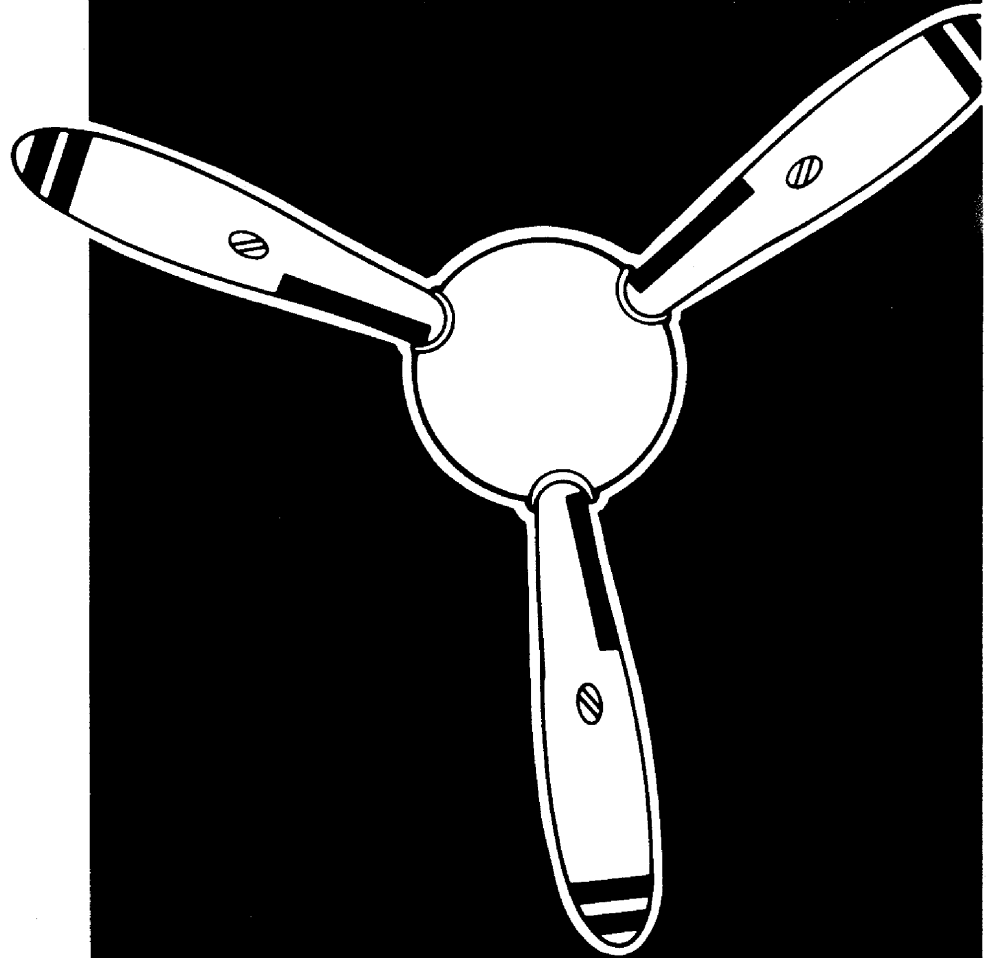


HARTZELL

Constant Speed And Feathering Two- And Three-Blade Propeller

Inspection,
Repair, And
Overhaul
Instructions
For Models

HC-82 ()
HC-83 ()
HC-92 ()
HC-93 ()
HC-A2 ()
HC-A3 ()
HC-B3 ()



HARTZELL PROPELLER INC.

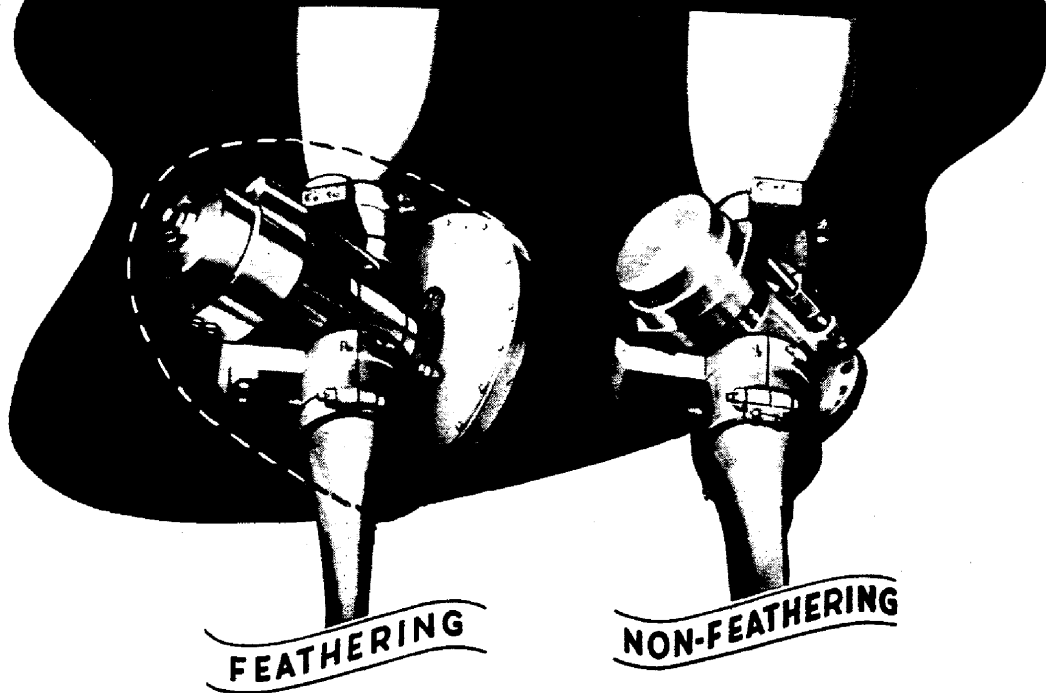
1800 Covington Avenue
Piqua, OH 45356-2634 U. S. A

Telephone: 513.778.4200
Telex: 4332032
Fax: 513.778.4391

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Hartzell constant-speed propellers for small planes



CONTENTS

MODELS

HC-8()X Series; HC-A()X Series
HC-9()Z Series; HC-9()W Series
HC-B()Z Series; HC-B()W Series
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NOTE:

FAA APPROVAL STATUS OF THE PROPELLERS AND BLADES LISTED IN THIS MANUAL SHOULD BE OBTAINED FROM FAA PROPELLER SPECIFICATIONS. SINCE FAA APPROVAL OF THIS MANUAL DOES NOT IMPLY APPROVAL OF THE PROPELLERS LISTED.

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INTRODUCTION

The present manual is for the purpose of enabling the mechanic to overhaul propellers only. It does not cover installation, operating instructions, or service instructions; as these subjects are covered by separate owners manuals which are furnished to the owner.

The purpose of this manual is to up date or supplement Manuals 101 and 103 which are now out of print, and to cover a number of newer propeller models not previously covered in 103 or other manuals.

The propellers covered in this manual are all similar in construction and operation; hence, it is possible to describe the important methods of overhaul which are common to all without endless repetition. In order to accomplish this end, references are made to part names throughout the discussion; the part numbers are omitted. Each propeller, however, is covered in the parts list; and there are representative cut-away drawings given to illustrate the basic features.

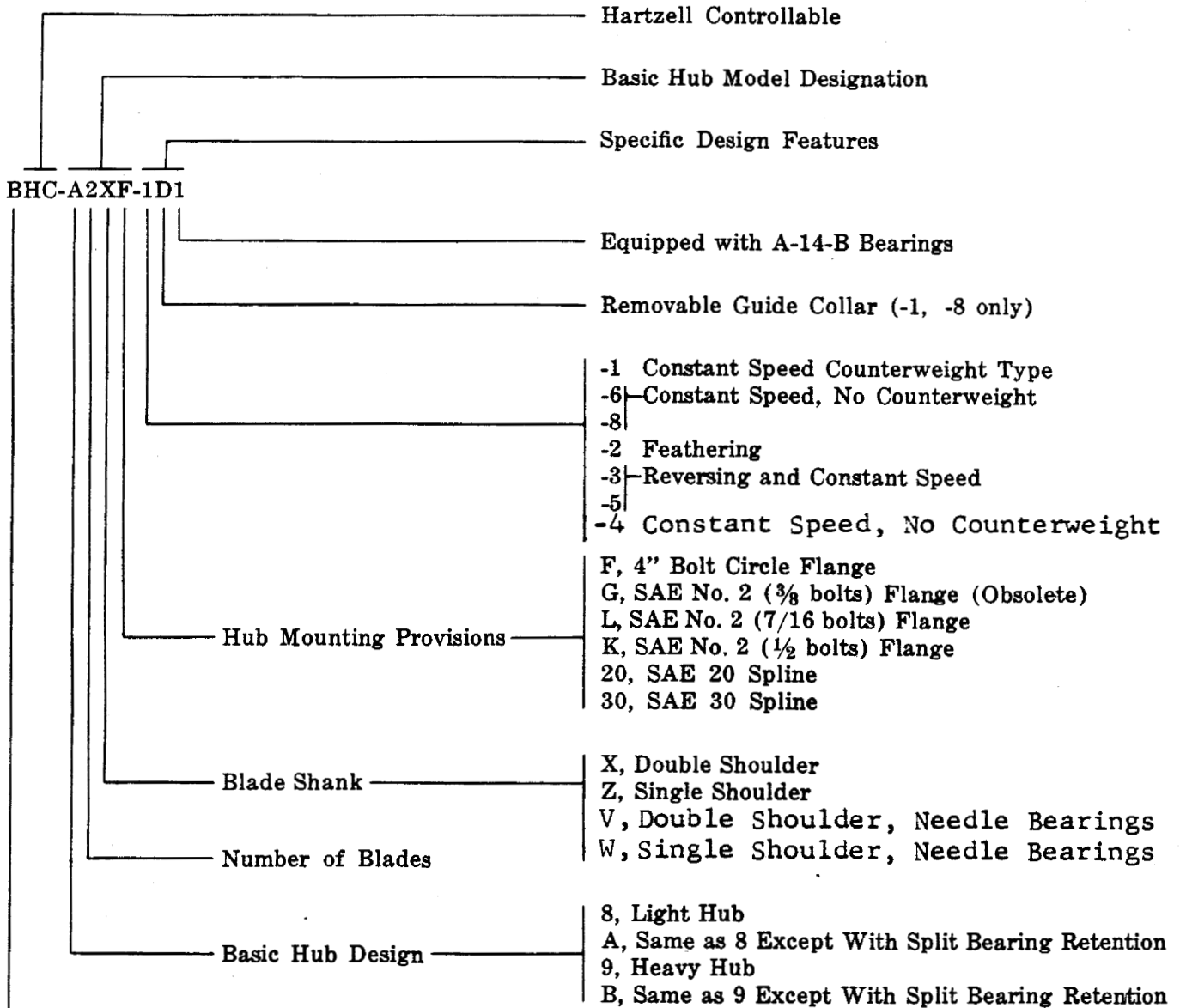
This manual may be updated at any time in the future by adding new parts lists as they become available.

Other manuals covering similar propellers are listed as follows:

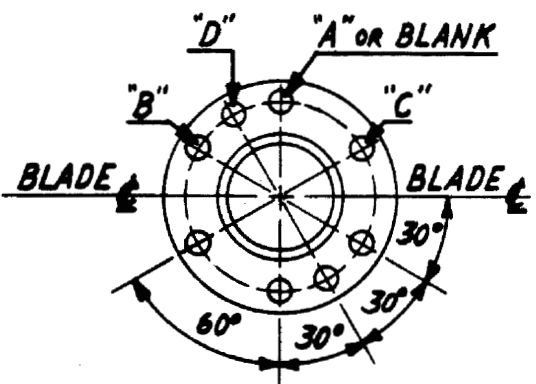
Manual Number	Propellers Covered
105	HC-92ZF-2, K-2A; HC-92WK-2A; HC-92WF-2A
108	HC-B3Z30-2E; HC-B3W30-2E
109	HC-A2XF, K, L-2; HC-A2VF, K, 20-2
110	HC-92ZF-1, K-8; HC-92WK-1
112	HC-B3Z30-2B; HC-B3W30-2B
118	HC-B3TN-2, -3, -5 (Turbo-prop)

SECTION I

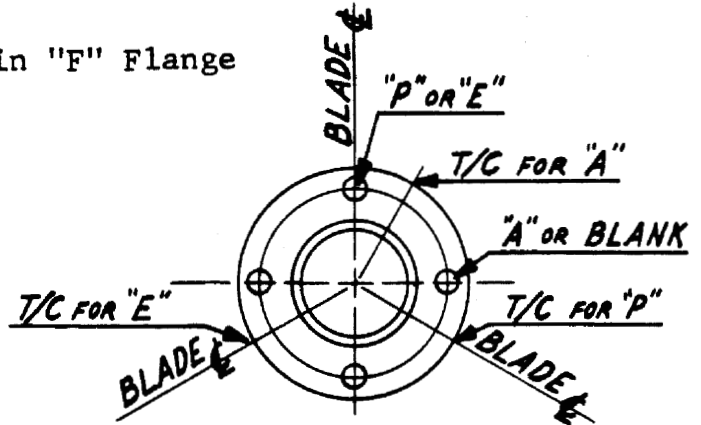
MODEL DESIGNATION



Location of Dowel Pin in "F" Flange



DOWEL PIN LOCATIONS FOR TWO BLADE PROPELLERS. REAR VIEW OF PROPELLER FLANGE.



