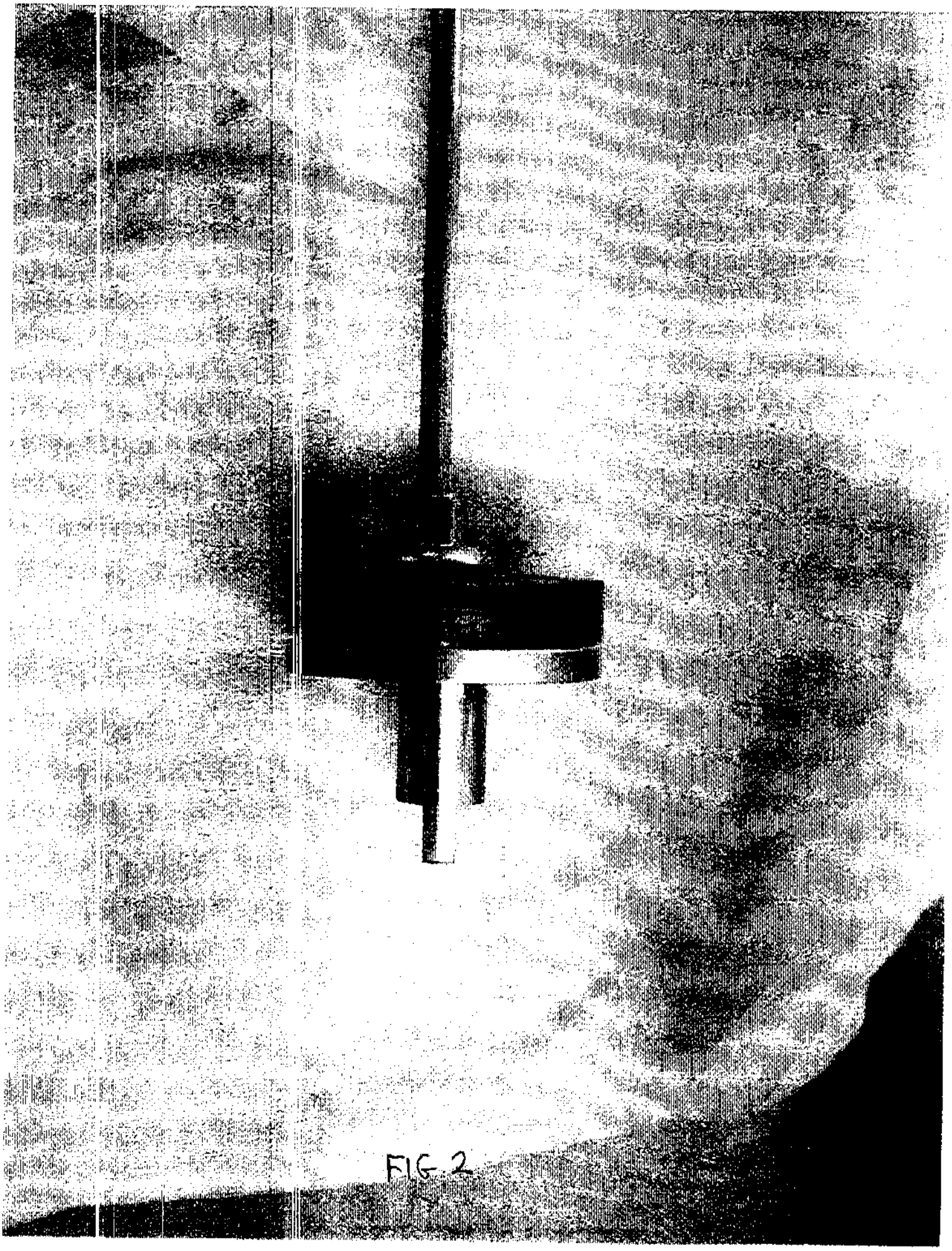
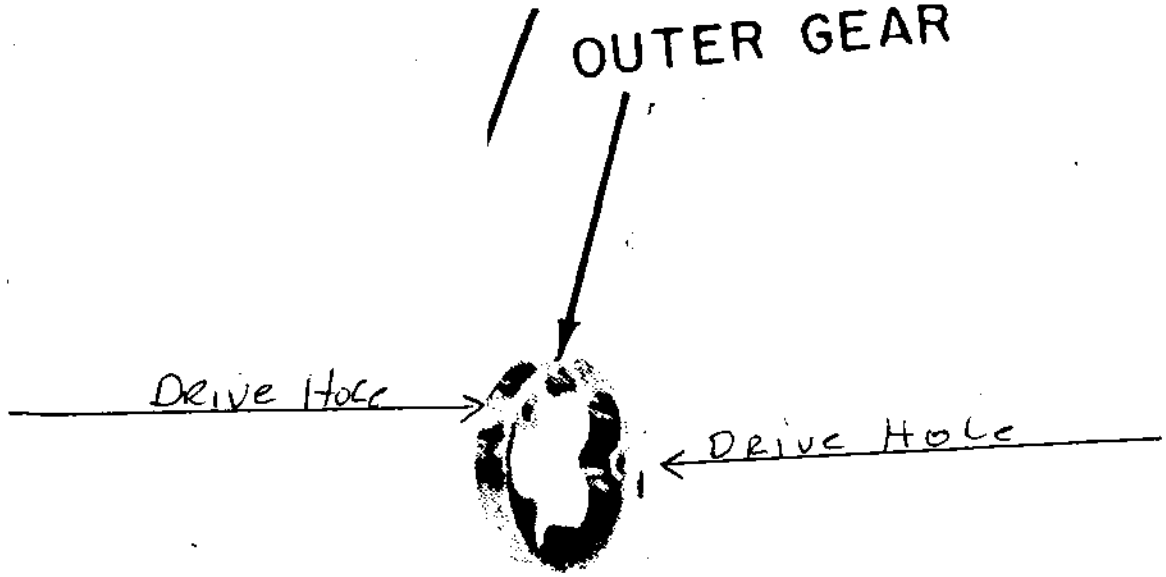


FIG. 2



P/N 51H120-7022

View 3