DOWEL PIN LOCATIONS FOR THREE BLADE PROPELLERS. REAR VIEW OF PROPELLER FLANGE.

SECTION II

DESCRIPTION

MODELS HC-8()X(); HC-A()X()
HC-9()Z(); HC-B()Z();
CONSTANT SPEED FEATHERING & REVERSING

A. CONSTRUCTION

The construction of all propellers in this series is similar, in that the hub consists of a central spider which is fastened to the engine shaft, and which supports the blades with a tube extending up inside of the blade roots. Blade clamps connect the blade shanks with the blade retention bearings. A hydraulic cylinder is mounted on the rotational axis, and is connected to the blade clamps for pitch actuation.

The hub parts are made of steel forgings; while the blades are generally made of aluminum forgings.

B. CONTROL

Governor oil pressure which is piped to the propeller through the engine shaft is used to change pitch in one direction; while centrifugal forces acting on the blades and weights attached to the blade clamps are used to change pitch in the opposite direction. Propellers employing counterweights, attached to the blade clamps, utilize governor oil pressure to reduce blade pitch, and centrifugal force to increase pitch. Propellers not employing counterweights utilize governor pressure to increase pitch while centrifugal twisting moments acting on the blades to reduce pitch.

Feathering propellers utilize oil from the governor to reduce pitch and counterweights plus a spring to feather. Feathering is accomplished in the absence of governor pressure.

Reversible propellers are similar to the feathering propellers, for pitch actuation from low pitch to feathering pitch. In order to go from low pitch to reverse pitch, a second oil system is incorporated, independent of the governor control; which is put into play by a manually actuated valve. Oil pressure applied to this second oil line moves the pitch from low position to reverse position. Draining the oil allows the feathering spring to move the pitch from reverse to low.

C. MODELS

The HC-8()X() models are manufactured in 2 and 3-blade versions, constant speed feathering, and reversing, and for all types of shaft mountings shown in the Model Designation diagram except 30 spline.

The HC-A()X() models are similar to the earlier HC-8()X() series except the blade bearing retention has been changed to the split bearing type.

The HC-9()Z() models are also manufactured in 2 and 3-blade versions, constant speed and feathering; but not reversing. It is made with the F, K, 20, and 30 spline shaft mounting.

The HC-B()Z() models are manufactured in 3-blade versions only, constant speed and feathering, and with provisions for F, K, 20, and 30 spline shafts. This series is similar to the HC-9()Z() series except it incorporates the later split bearing retention system.

The HC-A()V() models are similar to the HC-A()X() models except needle bearings are installed in the blade shanks replacing a portion of the bronze bushings.

The HC-B()W() models are similar to the HC-B()Z() models except needle bearings are installed in the blade shanks replacing a portion of the bronze bushings.

Propeller installation instructions, operating instructions, and service instructions are contained in the owner's manual and will not be duplicated here.

SECTION III

PROPELLER INSTALLATION INSTRUCTIONS

TABLE I. — SPECIAL TOOLS

Part No.	Nomenclature
461	Spanner Wrench, 831-12 Spring Assembly
B-840	Shaft Nut Wrench For SAE 20 & 30 Spline
B-842	Wrench for A-880-1 Nut on Spring Assembly
B-842-1	Wrench for A-880-2 Nut on Spring Assembly
B-844	Tool for Pressing Pilot Tube into Hub Spider
C-845	Fixture for Assembly of Feathering Spring
-----	Propeller Table
-----	Propeller Table, 30 Spline Spindle
-----	Balancing Equipment, Wire or Arbor
BT-222	Assembly Tool for Pressing A-1852 Ring on C-1853 Hub Spider
BT-222-1	Assembly Tool for Pressing A-972 Ring on C-982 Hub Spider
BT-223	Puller Tool for A-1852 Ring
BT-223-1	Puller Tool for A-972 Ring
SK-274	Piston Fixture Used for Balancing

SECTION IV GOVERNORS

There are three governor types which can be used with the propellers listed in this manual.

- A. Woodward 210,000 Series
- B. Hartzell Models B-(); C-(); D-(); and

F(). These are surplus governors, overhauled and modified to suit the various applications.

- C. Hoof 1,000,000 Series.

SECTION V DISASSEMBLY INSTRUCTIONS

In view of the fact that this manual covers a large number of propeller models, the instructions will be given in general terms applicable to all models.

1. Install the propeller on a propeller bench having provisions to receive the particular engine shaft in question.

2. Remove the hydraulic piston and pitch actuating linkage systems.

3. Remove the blade clamps.

4. Remove the blades from the hub spider.

5. Remove the blade retention bearing races in the hub spider. In the case of the HC-8()X and HC-9()Z series propellers, removal of the bearings is quite simple and obvious; however, in the case of the HC-A()X and HC-B()Z series, removal of the bearing from the hub spider requires the use of special tools. (See Manuals 108 and 109.)

(a) HC-A()X , HC-A()V Series.

- (1) Remove the balls from bearings.
- (2) Remove the inner races of the bearing by

removing the wire ring from the groove.

(3) Using special tool BT-222-1, combined with BT-223-1, push guide ring in slightly towards center of the hub only enough to uncover wire ring, which can be removed. Using tool BT-223-1, pull guide ring from hub. Remove outer two halves of bearing.

(b) HC-B()Z , HC-B()W Series.

Same as (a) above except for the use of BT-222 and BT-223 tools.

6. Feathering spring sub-assembly (feathering and reversing propellers only).



Do not attempt to disassemble the feathering spring sub-assembly unless special tool No. C-845 is available. With this tool, the assembly can be compressed until the retaining rings are free.

SECTION VI INSPECTION

(a) Inspect all wearing parts according to tolerances specified in TABLE II. Replace parts not coming within specified limits.

(b) Inspect the blades according to the tolerances in TABLE III. Replace a blade which falls below the listed minimum dimensions upon repair.

(c) Visually inspect all metal surfaces. Replace or refinish any bearing or wear surface which has a visible nick, dent or other distortion.

(d) Magnetically inspect all steel parts for cracks not visible to the eye.

(e) Visually inspect the blades for cracks, par-

ticularly around the shank retention area and at the leading edge near the tip.

(f) Inspect the bearings for excessive wear or chafing. A certain amount of marking of the balls and races is to be expected and is not necessarily a reason for replacement. Only when the bearings show pit marks which are .002" deep and definitely feel rough, are the balls or races to be replaced. Bearing life ordinarily is greater than 1000 hours.

(g) Inspect pilot tube for slippage. The tube should extend out from hub $3\frac{3}{4}$ inches only. If this distance is greater, the indication is that the tube has slipped out of the hub spider. An oversize tube should replace the one which slipped.

SECTION VII

REPAIR AND REPLACEMENT

(a) Remove all rust, galling marks and nicks from the hub spider arms with crocus cloth or fine emery. Rust, galling and nicks are stress raisers which reduce the fatigue life of the hub. Do not polish unless necessary, as the spider arms have been rolled to improve the fatigue strength. (The roll marks are not tool marks and should not be removed.) If the blade pilot tube is to be replaced in the hub, due either to excessive wear, or due to the fact that it has slipped out slightly from the spider, it is necessary to use a new tube having a .002" to .003" oversize diameter over the 2¼" length which presses into the hub spider hole. Press the new tube into the hub spider leaving exactly 3¾ inches of the length exposed. Be sure the heavy end of the tube is inserted into the hub. Test the tube for tightness by applying 5000 lb. force on the tube. If it slips with this force, it must be replaced with a larger tube of say .003" to .004" oversize.

(b) Replace the counterweight mounting screws. Use only the specified parts as they are heat treated to a high strength.

(c) Replace all gaskets, "O" rings, and cotter pins.

(d) Nicks or deep scratches in cylinder may be cause for replacement, particularly if the marks are in the region of the piston "O" ring during normal cruise-flight. Scratches in the feathering region may be tolerated if not too deep.

(e) Replating (cadmium) of steel parts is recommended if the original plating has been worn off or if damaged by nicks or scratches.



The hub spider arm and pilot tubes should be masked. After plating the parts, they **must** be baked in an oven at 350° F. plus or minus 25° for 3 hours to eliminate possibility of hydrogen embrittlement. High strength

bolts, hub, and clamp parts are particularly susceptible to this effect. Failure of the part may result unless this baking is accomplished. If proper plating facilities are not available, the parts should be painted with a suitable aluminum or lacquer paint.

(f) Repair blades according to Fig. 1.

(g) Blade bushings. If the blade bushing is worn beyond specified tolerances, the blades should be returned to the factory to be rebushed. These bushings seldom wear, however, to the point where they must be replaced.

(h) Recommended Overhaul Procedures Regarding Replacement of A-14 Bearings and A-159 Split Rings.

Hartzell Models: HC-83XF-1A; HC-83XF-3A, 3AL, 3B; HC-83X20-1A, -1B, 1C; HC-82XF-1DB; HC-82XF-2B, 2C; HC-82XK-2B, 2C; HC-83X20-2C; HC-83XF-2A.

1. The above propellers originally were manufactured with A-14-A bearings and A-159 split rings. The present overhaul procedure calls for replacing the split rings at overhaul.

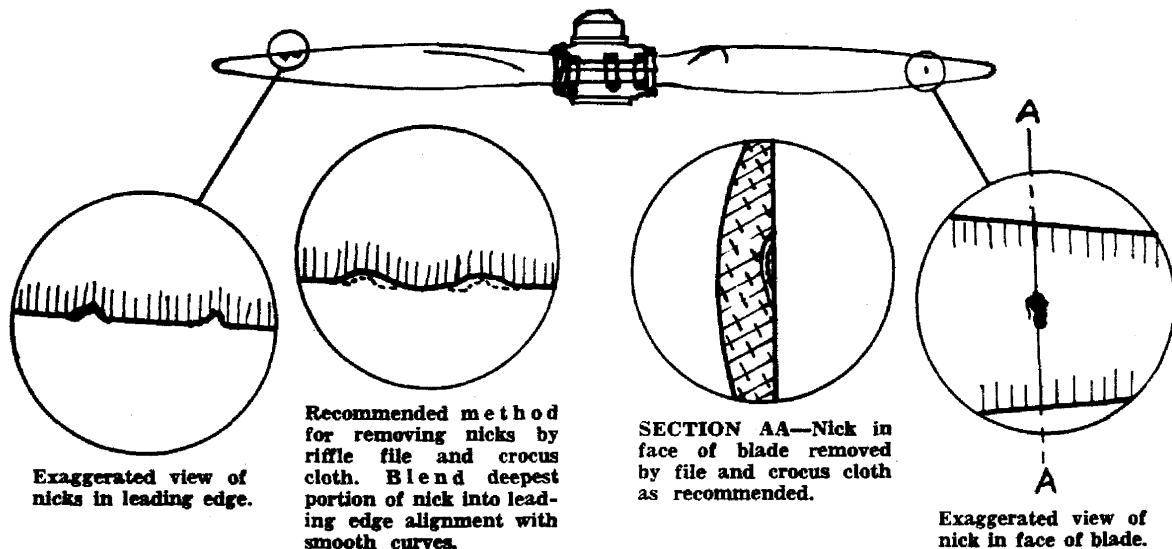
2. These basic propellers are now approved also with the A-14-B bearings and A-969 split rings. Since the A-969 split ring is heavier than the A-159 split ring, it is not necessary to follow the practice of replacing them at subsequent overhauls.

3. We recommend that during overhaul, if A-14-A bearings must be replaced due to wear; be replaced with the A-14-B bearings. Then the A-159 split rings must be replaced by the A-969 split rings, in order that these parts fit together properly.

4. Upon making this modification, the figure "1" is added to the dash number, as: HC-83XF-1A becomes HC-83XF-1A1.

5. This practice of updating propellers is being practiced in our overhaul department. It is recommended that it be followed by all field service stations also.

Figure 1. SKETCH OF TYPICAL NICKS AND METHOD OF REMOVAL



SECTION VIII ASSEMBLY

See representative assembly drawings for parts position)

The description of the assembly will be general since it is intended to cover a variety of assemblies. Certain important details which are common to all models will be spelled out precisely.

A. ASSEMBLY OF GUIDE COLLAR UNIT ON HUB (Constant speed propellers only)

(a) Constant speed propellers having "F", "L", "K" flanges.

1. Install guide collar unit on hub spider, using socket head screws to clamp halves together. Before screws are tightened, line up the notch in the collar unit with the dowel pin hole in the hub spider. Tighten screws to 2-4 ft. lb. torque.

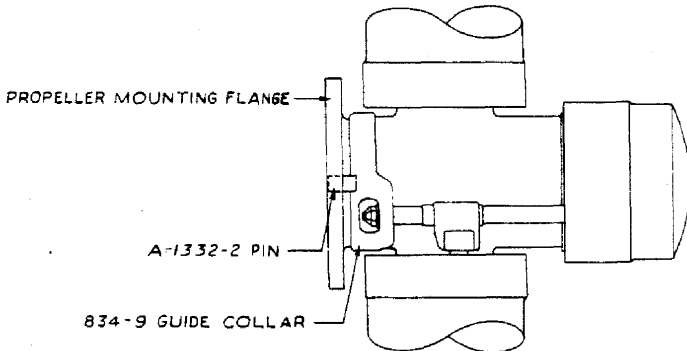
2. Insert dowel pin in flange from rear, until it enters the notch machined into guide collar.



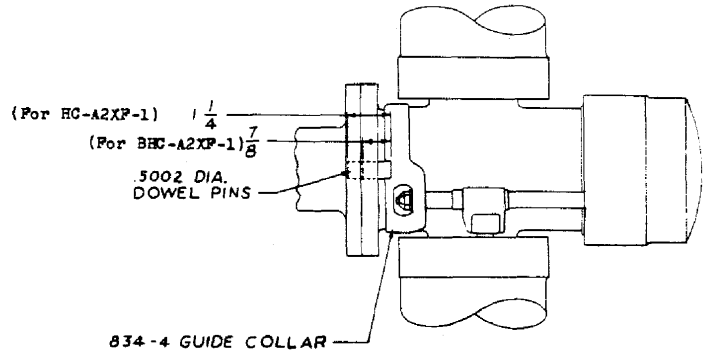
For HC-A2XF-1, HC-92ZF-1, and some HC-82XF-1 propellers only, the dowel pins used for installing the propeller are 1 $\frac{3}{8}$ inches long and are used also to stake the guide collar, installed in "A" location. For BHC-A2XF-1, BHC-92ZF-1, and some HC-82XF-1DB propellers, short aluminum pins are inserted in the "A" dowel pin holes to stake the guide collar; while 1 inch long steel dowel pins are installed in the "B" holes for installing the propeller on the engine.

NOTE: HC-92ZF-1 is covered more completely in Manual No. 110.

Propeller Model HC-82XK-1D—Be sure the dowel pin A-1332-2 is a **drive fit** thru the hole in the flange of the propeller hub, and **securely** engages the notch which is milled into the 834-9 guide collar as shown below.



Propeller Model HC-A2XF-1 and BHC-A2XF-1: Install 1 $\frac{1}{4}$ inch long dowel pins in "A" location of the mounting flange for HC-A2XF-1 propellers and $\frac{7}{8}$ inch long dowel pins in "A" location for BHC-A2XF-1 propellers as shown below.



(b) Constant speed propellers having 20 spline shaft. The guide collar unit used on the 20 spline propellers may be either of two types (1) clamping type and (2) integral with spinner hub. In either case, these can be installed on the hub or propeller table spindle at the start of the build up.

B. ASSEMBLY OF BEARINGS ONTO HUB SPIDER

(a) HC-8()X and HC-9()Z Series.

1. Install proper "O" ring over hub spider arms past the "O" ring grooves.
2. Install blade bearing—THIN RACE FIRST.
3. Install proper split ring. These are paired and stamped accordingly.
4. Press bearing over split ring against split ring shoulder.
5. Roll "O" ring into groove.

(b) HC-A()X and HC-B()Z series.

1. Mount hub spider on propeller table.
2. Using special tool BT-222, combined with tool BT-223, push guide ring onto hub spider bearing retention flange. The chamfered end of ring must face the center of the hub, and the counterbored end face out. Push ring until the inner edge overhangs the inner flange face of hub spider by about 1/16-inch. This provides a nest to fit the two halves of outer bearing race. Unscrew tool BT-223 about 1/2 inch to allow for inserting outer bearing race in nest provided by ring. Adjust BT-223 so that fingers press against bearing race and BT-222 presses against ring. Screw ring further onto hub and bearing race until the groove in flange is uncovered.

CAUTION

It is important that the two bearing halves be matched perfectly at the fractured surfaces and held flat against the inner face of the hub flange when the ring is forced into place.

3. Insert wire ring in groove.

4. Remove tool BT-222 and install tool BT-223 so that fingers rest against inner edge of ring. Pull ring out over the wire ring.

5. Install "O" ring over hub retention arm, in towards the center of the hub as far as possible.

6. Install inner bearing race; hold halves together with wire ring.

IMPORTANT: Locate bearing parting line fore and aft or parallel with hub shaft axis.

7. Fill bearings with balls. Pack with grease.

8. Roll "O" ring out against bearing race.

9. Wrap masking tape around outside of bearing and ring so the balls will not fall out. This will be removed when clamps are installed.

C. ASSEMBLY OF BLADES ONTO HUB SPIDER

NOTE: In order to assemble the propeller and set pitch accurately, it is highly advantageous to use a special propeller table having a shaft which mates with the propeller hub flange. Air or oil pressure (100 psi min.) should be available in the shaft to actuate the piston.

(a) Mount the hub on the propeller table shaft.

(b) Fill the blade pilot tube hole with a grease as specified under "Greases Recommended."

NOTE: Be sure no air is trapped below the grease as this will upset the balance.

(c) Install blade on the same pilot tube from which it was removed. Place a hardening gasket compound (commercial automotive type) around the blade shank in the shoulder radius.

(d) Install the correct matching clamp and counterweight sub-assembly with new clamp gaskets.

NOTE: For split bearings only. This process can best be accomplished by peeling back the masking tape from about 180° of the bearing on the top side. Then install the one-half of clamp that has the counterweight. Then peel the tape from the lower half of the bearing which is exposed, and install the other clamp half. Slip the clamp gaskets between the clamps at the parting line. This procedure will locate the inner bearing race parting line at right angles with the clamp parting line WHICH IS ESSENTIAL.

Fasten the clamp halves together with socket screws, bolts, washers and nuts. Tighten socket screws and nuts and check for friction of the blade when being rotated on the hub.

NOTE: The pitch will be set after the propeller is completely assembled, after which the clamp bolts will be torqued and safetied.

(e) Install the lubricator fittings and high speed plates if propeller is feathering type.

(f) Check for friction or binding of the blades when rotated about their axes. If the blades tend to bind after the bolts are tightened, it will be necessary to remove the clamps and blades and relieve the friction, whatever the cause; whether it be friction between blade and pilot tube or friction between the end of the blade and the end of the hub spider arm.

D. INSTALLATION OF CYLINDER

(a) (Two blade feathering propellers and 2 and 3-blade constant speed propellers only.) These models generally do not have guide collars installed back of the cylinder except for the 20 spline version; hence the cylinder can be installed on flange mounted propellers by inserting the "O" ring in the groove provided, and screwing the cylinder into place. (Use non-hardening gasket compound in threads.) Torque about 200 ft. lb. using a bar in the slot provided.

(For 20 and 30 spline shaft mounted propellers)

These models have the hub nut and puller ring installed in the hub before the cylinder is installed.

(b) (Three blade and two blade 20 spline feathering propellers) These propellers have guide collars installed back of the cylinder, which must be installed when the cylinder is installed. Install "O" ring in groove provided and screw cylinder on using gasket compound on threads. Torque to about 200 ft. lb. using bar in slot provided.

(For 20 and 30 spline propellers) These models have the hub nut and puller ring installed in the hub before the cylinder is installed.

E. INSTALLATION OF FEATHERING SPRING

(For feathering propellers only)

NOTE: In order to assemble a feathering spring sub-assembly, it is important that a safe means for compressing the springs are used. This can be done best with special tool No. C-845.

(a) Install spring assembly onto cylinder with provisions available for each model, viz. split rings or screw threads.

F. INSTALLATION OF PISTON

(a) Feathering propellers

1. Install link arms in piston. Install link pin unit and safety screw. Wire safety the latter.

2. Check link arms for free movement in piston slots.

3. Install a new "O" ring and felt seal into the grooves in piston. Soak the felt seal in oil. Oil "O" ring.

4. Oil the cylinder and "O" ring at end of pilot tube.

5. Slide the piston onto cylinder.

6. Rotate piston so the free ends of the link arms can be assembled over link screws.

7. Insert link screw sleeve between screw and d in link arm. Insert cotter pin.

8. Move piston into full feathered position (back against the hub assembly) so that the threaded end of the pilot tube protrudes through the end of the piston. Screw the nut onto pilot tube. Torque the nut to 75-100 lb. ft. Restrain the pilot tube from turning by applying a socket wrench to the hex located at the end.

(b) Constant speed, non-feathering propellers.

1. Install new "O" ring and felt seal in piston. Oil these parts.

2. Fit new pitch change block snug in fork and install block on linkscrew.

3. Install piston assembly over cylinder, feeding guide rods through forks, and sleeves, which must be fitted into the bushings of guide collar. Install washer and nut onto rod. Torque to 20 ft. lb.

4. Tighten set screw 2-3 ft. lbs. torque. Prick punch around set screw to safety.

G. SETTING BLADE PITCH

(a) Loosen outer clamp screws only.

(b) With air pressure, set low pitch on both blades per aircraft specification. Tighten outer clamp screws. See Tables of Torque Values.

(c) Without air pressure, increase pitch to high stops and check blade angle.

(d) Check the blade against turning in the clamp by torquing the blade to 167 ft. lb. Use a blade bar and a weight attached to the end. If the blade moves, or rocks in the clamp, the clamp must be removed and the difficulty rectified. Experience has shown that the clamp gaskets may prevent the clamps from tightening on the blades. These gaskets can be trimmed at the outer hole slightly to allow the clamp to come together closer. Also, the outer corner of the clamps might require filing by .005-.010 inch. (Coat filed area with aluminum lacquer.) (Bulletin 69 also covers this subject.)

(e) Check the blade angle in low pitch again, as torquing of the blade may have moved it.

H. CHECK FOR GENERAL OPERATION, FRICTION AND LEAKAGE

(a) Cycle the pitch for possible friction.

(b) Hold full pressure on piston and check for leakage past the piston "O" ring and cylinder "O" ring. Spread oil around these points as air bubbles will indicate leakage.

SECTION IX BALANCE

(a) Balance the propeller assembly before grease is added to the clamps, and check again after

grease is added. Balance with pitch about midway between low and high pitch.

(b) Either a suspension system or an arbor mounted on knife edges may be used for balancing. In the event the suspension system is used, it is essential that the center of gravity of the propeller be located at or slightly below the pivot of the balance equipment; otherwise inaccuracies will result.

(c) Remove the end play from the blade clamp assemblies by driving identical small wedges between the blade clamps and hub spider, at identical locations.

(d) Bolt propeller to balance arbor, or wire balancer.

NOTE: The following balance procedure applies only to balance arbor method.

(e) Check horizontal balance by laying slugs in corner of blade and clamp. Record number of slugs required for balance.

(f) With the propeller in horizontal position, apply 50-100 lb. downward force to each blade tip. This takes up the clearance between hub and blades in one direction.

(g) Check vertical balance with heavy blade up. Add weight slugs to light side of clamps. Record number required for balance.

(h) Rotate blade 180° from horizontal position as noted in "f" above and apply 50-100 lb. to each blade tip. This takes up the clearance opposite to that noted under "f".

(i) Again check vertical balance. Record number of weight slugs.

(j) The final number of weight slugs can now be determined for vertical balance. If the slugs under "g" and "i" are added to the **same** side of the blade, the total slugs required for vertical balance is the **average** of "g" and "i". If the slugs under "g" and "i" are added to **opposite** sides of the blade the **difference** between the two numbers is added to the side requiring the greatest number.

(k) Horizontal balance determined under "e" must be maintained by properly dividing the slugs required under "j" between the two blades.

(l) Attach the slugs to the clamps with screws and again check horizontal balance. Safety with wire. Do not attach more than 4 slugs with each pair of screws.

(m) Add equal amounts of grease to each blade, holding horizontal balance constant, until clamps are completely full, as evidenced by grease starting to come out around circumference of hub spider at "O" ring. Avoid blowing out "O" ring and gaskets with excessive pressure.

SECTION X
WEAR TOLERANCES

TABLE II. — TOLERANCES OF WEARING SURFACES

	Specified		Replace if dimension is above or below	
	Max.	Min.	Max.	Min.
1. A-158 Pilot Tube O. D. (HC-8() X () series.) HC-A() X	1.4990	1.4987	—	1.4977
1a. A-1496 Pilot Tube, Inner End ("V" Shank)	1.499	1.4985	—	1.497
1b. A-1496 Pilot Tube, Outer End ("V" Shank)	1.252	1.2515	—	1.250
2. A-1308 Pilot Tube O. D. (HC-9() Z () series.) HC-B() Z	1.7185	1.7180	—	1.7165
	1.7203	1.7197	—	1.7185
	1.7185	1.718	—	1.7165
2a. A-1884 Pilot Tube, Inner End ("W" Shank)	1.376	1.3755	—	1.374
2b. A-1884 Pilot Tube, Outer End ("W" Shank)	3 ³ / ₄ +1/16	3 ³ / ₄ -1/16	3 ³ / ₄ + 1/8	—
3. Distance Pilot Tube extends beyond hub (all models)	1.5015	1.5005	1.5030	—
4. Blade bushing I. D. (HC-8() X () series.) HC-A() X	1.253	1.252	1.254	—
4a. Blade Needle Bearing "V" Shank	1.7225	1.7215	1.724	—
5. Blade Bushing I. D. (HC-9() Z () series.) HC-B() Z	1.377	1.376	1.378	—
5a. Blade Needle Bearing ("W" Shank)	3.782	3.780	3.790	—
6. All pistons, A-862 bushing I. D.	.3765	.3755	.3795	—
7. C-852-1 Piston Pin Hole I. D.	.3765	.3755	.3795	—
8. All pistons having A-946 Bushing I. D.	3.778	3.776	—	3.773
9. Cylinder B-854, B-806	.985	.984	—	.980
10. B-855 Pilot Tube diameter (all flange mounted Feathering propellers)	.735	.734	—	.731
11. B-868 Pilot Tube diameter O. D.	.988	.986	.993	—
12. A-856 Mushroom I. D.	.738	.736	.741	—
13. A-871 Mushroom I. D.	1.248	1.240	—	1.235
14. A-866 Spring Retainer O. D.	1.411	1.402	—	1.397
14a. A-866-2 Spring Retainer O. D.	2.243	2.241	—	2.237
15. A-857 Spring Retainer O. D.	.510	.508	.515	—
16. B-1402, B-892, B-824, 834-4 Guide collar bushing I. D.	.3755	.3750	.3785	—
17. A-861 Link arms, small end (all models)	.5635	.5625	.5645	—
18. A-861 Link arms, large end I. D. (Used with A-944 bushing)	.502	.501	.504	—
19. A-944 Bushing I. D.	.5602	.5615	—	.5600
20. A-944 Bushing O. D.	.5005	.4995	—	.4970
21. A-304, A-7-1, Link screw O. D.	1 slug A-48 or A-1305			
22. Balance Tolerance	+ or - 1/16 or 1/8 between blades			
23. Blade Track + or -	.060			
24. Blade End Play	.100 max., no grease			
25. Fore and Aft Movement of Blade Tip				

TABLE IV. — TORQUE VALUES

torques are values based on non-lubricated threads. Tolerance on torque is $\pm 10\%$ unless otherwise stated.

Model HC-82X; HC-83X, HC-A2X, HC-A3X,V Series

Part or Bolt Size	Location on Hub	Torque Lb. Ft.	Torque Lb. In.
3/8 - 24	"G" Flange Mounting	30	360
7/16 - 20	"L" Flange Mounting	50	600
1/2 - 20	"F" and "K" Flange Mounting — unless specified otherwise	60 - 70	720 - 840
A-63B	Shaft Nut, 20 Spline	450	5400
3/8 - 24	Outer Blade Clamp Bolts AN6-21A <i>(See Addendum)</i>	22	264
3/8 - 24	Inner Blade Clamp Socket Screw	40	480
7/16 - 20	Counterweight Socket Screw	65	780
7/16 - 24	Flexlock Nut, End of Push Rod, Non-Feathering	20	240
10 - 32	Set Screw in Pitch Change Fork, Non-Feathering	2 - 3	24 - 36
1/2 - 20	A-304 and A-295 Linkscrew	45 - 50	540 - 600
7/16 - 20	A-7 Linkscrew	35 - 40	420 - 480
1/4 - 28	834-4, -8, -9 Guide Collar Unit Flange Mounted, Non-Feathering	8 - 10	96 - 120
5/16 - 24	Socket Screw at End of Guide Rods, Feathering Prop	10	120
A-880-1, -2	Nut, at Front of Piston, Feathering	75 - 100	800 - 1200
1/4 - 28	834-3 Guide Collar Unit (B-824 Clamp)	10 - 12	120 - 144
1/4 - 28	834-1 Guide Collar Unit (B-824 Clamp)	4	48
Parts to be checked for slip			
B-824	Guide Rod Clamp Mounted on Hub	150 - 200	1800 - 2400
Blade	Blade Installed in Blade Clamp	167	2000

Model HC-92Z,V; HC-93Z; HC-B2Z; HC-B3Z,W Series

Part or Bolt Size	Location on Hub	Torque Lb. Ft.	Torque Lb. In.
1/2 - 20	"F" and "K" Flange Mounting — unless specified otherwise	60 - 70	720 - 840
A-63B	Shaft Nut, 20 Spline	450	5400
B-1814	Shaft Nut, 30 Spline	600	7200
7/16 - 20	Outer Blade Clamp Bolt	60 - 65	720 - 780
3/8 - 20	Inner Blade Clamp Socket Screw	40	480
7/16 - 20	Counterweight Socket Screw	65	780
7/16 - 20	Flexlock Nut, End of Push Rod, Non-Feathering	20	240
10 - 32	Set Screw in Pitch Change Fork, Non-Feathering	2 - 3	24 - 36
1/2 - 20	A-304 and A-295 Linkscrew	45 - 50	540 - 600
1/4 - 28	834-4, -8, -9 Guide Collar Unit, Non-Feathering, Flange Mounted	8 - 10	96 - 120
5/16 - 24	Socket Screw at End of Guide Rods, Feathering	10	120
A-880-1, -2	Nut at End of Piston, Feathering	75 - 100	800 - 1200
1/4 - 28	834-1, -7, Guide Collar Unit	4	48
Parts to be checked for slip			
Blade	Blade Mounted in Blade Clamp	167	2000

TABLE III. — BLADE REPAIR TOLERANCES

Radius	Angle		Face Alignment		Width* (Min.)	Thickness (Min.)
	Min.	Max.	Min.	Max.		
7636D, -2, -4 Blade						
9					4.700	1.980
12					5.572	1.095
18	41°	42°	.138	.202	5.702	.666
24	37°	37.6°	-.072	-.008	5.312	.449
30	33.2°	Setup	-.192	-.128	4.450	.319
36	29.8°	30.2°	-.242	-.178	No Limit	No Limit
8433-6, -7, -10, -12 Blade						
9					4.700	1.980
12					5.720	1.095
18	41°	42°	.138	.202	6.200	.625
24	37°	37.6°	-.072	-.008	5.985	.471
30	33.2°	Setup	-.192	-.128	5.380	.337
36	29.8°	30.2°	-.242	-.178	No Limit	No Limit
8433, -2, -4 Blade						
9					4.700	1.980
12					5.720	1.095
18	41°	42°	.138	.202	6.200	.625
24	37°	37.6°	-.072	-.008	6.000	.473
30	33.2°	Setup	-.192	-.128	5.460	.341
36	29.8°	30.2°	-.242	-.178	4.200	.234
8833, -2 Blade						
9					4.700	1.980
12					5.726	1.095
18	31.1°	32.1°	.103	.167	6.310	.692
26	24°	24.6°	-.082	-.018	6.070	.472
32	20°	Setup	-.164	-.098	5.450	.340
38	16.8°	17.2°	-.242	-.178	4.190	.233
9333C, -3 Blade						
9½					4.704	1.980
13					5.720	1.095
20	41°	42°	-.122	-.058	6.307	.693
28	36.5°	37.1°	-.472	-.408	6.070	.472
34	33.2°	Setup	-.682	-.618	5.450	.376
40	29.8°	30.2°	-.832	-.768	4.200	.286
8447, -12A, ** 8447A-12A ** Blade						
8					4.052	2.649
12					5.587	1.304
18	31.1°	32.1°	.158	.222	6.340	.799
24	25.7°	26.3°	-.032	.032	6.123	.518
30	21.9°	Setup	-.152	-.088	5.462	.355
36	18.8°	19.2°	-.232	-.168	4.203	.263
8847 Blade						
8					4.038	2.660
14					5.842	1.304
20	30.5°	31.5°	.158	.222	6.307	.799
26	25.5°	26.1°	-.047	-.017	6.110	.517
32	21.9°	Setup	-.152	-.088	5.450	.355
38	18.8°	19.2°	-.242	-.178	4.188	.233
10151-8 Blade						
18			.293	.357	6.071	.922
24	32.9°	33.5°	.038	.102	6.306	.690
30	29.4°	Setup	-.122	-.058	6.175	.516
36	25.6°	26.0°	-.242	-.178	5.655	.422
42	22.6°	23.0°	-.357	-.293	No Limit	No Limit
12					5.355	1.501
8					4.043	2.854

* All Minimum Requirements.

** Exclude 36

Radius	Angle		Face Alignment		Width* (Min.)	Thickness* (Min.)
	Min.	Max.	Min.	Max.		
10133D-3 Blade						
9½					4.704	1.983
12					5.355	1.501
18	39.0°	40.1°	.293	.357	6.071	.922
24	32.9°	33.5°	.038	.102	6.300	.691
30	29.4°	29.4°	-.122	-.058	6.188	.517
36	25.6°	26.0°	-.242	-.178	5.695	.425
42	22.6°	23.0°	-.357	-.293	4.645	.318
48	19.9°	20.3°	-.532	-.468	No Limit	No Limit
10152-5½ Blade						
8					3.870	2.890
12					4.825	1.610
18			.393	.457	5.500	1.120
24	32.9°	33.5°	.088	.152	5.816	.802
30	29.3°	29.3°	-.122	-.058	5.982	.580
36	25.8°	26.2°	-.242	-.178	5.655	.430
42	23.3°	23.7°	-.357	-.293	4.514	.330
43½						.315
44½						.285
45½						.247
46½						.208
10160-6 Blade						
8					3.870	2.890
12					4.825	1.775
18			.428	.492	5.500	1.198
24	32.9°	33.5°	.088	.152	5.816	.812
30	29.3°	29.3°	-.092	-.028	5.982	.630
36	25.8°	26.2°	-.217	-.153	5.666	.476
42	23.3°	23.7°	-.347	-.283	4.532	.365
43¼						.345
44¼						.308
45¼						.261
46						.225
9349 Blade						
8					4.045	2.870
13					5.720	1.095
20	41°	42°	-.122	-.058	6.310	.693
28	36.5°	37.1°	-.472	-.408	6.097	.472
34	33.2°	Setup	-.682	-.618	5.450	.376
40	29.8°	30.2°	-.832	-.768	4.200	.286
9350 Blade						
8					4.045	2.870
13					5.720	1.095
20	41°	42°	.108	.172	6.310	.693
28	36.5°	37.1°	-.122	-.058	6.097	.472
34	33.2°	Setup	-.222	-.158	5.450	.376
40	29.8°	30.2°	-.262	-.198	4.200	.286

* All Minimum Requirements.

SECTION XI LUBRICATION

A. GENERAL PROPERTIES OF GREASE REQUIRED

Any grease used must have the following properties:

- (a) Waterproof.
- (b) Temperature range between -15° F. and 150° F; or -40° to 100° F if operation is in cold climate.

(c) Freedom from separating oil from soap base due to centrifugal force or high temperature.

(d) Low Friction.

B. LIST OF APPROVED GREASES, by spec. or name

1. Hartzell DG Grease (rated at $\pm 100^{\circ}$ to $\pm 165^{\circ}$ F.)
2. Stroma HT-1 (Z-801 Grease)
Union Oil Co. of California

3. Gulflex A
This grease is recommended for the blade ball bearings as it will not bleed oil in hot weather.
4. RPM Aviation Grease No. 2
Standard Oil Co. of California
5. Stroma LT-1 (Z-815 Grease)
Union Oil Co. of California
6. Lubriplate 630 AA
Fiske Brothers, Toledo, Ohio
This grease will bleed oil in hot weather. It is recommended only for lubrication of the blade pilot tubes but not the blade bearings.
7. RPM Aviation Grease No. 1
Standard Oil Co. of California

8. Lubriplate 707
Fiske Brothers, Toledo, Ohio
9. Mobilgrease Aero Lo-Hi PD-535-K
Socony Vacuum Oil Co.
10. No. 84 Medium Grease
Keystone Lubricating Co.
11. Texaco Regal Starfax Special
12. Molub-Alloy No. 2 Grease -10° F.
No. 1 Grease -25° F.
Imperial Oil & Grease Co.
Los Angeles, California
13. Germany - Calypsol H442
German Calypsol Company, Dusseldorf

C. Proper times and amounts of grease are mentioned during assembly procedures.

SECTION XII SERVICE TROUBLES

Trouble	Probable Cause	Remedy
FAILURE OF PITCH TO CHANGE	If rpm fails to increase but will reduce: Low oil pressure.	Set relief valve in governor to provide necessary pressure, up to 275 psi.
	If rpm change in both directions is sluggish: Excessive friction in hub mechanism.	See "Excessive Friction in Hub Mechanism," below. Isolate friction in each blade by uncoupling piston and testing each blade separately, before tearing propeller down.
	Newly-installed governor has wrong direction of rotation, or has bypass plug in wrong hole.	Check and correct.
EXCESSIVE FRICTION IN HUB MECHANISM	Pilot tube has slipped out slightly and is rubbing hard against end of hole in blade.	Tear down and check distance pilot tube extends from hub spider. Should be 3¾ inches. If more, remove pilot tube and replace with a tube .002 in. oversize at hub end.
	Blade bushing seized on pilot tube.	Polish pilot tube and blade bushing with fine emery paper and reassemble.
	Blade ball bearings unusually rough or broken.	Replace bearing.
	Friction in various moving parts of pitch control mechanism.	Check parts individually. If tightness is encountered in sliding parts, increase clearances slightly. Apply oil externally to moving parts.
IMPROPER RPM	Static rpm too low.	Governor has high rpm stop, as well as propeller low pitch stop. Either the governor or the propeller stop may limit maximum rpm. To determine which is causing trouble, open the throttle and move governor control back and forth slowly. If maximum rpm is reached BEFORE governor stop is reached, propeller stop is probably limiting rpm. If this is the case, loosen blade clamp outer bolts and rotate blades in clamps. Reduce blade angle about 1° for each 100 rpm increase. (1° equals 1/16 inch circumference at blade root.) If maximum rpm is reached AT SAME TIME as governor is reached, governor stop is probably limiting the maximum rpm. Readjust governor stop to obtain proper rpm. One turn of governor stop screw equals about 17 rpm. Turn stop screw out to increase rpm. Governor stop should limit high rpm, with propeller stop reached at 50 to 100 rpm beyond. This allows for variations in engine power without affecting maximum rpm.

Trouble	Probable Cause	Remedy
	Static rpm too high	Reduce by screwing governor stop in, one turn for each 17 rpm reduction.
FAILURE TO FEATHER	Governor control does not provide enough travel to allow governor to move hard against high pitch stop.	Provide sufficient travel in governor control. Governor must drain oil out of propeller during feathering.
	Excessive friction.	See "Excessive Friction in Hub Mechanism."
	High pitch stop pin fails to slide out at feathering rpm.	Check for burrs on pins. Check for stiffness of spring. If propeller feathers at high rpm's but fails to feather at low rpm's, too-stiff spring is indicated. Reduce length of spring by one or two turns.
	Weak or broken feathering spring.	Replace.
SURGING (When governor control is changed rapidly or rough air is encountered.)	Air trapped in propeller actuating piston or in engine shaft.	Provision should be incorporated in engine to allow trapped air to escape from system during one half of the pitch change cycle. Exercise propeller by changing pitch or feathering before each flight.
	Governor pressure too low.	Adjust governor relief pressure so that rate of pitch change is the same in both directions.
	Excessive friction in pitch change mechanism.	See "Excessive Friction in Hub Mechanism."
	Governor lacks sufficient dampening.	Change or adjust speeder spring. This gives governor more stability, but makes pitch control more sensitive, which, may in turn require re-rigging of control to offset higher spring rate. Changing to stiffer speeder spring should be done only after all other factors are checked and corrected.
OIL LEAKAGE	Faulty "O" ring seals as follows: Front of rear cone between engine shaft and hub. Between hub and cylinder. Between piston and cylinder at front of piston.	Disassemble and inspect "O" rings and the surfaces they seal. Replace "O" rings if defective. Replace cylinder if surface is scratched or nicked in area where "O" ring slides. Use gasket compound on cylinder threads when replacing. Peen down raised places caused by tightening of cylinder with bar.
GREASE LEAKAGE (Only source of grease leakage is blade bearings.)	Grease leaks past clamp seal gaskets.	Loosen clamp bolts and replace gaskets. Standard thickness of gasket is .050, but .060 gaskets are available in case .050 gaskets are not compressed sufficiently to hold.
	Grease leaks from between blade and clamp.	Inscribe blade with ink or pencil to assure correct blade angle on reassembly, and remove blade and clamp. Add gasket compound in radius of blade butt. Replace blade and clamp.
END PLAY IN BLADES	Buildup of manufacturing tolerances.	Total end play of .060 is permissible.
BLADE TRACK		Tolerance of $\frac{1}{8}$ inch is allowed.
BLADE FIT ON HUB PILOT TUBE		With manufacturing tolerances, the maximum that the blade tip can be moved fore and aft is .068, without grease in blade clamps and bearings. With grease, the movement is nil. If blade tip fore-and-aft movement increases to .100 dry, blade requires factory re-bushing.

SECTION XIII
PARTS LISTS
Model HC-82XF-1DB1

Assembly Drawing D-809

Part No.	Nomenclature	No. Required
840-19B	HUB SPIDER UNIT	1
C-801-11B	Hub Spider	1
A-158L	Pilot Tube	2
834-4	Guide Collar Assembly	1
B-1326-2	Guide Collar	1
A-116-A-1	Plastic Bushing	2
A-114-C	Staking Pin	4
A-2038-10	Socket Screw	2
A-957	Safety Pin	2
	HUB ASSOCIATED PARTS	
A-14-B	Blade Bearing	2
A-969	Split Ring	2
.5002x1	Danley Dowel Pin	2
A-2040 or A-1333-4	Hub Mounting Bolt	6
PRP-909-6	Blade & Hub "O" Ring	3
838-2	CLAMP & COUNTERWEIGHT ASSEMBLY	2
C-3-1A	Clamp	2
A-295	Link Screw	2
A-285	Staking Pin, Linkscrew	2
MS15001-1	Zerk Fitting	3
B-891-1	Counterweight Sub-Assembly	2
A-65	Counterweight Staking Pin	2
A-2036-30	Mounting Bolt	4
A-285	Staking Pin	4
A-47-1	Clamp Gasket	4
A-282	Socket Screw	4
AN380-3-2	Cotter Pin	4
A-2017	Clamp Bolts	4
AN960-616	Mounting Washer	4
A-2043	Clamp Nuts	4
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weight	As Needed
AN501-A10-6	Weight Screws	4
B-828	PISTON ASSEMBLY	1
B-966	Piston (B-805 interchangeable)	1
A-862	Plastic Bushing	1
A-826-1	Push Rod	2
A-114-F	Staking Pin	2
A-921-1	Fork	2
A-2039	Set Screw	2
A-827-1	Rod Sleeve	2
A-965	Washer	2
A-848	Flexlock Nut	2
	HYDRAULIC ASSOCIATED PARTS	
B-806	Cylinder	1
PRP-909-13	Cylinder "O" Ring	1
PRP-902-46	Piston "O" Ring	1
A-810	Felt Seal	1
A-95-A	Block, Pitch Change	2
835-13	SPINNER ASSEMBLY	1
C-888-4	Dome	1
C-807-1	Bulkhead	1
AN526C1032R7	Screws, Dome Mounting	14

Part No.	Nomenclature	No. Required
	SPINNER MOUNTING PARTS	
A-846-3	Lug, Spinner	4
A-2051	Hex Head Bolt	4
AN960-416L	Washer	4
AN363-428	Flexlock Nut or H10-4 Kaylock Nuts	4
AN4H-14A	Hex Head Bolt	4

Assembly Drawing D-809 **PARTS LIST — Model HC-82XF-1D**

Part No.	Nomenclature	No. Required
840-19	HUB SPIDER UNIT	1
C-801-11	Hub Spider	1
A-158L	Pilot Tubes	2
A-846-3	Spinner Lugs	4
A-957	Staking Pin	2
834-4	Guide Collar Unit	1
B-1326-2	Guide Collar	1
A-116A-1	Plastic Bushings	2
A-2038-10	Nylock Socket Head Cap Screws	2
.5002 x 1"	Staking Pins, Guide Collar	2
	HUB ASSOCIATED PARTS	
PRP-906-6	"O" Rings, Blade	2
A-14-A	Blade Bearings	2
A-159	Split Rings, Bearing	2
PRP-909-6	"O" Ring, Shaft	1
A-2040 or A-1333-4	Hex Head Bolts	6
838-2	CLAMP & COUNTERWEIGHT ASSEMBLY	2
C-3-1A	Clamp	2
A-295	Linkscrew	2
A-285	Staking Pin, Linkscrew	2
B-891-1	Counterweight Unit	2
A-2036-30	Socket Head Cap Screws, Cwt.	4
A-285	Staking Pin, Sk. Hd. Cap Sc. (AN380-3-2 Cotter Pin	4
A-65	Staking Pin, Counterweight Optional)	2
MS15001-1	Zerk Fittings	4
A-47-1	Clamp Gaskets	4
A-282	Socket Screws, Clamp	4
AN380-3-2	Cotter Pins, Socket Screw	4
A-2017	Clamp Bolts, 12 Point	4
AN960-616	Washers	4
A-2043	Clamp Nuts	4
No. 3	Lubricaps	4
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weights	As Needed
AN501A10-()	Screws, Balance Weight	As Needed
A-95-A	Blocks, Pitch Change	2
B-828	PISTON ASSEMBLY	1
B-966-1	Piston Unit	1
B-966	Piston (B-805 interchangeable)	1
A-826-1	Push Rods	2
A-114-G	Staking Pins, Push Rod	2
A-862	Plastic Bushing	1
A-921-1	Forks	2
A-2039	Socket Set Screws, Fork	2
A-827-1	Sleeves, Push Rod	2
A-965	Washers, Push Rod	2
A-848	Flexlock Nuts, Push Rod	2
	HYDRAULIC ASSOCIATED PARTS	
PRP-909-13	"O" Ring, Cylinder Mounting	1
B-806	Cylinder	1
A-810	Dust Seal, Cylinder	1
PRP-920-46	"O" Ring, Piston	1
835-13	SPINNER ASSEMBLY	1
C-888-4	Dome, Spinner	1
AN526C1032R7	Screws, Dome Mounting	14
C-807-1	Bulkhead Unit	1

Part No.	Nomenclature	No. Required
	SPINNER ASSEMBLY (Continued)	
AN4H14A	Hex Head Bolts	4
AN960-416L	Washers	4
H10-4 or AN363-428	Kaylock Nuts	4
A-2051	Hex Head Bolt	4
B-(x)-(x)	GOVERNORS, HARTZELL	1
F-(x)-(x)	GOVERNORS, HARTZELL	1
(x), 210, (xxx)	GOVERNORS, WOODWARD	1
1A4, 1M12, 1P12, 1Q12	GOVERNORS, HAMILTON-STANDARD	1

PARTS LIST
Model HC-82XL-2B, -2C

Assembly Drawing D-851

Part No.	Nomenclature	No. Required	
		-2B	-2C
840-58	HUB SPIDER ASSEMBLY		1
C-801-18	Hub Spider		1
A-158L	Pilot Tube		2
840-30	HUB SPIDER ASSEMBLY	1	
C-801-14	Hub Spider	1	
A-158L	Pilot Tube	2	
	ASSOCIATED PARTS FOR 840-58 & 840-30		
A-311	Ball Spacer (Optional)	2	2
A-14-A	Bearing	2	2
A-159	Split Ring	2	2
PRP-909-6	Blade Mtg. "O" Ring	2	2
PRP-902-32	Shaft Mtg. "O" Ring	1	1
B-933-1	Shim, Flange Mtg.	1	1
A-988	Screw, Prop. Mtg.	4	4
A-898-2	Washers	4	4
A-988-1	Screw, Prop. Mtg. (A-943-1 Optional—		2
A-987	Ferry Screw Conversion from -2B)	2	
	(For 7636 & 8433-12 Blades)		
838-11	CLAMP & COUNTERWEIGHT SUB-ASSY.	2	2
C-3-5A	Clamps	2	2
A-304	Linkscrew	2	2
A-285	Staking Pin, Linkscrew	2	2
MS-15001-1	Clamp Zerk Fitting	4	4
B-271-1	Counterweight	2	2
A-2036-30	Counterweight Socket Screws	4	4
A-285	Staking Pins, Ctwt. Socket Sc. (AN-380-3-2 Cotter	4	4
A-65	Counterweight Staking Pin Pin Optional)	2	2
A-47-1	Clamp Gaskets	4	4
A-282	Clamp Mounting Socket Screws	4	4
AN380-3-2	Cotter Pins, Clamp Sk. Sc.	4	4
A-2017	Clamp Bolts	4	4
AN960-616	Clamp Mounting Washers	4	4
A-2043	Clamp Mounting Lock Nuts	4	4
No. 3	Lubricaps	4	4
	CLAMP ASSOCIATED PARTS		
A-48	Balance Weight	As Needed	
AN501A10-6	Weight Screw	4	4
A-881	Stop Plate	2	2
AN501A10-6	Stop Screws	4	4
A-944	Sleeve, Linkscrew	2	2
AN380-3-3	Sleeve Cotter Pin	2	2
830-2	AUTOMATIC HIGH PITCH STOP ASSY.	2	
B-882-1	High Pitch Stop Bracket	2	
A-883	High Pitch Stop Pin	2	
A-884	High Pitch Stop Spring	2	
AN936A10	Washer	2	
AN380-3-3	Cotter Pin	2	

Part No.	Nomenclature	No. Required	
		-2B	-2C
830-9	AUTOMATIC HIGH PITCH STOP ASSY.		2
B-984	High Pitch Stop Bracket		2
A-883	High Pitch Stop Pin		2
A-884	High Pitch Stop Spring		2
AN936A10	Washer		2
AN380-3-3	Spring Mounting Cotter Pins		2
	AUTOMATIC HIGH PITCH STOP ASSOCIATED PARTS		
AN74-5	Mounting Bolt	4	4
831-5A	FEATHERING SPRING SUB-ASSEMBLY	1	1
B-855A	Pilot Tube	1	1
A-856	Outer Mushroom	1	1
A-860-1	Feathering Spacer Tube	1	1
B-953	Feathering Spring Inner (Heavy)	1	1
B-853	Feathering Spring Outer	1	1
A-857	Rear Spring Retainer	1	1
A-858	Rear Split Retainer	1	1
832-24	PISTON ASSEMBLY	1	1
C-852-6	Piston Jack Unit	1	1
C-852-6 Det. #1	Piston	1	1
A-862	Plastic Bushing	1	1
A-946	Bushing	4	4
A-1464	Link Pin Unit	2	2
AN501A10-6	Safety Screws	2	2
A-861-3	Link Arms	2	2
	HYDRAULIC ASSOCIATED PARTS		
B-854	Cylinder	1	1
PRP-909-13	Cylinder "O" Ring	1	1
A-859	Split Retainer, Front	1	1
A-899	Feathering Stops	2	2
AN501A10-6	Screws, Feathering Stop	4	4
PRP-902-46	"O" Ring, Piston	1	1
A-863	Dust Seal	1	1
PRP-914-12	"O" Ring, Pilot Tube	1	1
A-880-2	Flexlock Nut, Piston	1	1
835-6P	SPINNER ASSEMBLY	1	1
C-888-4P	Spinner Dome	1	1
C-885P	Bulkhead Adaptor	1	1
AN526C1032R7	Button Screws	14	14

PARTS LIST

Model HC-82X20-1B

Assembly Drawing D-823

Part No.	Nomenclature	No. Required
840-5	HUB SPIDER UNIT	1
C-157-5	Hub Spider	1
A-158L	Pilot Tube	2
A-155	Bushing	1
834-3	Guide Collar Unit	1
	HUB ASSOCIATED PARTS	
A-14-A	Blade Bearing	2
A-159	Split Ring	2
PRP-909-6	"O" Ring, Blade	2
A-50-3	Rear Cone	1
PRP-909-7	"O" Ring, Hub Mounting	1
A-870	Puller Ring	1
A-63-B	Hub Nut	1
A-847	Pin Safety, Hub Lock	1

Part No.	Nomenclature	No. Required
838-25	CLAMP ASSEMBLY (838-21 Alternate)	2
C-3-1A	Clamp	2
A-295	Linkscrew	2
A-285	Staking Pin, Linkscrew	2
MS-15001-1	Zerk Fitting	6
838-24	Counterweight Unit	2
A-65	Counterweight Staking Pin	2
A-2036-30	Counterweight Socket Head Screw	4
A-285	Socket Screw Staking Pin	4
A-47-1	Clamp Gasket	4
A-282	Socket Screw	4
AN380-3-2	Cotter Pin	4
A-2017	Clamp Bolts	4
A-2043	Clamp Nuts	4
AN960-616	Washer	4
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weight	As Needed
AN501A10-6	Weight Screws	4
B-828-3	PISTON ASSEMBLY	1
B-966-3	Piston Unit	1
B-966	Piston (B-805 interchangeable)	1
A-862	Plastic Bushing	1
A-826-3	Push Rod	2
A-114F	Rod Staking Pin	2
A-821-1	Fork	2
A-2039	Set Screw	2
A-827-2	Rod Sleeve	2
A-965	Washer	2
A-848	Flexlock Nut	2
A-970	Spacer	2
	HYDRAULIC ASSOCIATED PARTS	
B-806-1	Cylinder	1
PRP-909-13	Cylinder "O" Ring	1
PRP-902-46	Piston "O" Ring	1
A-810	Dust Seal	1
A-95-A	Block, Pitch Change	2
835-15	SPINNER ASSEMBLY (No Stops)	1
C-888-4	Dome (Not Polished)	1
AN526C1032R7	Dome Mounting Screws	14
C-807-6	Bulkhead	1

PARTS LIST
Model HC-82XL-1D

Drawing D-809

Part No.	Nomenclature	No. Required HC-82XL, -1D
840-29	HUB SPIDER SUB-ASSEMBLY	1
C-801-12	Hub Spider	1
834-4	Guide Collar Unit	1
A-158L	Blade Pilot Tubes	2
A-1332-1	Staking Pin, Collar	2
	ASSOCIATED PARTS	
A-14-A	Blade Mounting Bearings	2
A-159	Blade Mounting Split Ring	2
PRP-909-6	Blade Mounting "O" Rings	2

Part No.	Nomenclature	No. Required HC-82XL, -1D
838-20	CLAMP & COUNTERWEIGHT SUB-ASSY.	2
C-3-1A	Clamp	2
B-271-2	Counterweight Assembly	2
A-65	Counterweight Staking Pin	2
A-295	Linkscrews	2
A-285	Staking Pins, Linkscrew	2
ASSOCIATED PARTS FOR 838-20 CLAMP & COUNTERWEIGHT SUB-ASSY.		
A-47-1	Clamp Gaskets	4
A-48	Balance Weights	As Needed
A-95-A	Pitch Change Blocks	2
A-282	Clamp Mounting Socket Screws	4
A-2017	Clamp Mounting Bolts	4
A-2043	Clamp Mounting Self Locking Nuts	4
MS15001-1	Zerk Fitting	4
AN380-3-2	Counterweight Mounting Cotter Pins	4
AN501-A10-6	Balance Weight Mounting Screws	4
A-2036-30	Counterweight Mounting Socket Serews	4
AN960-616	Washer	4
A-285	Staking Pin	4
B-828-8	PISTON JACK SUB-ASSEMBLY	1
B-966	Piston (B-805 interchangeable)	1
A-826-8	Push Rod	2
A-921-1	Fork	2
A-827-1	Bushing	2
A-965	Washer	2
A-848	Nut, Flex Lock	2
A-2039	Set Screw	2
A-862	Plastic Bushing	1
A-114-F	Rod Staking Pins	2
ASSOCIATED HYDRAULIC PARTS		
PRP-902-46	"O" Ring, Piston Seal	1
B-806	Cylinder	1
A-810	Felt Seal	1
PRP-909-13	Cylinder "O" Ring	1
835-6	SPINNER SUB-ASSEMBLY	1
C-888-4	Spinner Dome	1
C-885	Spinner Adaptor	1
AN526C1032R7	Screws	14
PROPELLER MOUNTING PARTS		
PRP-902-32	"O" Ring	1
A-943-1	Screw, Flange Mounting	6
B-933-1	Shim, Plastic	1

PARTS LIST

Assembly Drawing D-865

Model HC-82X20-2, -2A

Part No.	Nomenclature	No. Required	
		-2	-2A
840-5	HUB SPIDER SUB-ASSEMBLY	1	
C-157-5	Hub Spider (C-157-4 Hub Spider for -2)	1	
A-158L	Pilot Tubes	2	
A-155	Hub Bushings	2	

Part No.	Nomenclature	No. Required	
		-2	-2A
	ASSOCIATED PARTS		
A-50-3	Rear Cone	1	1
A-63-B	Hub Retention Nut	1	1
A-14-A	Blade Mounting Bearings	2	2
A-159	Split Rings	2	2
A-870	Hub Puller Ring (Not Req'd With B-2063)	1	1
PRP-909-7	"O" Ring, Hub Shaft	1	1
PRP-909-6	"O" Ring Blade	2	2
A-847	Retention Nut Safety Pin, Hub	1	1
838-8 (For 8433 and 9333 Blades)	CLAMP & COUNTERWEIGHT SUB-ASSY.	2	2
C-3-5	Clamps	2	2
833-1	Counterweights	2	2
A-65	Counterweight Staking Pins	2	2
A-285	Staking Pin, Linkscrew	2	2
A-7-2	Linkscrew	2	2
A-47-1	Clamp Gaskets	4	4
A-48	Balance Weights	As Needed	
A-282	Clamp Mounting Socket Screws	4	4
AN501-A10-6	Balance Weight Mounting Screws	4	4
A-2017	Clamp Mounting Bolts	4	4
A-2043	Clamp Mounting Lock Nuts	4	4
AN960-616	Clamp Mounting Washers	4	4
A-2036-30	Counterweight Mounting Socket Screws	4	4
A-285	Staking Pins (AN380-3-2 Optional)	4	4
AN380-3-2	Cotter Pins	4	4
MS15001-1	Zerk Fitting	4	4
No. 3	Lubricaps	4	4
	CLAMP ASSOCIATED PARTS		
A-944	Sleeve, Linkscrew	2	2
AN380-3-3	Cotter Pin	2	2
A-881	High Pitch Stop Plate	2	2
AN501A10-6	Plate Screw	4	4
830-2	AUTOMATIC HIGH PITCH STOP	2	2
B-882-1	High Pitch Stop Bracket	2	2
A-883	High Pitch Stop Pin	2	2
A-884	High Pitch Stop Spring	2	2
AN936A10	Washer	2	2
AN380-3-3	Spring Mounting Cotter Pins	2	2
831-7	FEATHERING SPRING ASSEMBLY		1
B-1405	Feathering Spring		1
A-866	Spring Rear Retainer		1
A-867	Spring Rear Split Retainer		1
B-868A	Pilot Tube		1
A-871	Outer Mushroom		1
831-2	FEATHERING SPRING ASSEMBLY	1	
B-1405	Feathering Spring	1	
A-866	Spring Rear Retainer	1	
A-867	Spring Rear Split Retainer	1	
B-868	Pilot Tube	1	
A-871	Outer Mushroom	1	
A-818	Feathering Spacer Tube	1	
A-819	Feathering Spacer Ring	1	
832-10	PISTON ASSEMBLY	1	
A-979-1	Link	2	
AN501-A10-6	Mounting Screws	4	
A-861-1	Link Arms	2	
C-852-2	Piston	1	
A-862	Plastic Piston Bushing	1	
A-872	Link Arm Mounting Pins	2	
AN501A10-18	Screw	1	

Part No.	Nomenclature	No. Required	
		-2	-2A
832-11	PISTON ASSEMBLY		1
C-852-3	Piston		1
A-862	Plastic Bushing		1
A-817-2	Rod		2
A-114-F	Pin		2
A-979-1	Link		2
A-872	Link Arm Mounting Pin		2
AN501A10-6	Mounting Screw		4
AN501A10-18	Screw		1
A-861-1	Link Arm		2
HYDRAULIC ASSOCIATED PARTS			
B-854	Cylinder	1	1
A-863	Piston Felt Dust Seal	1	1
PRP-909-13	"O" Ring, Piston Seal	1	1
PRP-902-46	"O" Ring, Cylinder	1	1
834-2	Guide Collar Unit	1	1
A-859	Front Split Retainer	1	1
A-899	Feathering Stop	2	2
AN501A10-6	Stop Screw	4	4
A-880-1	Flexlock Nut	1	1
PRP-914-8	Pilot Tube "O" Ring	1	1
835-1S	SPINNER ASSEMBLY	1	1
C-888-4	Spinner Dome	1	1
AN526C1032R7	Screws, Dome Mounting	14	14
C-807-2S	Spinner Bulkhead	1	1

PARTS LIST

Model HC-82XF-2B, -2B1, -2C

Assembly Drawing D-851

Part No.	Nomenclature	No. Required		
		2B	2B1 (REPAIR ONLY)	2C
840-3	HUB SPIDER ASSEMBLY	1	1	1
C-801-2	Hub Spider	1	1	1
A-158L	Pilot Tube	2	2	2
HUB ASSOCIATED PARTS				
A-14-A	Blade Mtg. Bearings	2		2
A-159	Split Rings	2		2
A-14-B	Blade Bearing		2	
A-969	Split Ring		2	
PRP-909-6	"O" Ring, Hub Mtg.	1	1	1
PRP-909-6	"O" Ring, Blade	2	2	2
A-2040 or A-1333-4	Hub Mtg. Hex Bolts	6	6	6
.5002x1 Danley	Hub Mtg. Dowel Pin	2	2	2

Part No.	Nomenclature	No. Required		
		2B	2B1 (REPAIR ONLY)	2C
838-10	CLAMP & COUNTERWEIGHT ASSEMBLY	2	2	2
C-3-5A	Clamps	2	2	2
833-2	Counterweight	2	2	2
A-65	Counterweight Staking Pins	2	2	2
A-304	Linkscrew	2	2	2
A-285	Staking Pin	2	2	2
A-2036-30	Counterweight Screw	4	4	4
AN380-3-2	Counterweight Cotter Pin	4	4	4
A-47-1	Clamp Gaskets	4	4	4
A-282	Clamp Mounting Socket Screws	4	4	4
A-2043	Clamp Mounting Lock Nuts	4	4	4
A-2017	Clamp Bolts	4	4	4
AN960-616	Clamp Mounting Washers	4	4	4
No. 3	Lubricaps	4	4	4
MS15001-1	Clamp Zerk Fitting	4	4	4
A-285	Staking Pin, Socket Screw (AN380-3-2 Optional)	4	4	4
	CLAMP ASSOCIATED PARTS			
A-48	Balance Weight		As Needed	
AN501-A10-6	Weight Screw	4	4	4
A-881	Stop Plate	2	2	2
AN501A10-6	Stop Screws	4	4	4
A-944	Sleeve, Link Screw	2	2	2
AN380-3-3	Sleeve Cotter Pin	2	2	2
830-2	AUTOMATIC HIGH PITCH STOP ASSY.	2	2	2
B-882-1	High Pitch Stop Bracket	2	2	2
A-883	High Pitch Stop Pin	2	2	2
A-884	High Pitch Stop Spring	2	2	2
AN380-3-3	Spring Mounting Cotter Pins	2	2	2
AN936A10	Washer	2	2	2
	AUTOMATIC HIGH PITCH STOP ASSOCIATED PARTS			
AN74-5	Hex Head Bolts	4	4	4
AN4-15A	Hex Head Bolts	4	4	4
H10-4	Kaylock Nuts	4	4	4
AN960-416L	Mounting Washer	4	4	4
AN363-428	Flexlock Nut (Optional)	4	4	4
831-5A	FEATHERING SPRING ASSEMBLY	1	1	
A-856	Outer Mushroom	1	1	
A-857	Spring Rear Retainer	1	1	
A-858	Spring Rear Split Retainer	1	1	
B-853	Feathering Spring, Outer	1	1	
B-953	Feathering Spring, Inner (Heavy)	1	1	
B-855A	Pilot Tube	1	1	
A-860-1	Feathering Spacer Tube	1	1	
831-1A	FEATHERING SPRING ASSEMBLY			1
A-856	Outer Mushroom			1
A-857-1	Spring Rear Retainer			1
A-858	Spring Rear Split Retainer			1
B-853	Feathering Spring			1
B-855-2A	Pilot Tube			1
A-860-1	Feathering Spacer Tube			1
B-953	Spring, Feathering, Inner			1
832-24	PISTON ASSEMBLY	1	1	1
C-852-6	Piston Jack Unit	1	1	1
C-852-6 Det. #1	Piston	1	1	1
A-862	Plastic, Piston Bushing	1	1	1
A-946	Bronze Bushings	4	4	4
AN501-A10-6	Safety Bar Mounting Screws	4	4	4
A-861-3	Link Arms	2	2	2
A-1464	Link Pin Units	2	2	2

Part No.	Nomenclature	No. Required		
		2B	2B1 (REPAIR ONLY)	2C
	HYDRAULIC ASSOCIATED PARTS			
B-854	Cylinder	1	1	1
PRP-909-13	Cylinder "O" Ring	1	1	1
A-859	Split Retainer Front	1	1	1
A-899	Feathering Stop	2	2	2
AN501-A10-6	Stop Screw	4	4	4
A-880-2	Piston Nut	1	1	2
PRP-914-12	"O" Ring, Pilot Tube	1	1	1
PRP-902-46	"O" Ring	1	1	1
A-863	Dust Seal	1	1	1
835-13	SPINNER ASSEMBLY	1	1	1
C-888-4	Spinner Dome	1	1	1
AN526C1032R7	Button Head Rivets	14	14	14
C-807-1	Spinner Bulkhead	1	1	1

PARTS LIST

Model HC-82XK-2B, -2B1, -2C1

Assembly Drawing D-851

Part No.	Nomenclature	No. Required		
		2B	2B1	2C1
840-36	HUB SPIDER SUB-ASSEMBLY	1	1	
C-960	Hub Spider	1	1	
A-158L	Pilot Tubes	2	2	
840-31	HUB SPIDER SUB-ASSEMBLY			1
C-960-2	Hub Spider			1
A-158L	Pilot Tubes			2
	ASSOCIATED PARTS FOR 840-36 and 840-31			
A-14A	Bearing	2		
A-14B	Bearing		2	2
A-159	Split Rings	2		
A-969	Split Rings		2	2
PRP-902-32	Shaft Mtg. "O" Ring	1	1	1
PRP-909-6	Blade Mtg. "O" Ring	2	2	2
B-1322	Shim, Flange Mtg.	1	1	1
A-1328	Screw, Prop Mtg.	4	4	4
A-1315	Screw, Prop Mtg.	2	2	
A-1333 or -3	Screw, Prop Mtg.			2
838-10	(For 8433 and 8833 Blades) CLAMP & COUNTERWEIGHT SUB-ASSY.	2	2	2
C-3-5A	Clamps	2	2	2
833-2	Counterweight	2	2	2
A-65	Counterweight Staking Pins	2	2	2
A-304	Linkscrew	2	2	2
A-285	Staking Pin, Linkscrew	2	2	2
A-2036-30	Counterweight Screw	4	4	4
AN380-3-2	Counterweight Cotter Pin	4	4	4
A-47-1	Clamp Gaskets	4	4	4
A-282	Clamp Mounting Socket Screws	4	4	4
A-2043	Clamp Mounting Lock Nuts	4	4	4
A-2017	Clamp Bolts	4	4	4
A-285	Staking Pin (AN380-3-2 Optional Cotter Pin)	4	4	4
AN960-616	Clamp Mounting Washers	4	4	4
No. 3	Lubricaps	4	4	4
MS15001-1	Clamp Zerk Fitting	4	4	4

Part No.	Nomenclature	No. Required		
		2B	2B1	2C1
CLAMP ASSOCIATED PARTS				
A-48	Balance Weight	As Needed		
AN501-A10-6	Weight Screw	4	4	4
A-881	Stop Plate	2	2	2
AN501A10-6	Stop Screws	4	4	4
A-944	Sleeve, Link Screw	2	2	2
AN380-3-3	Sleeve Cotter Pin	2	2	2
830-2	AUTOMATIC HIGH PITCH STOP SUB-ASSY.	2	2	
B-882-1	High Pitch Stop Bracket	2	2	
A-883	High Pitch Stop Pin	2	2	
A-884	High Pitch Stop Spring	2	2	
AN380-3-3	Spring Mounting Cotter Pins	2	2	
AN936A10	Washer	2	2	
830-9A	AUTOMATIC HIGH PITCH STOP SUB-ASSY.			2
AN380-3-3	Spring Mounting Cotter Pins			2
A-884	High Pitch Stop Spring			2
B-984-1	High Pitch Stop Bracket			2
A-883	High Pitch Stop Pin			2
AN936A10	Washer			2
AUTOMATIC HIGH PITCH STOP ASSOCIATED PARTS				
AN74-5	Hex Head Bolt	4	4	4
831-5A	FEATHERING SPRING SUB-ASSEMBLY	1	1	1
A-856	Outer Mushroom	1	1	1
A-857	Spring Rear Retainer	1	1	1
A-858	Spring Rear Split Retainer	1	1	1
B-853	Feathering Spring Outer	1	1	1
B-953	Feathering Spring Inner (Heavy)	1	1	1
B-855A	Pilot Tube	1	1	1
A-860-1	Feathering Spacer Tube	1	1	1
832-24	PISTON ASSEMBLY	1	1	1
C-852-6	Piston Jack Unit	1	1	1
C-852-6 Det. #1	Piston	1	1	1
A-862	Plastic, Piston Bushing	1	1	1
A-946	Bushing	4	4	4
AN501-A10-6	Safety Bar Mounting Screws	2	2	2
A-861-3	Link Arms	2	2	2
A-1464	Link Assembly	2	2	2
HYDRAULIC ASSOCIATED PARTS				
B-854	Cylinder	1	1	1
PRP-909-13	Cylinder "O" Ring	1	1	1
A-859	Split Retainer Front	1	1	1
A-899	Feathering Stop	2	2	2
AN501-A10-6	Stop Screw	4	4	4
A-880-2	Piston Nut	1	1	1
PRP-914-12	"O" Ring, Pilot Tube	1	1	1
PRP-902-46	"O" Ring	1	1	1
A-863	Dust Seal	1	1	1
835-6P	SPINNER SUB-ASSEMBLY	1	1	1
C-888-4P	Spinner Dome	1	1	1
C-885P	Bulkhead Adaptor	1	1	1
AN526C1032R7	Button Screws	14	14	14

PARTS LIST

Model HC-82XK-1D

Assembly Drawing D-809

Part No.	Nomenclature	No. Required
840-33	HUB SPIDER UNIT	1
C-960-1	Hub Spider	1
A-158L	Pilot Tube	2
834-9	Guide Collar Unit	1
A-1332-2	Staking Pin, Collar	2
	HUB ASSOCIATED PARTS	
A-14A	Blade Bearing	2
A-159	Split Rings	2
A-1333-3	Mounting Bolts	6
PRP-902-32	"O" Ring	1
B-1322	Shim	1
PRP-909-6	Blade & Hub "O" Ring	3
A-1333-2	Hex Head Bolts	2
838-2	CLAMP & COUNTERWEIGHT ASSEMBLY	2
C-3-1A	Clamp	2
A-295	Link Screw	2
A-285	Staking Pin, Linkscrew	2
MS15001-1	Zerk Fitting	3
A-47-1	Clamp Gasket	4
A-282	Socket Screw	4
A-48	Balance Weight	As Needed
AN501-A10-6	Weight Screws	4
A-2017	Clamp Bolts	4
AN960-616	Mounting Washer	4
A-2043	Clamp Nuts	4
B-891-1	Counterweight Assembly	2
B-271	Counterweight	2
A-293	Stop	2
A-272-2	Weight Slug	2
A-2036-30	Mounting Bolt	4
AN380-3-2	Cotter Pin	4
A-65	Counterweight Staking Pin	2
A-285	Staking Pin	4
B-828-8	PISTON ASSEMBLY	1
B-805	Piston (B-966 interchangeable)	1
A-862	Plastic Bushing	1
A-826-8	Push Rod	2
A-921-1	Fork	2
A-2039	Set Screw	2
A-827-1	Rod Sleeve	2
A-114-F	Staking Pin	2
A-965	Washer	2
A-848	Flexlock Nut	2
	HYDRAULIC ASSOCIATED PARTS	
B-806	Cylinder	1
PRP-909-13	Cylinder "O" Ring	1
PRP-902-46	Piston "O" Ring	1
A-810	Felt Seal	1
A-95-A	Block, Pitch Change	2
834-9	GUIDE COLLAR ASSEMBLY	
B-1326-1	Guide Collar	1
A-116-A-1	Plastic Bushing	2
A-114-C	Staking Pin	4
A-2038-10	Socket Screw	2
835-6	SPINNER ASSEMBLY	1
C-888-4	Spinner Dome	1
C-885	Spinner Adaptor	1
AN526C1032R7	Screws	14
	Governor—Woodward 210,000 series or Hartzell B-2.	

PARTS LIST
Model HC-83XF-1A, -1A1

Assembly Drawing D-1475

Part No.	Nomenclature	No. Required	
		-1A	-1A1
840-69	HUB SPIDER UNIT	1	1
C-1426-1	Hub Spider (With Lugs)	1	1
A-158L	Pilot Tubes	3	3
	HUB ASSOCIATED PARTS		
A-14-A	Blade Bearings	3	
A-14-B	Blade Bearings		3
A-159	Split Ring	3	
A-969	Split Ring		3
PRP-909-6	"O" Ring, Blade	3	3
PRP-909-6	"O" Ring, Shaft	1	1
A-2040	Hex Head Bolts	6	6
AN960-816	Washers	6	6
.5002x1"	Danley Dowel Pins	2	2
838-61	CLAMP ASSEMBLY	3	3
C-3-1A	Clamp	3	3
A-295	Linkscrew	3	3
A-285	Staking Pin, Linkscrew	3	3
MS-15001-1	Zerk Fittings	6	6
833-4R	Counterweight Unit	3	3
A-65	Staking Pin, Counterweight	3	3
A-2036-30	Socket Head Cap Screws, Counterweight	6	6
A-285	Staking Pins, Socket Screw	6	6
A-47-1	Clamp Gaskets	6	6
A-282	Clamp Socket Screws	6	6
AN380-3-2	Cotter Pins, Socket Screw	6	6
A-2017	Clamp Bolts	6	6
AN960-616	Washers	6	6
A-2043	Clamp Nuts	6	6
	CLAMP ASSOCIATED PARTS		
A-48	Balance Weights	As Needed	
AN501A10-6	Weights	6	6
B-1378-3	PISTON ASSEMBLY	1	1
B-1421-1	Piston Unit	1	1
B-1421	Piston	1	1
A-862	Plastic Bushing	1	1
A-826-1	Push Rods	3	3
A-114-G	Staking Pins, Rod	3	3
A-1926	Forks	3	3
A-2039	Socket Set Screws	3	3
A-827-1	Sleeves, Rod	3	3
A-965	Washers	3	3
A-848	Flexlock Nuts	3	3
	HYDRAULIC ASSOCIATED PARTS		
B-806	Cylinder	1	1
PRP-909-13	"O" Ring, Cylinder	1	1
A-810	Dust Seal	1	1
PRP-902-46	"O" Ring, Piston	1	1
A-95-A	Block, Pitch Change	2	2
835-9	SPINNER ASSEMBLY	1	1
C-888-6	Dome	1	1
AN526C1032R8	Screws	9	9
C-807-8	Bulkhead	1	1
836-18	SPINNER ASSEMBLY	1	1
D-1367-6	Dome	1	1
AN526C1032R8	Screw	12	12
D-1415-4	Bulkhead	1	1

Part No.	Nomenclature	No. Required	
		-1A	-1A1
836-19	SPINNER ASSEMBLY (Anti-Icing)	1	1
D-1367-7	Dome	1	1
AN526C1032R8	Screw	12	12
D-1415-6	Bulkhead (Anti-Icing)	1	1
	Beech Travel Tubes	3	3
	SPINNER MOUNTING PARTS		
A-846 or -3	Spinner Lugs	4	4
AN4H4A	Hex Head Bolts	4	4
AN4H14A	Hex Head Bolts	4	4
AN960-416	Washers	4	4
AN363-428	Flexlock Nuts (H10-4 Kaylock Alternate)	4	4

PARTS LIST

Models HC-83X20-1A, -1B, -1C, -1A1, -1B1, -1C1

Assembly Drawing D-1420

Part No.	Nomenclature	No. Required					
		1A	1B	1C	1A1	1B1	1C1
840-12	HUB SPIDER UNIT	1	1	1	1	1	1
C-1404-4	Hub Spider	1	1	1	1	1	1
A-158L	Pilot Tube	3	3	3	3	3	3
A-155	Bushing	1	1	1	1	1	1
	HUB ASSOCIATED PARTS						
A-14-A	Blade Bearing	3	3	3			
A-14-B	Blade Bearing				3	3	3
A-159	Split Ring	3	3	3			
A-969	Split Ring				3	3	3
PRP-909-6	"O" Ring, Blade	3	3	3	3	3	3
A-50-5	Rear Cone	1			1		
A-50-3	Rear Cone		1	1		1	1
PRP-909-7	"O" Ring, Shaft	1	1	1	1	1	1
A-63-B	Hub Nut	1	1	1	1	1	1
A-870	Puller Ring	1	1	1	1	1	1
A-847	Safety Pin, Hub	1	1	1	1	1	1
838-21 (838-25 Alternate)	CLAMP ASSEMBLY	3	3	3	3	3	3
C-3-1A	Clamp	3	3	3	3	3	3
A-295	Linkscrew	3	3	3	3	3	3
A-285	Staking Pin, Linkscrew	3	3	3	3	3	3
MS15001-1	Zerk Fitting	6	6	6	6	6	6
833-17	Counterweight Unit	3	3	3	3	3	3
A-65	Staking Pin, Counterweight	3	3	3	3	3	3
A-2036-30	Socket Head Cap Screws, Counterweight	6	6	6	6	6	6
A-285	Staking Pins, Sk. Screw	6	6	6	6	6	6
A-47-1	Clamp Gasket	6	6	6	6	6	6
A-282	Clamp Socket Screw	6	6	6	6	6	6
AN380-3-2	Cotter Pin, Sk. Screw	6	6	6	6	6	6
A-2017	Clamp Bolts	6	6	6	6	6	6
AN960-616	Washer	6	6	6	6	6	6
A-2043	Clamp Nuts	6	6	6	6	6	6
B-1378-5	PISTON ASSEMBLY	1			1		
B-1421-5	Piston Unit	1			1		
B-1421	Piston	1			1		
A-862	Plastic Bushing	1			1		
A-826-5	Push Rod	3			3		
A-114-G	Staking Pins, Rod	3			3		
A-1926	Forks	3			3		
A-2039	Socket Set Screw	3			3		
A-827-8	Sleeves, Rod	3			3		
A-965	Washer	3			3		
A-848	Flexlock Nut	3			3		
A-970	High Stop	3			3		
A-970-3	High Stop	3			3		

Part No.	Nomenclature	No. Required					
		1A	1B	1C	1A1	1B1	1C
B-1378-1	PISTON ASSEMBLY		1			1	
B-1421-5	Piston Unit		1			1	
B-1421	Piston		1			1	
A-862	Plastic Bushing		1			1	
A-826-5	Push Rod		3			3	
A-114-G	Staking Pins, Rod		3			3	
A-1926	Fork		3			3	
A-2039	Socket Set Screw		3			3	
A-827-6	Sleeve, Rod		3			3	
A-965	Washer		3			3	
A-848	Flexlock Nut		3			3	
A-970-1	High Stop		3			3	
B-1378-4	PISTON ASSEMBLY			1			1
B-1421-5	Piston Unit			1			1
B-1421	Piston			1			1
A-862	Plastic Bushing			1			1
A-826-5	Push Rod			3			3
A-114-G	Staking Pin, Rod			3			3
A-1926	Fork			3			3
A-2039	Socket Set Screw			3			3
A-827-6	Sleeve, Rod			3			3
A-965	Washer			3			3
A-848	Flexlock Nut			3			3
A-970-3	High Stop			3			3
	HYDRAULIC ASSOCIATED PARTS						
B-806-1	Cylinder	1	1	1	1	1	1
PRP-909-13	"O" Ring Cylinder	1	1	1	1	1	1
A-810	Dust Seal	1	1	1	1	1	1
PRP-902-46	"O" Ring, Piston	1	1	1	1	1	1
A-95-A	Blocks, Pitch Change	3	3	3	3	3	3
836-15R	SPINNER ASSEMBLY	1			1		
D-1367-6	Dome	1			1		
AN526C1032R8	Screw	12			12		
D-1387RH	Bulkhead	1			1		
AN526C1032R7	Screw	12			12		
835-8	SPINNER ASSEMBLY		1	1		1	1
C-888-6	Dome		1	1		1	1
AN526C1032R7	Screw		9	9		9	9
C-1429	Bulkhead		1	1		1	1

PARTS LIST

Model HC-83X20-2C, -2C1, -2CL

Assembly Drawing D-1400

Part No.	Nomenclature	No. Required		
		2C	2C1	2CL
840-12	HUB SPIDER UNIT	1	1	1
C-1404-4	Hub Spider	1	1	1
A-158L	Pilot Tube	3	3	3
A-155	Bushing	1	1	1
	HUB ASSOCIATED PARTS			
A-50-3	Rear Cone	1	1	1
PRP-909-7	Hub "O" Ring	1	1	1
A-63-B	Hub Nut	1	1	1
A 870	Puller Ring	1	1	1
A-847	Pin, Safety	1	1	1
A-159	Split Ring	3		3
A-14-A	Blade Bearing	3		3
PRP-909-6	Blade "O" Ring	3	3	3
A-14-B	Bearing, Blade		3	
A-969	Split Ring		3	

Part No.	Nomenclature	No. Required		
		2C	2C1	2CL
838-6	CLAMP ASSEMBLY (8433, 8833 Blades)	3	3	
C-3-5A	Clamp	3	3	
833-4	Counterweight Unit	3	3	
838-23	CLAMP ASSEMBLY (9333 blades)	3	3	
C-3-5A	Clamp	3	3	
833-4R	Counterweight Unit	3	3	
838-18	CLAMP ASSEMBLY (L8433, L8433H Blades)			3
C-3-5AL	Clamp			3
833-4	Counterweight Unit			3
838-23L	CLAMP ASSEMBLY (L9333CH-3, -5 Blades)			3
C-3-5AL	Clamp			3
833-4L	Counterweight			3
COMMON CLAMP PARTS				
A-304	Link Screw	3	3	3
A-285	Staking Pin, Linkscrew	3	3	3
MS15001-1	Zerk Fitting	6	6	6
A-65	Counterweight Staking Pin	3	3	3
A-2036-30	Counterweight Socket Head Screws	6	6	6
A-285	Counterweight Sc. Staking Pin (or AN380-3-2)	6	6	6
A-47-1	Clamp Gasket	6	6	6
A-282	Socket Screw	6	6	6
AN380-3-2	Cotter Pin	6	6	6
A-2017	Clamp Bolts	6	6	6
AN960-616	Mounting Washer	6	6	6
A-2043	Clamp Nuts	6	6	6
CLAMP ASSOCIATED PARTS				
A-48	Balance Weights		As Needed	
AN501A10-6	Weight Screws	6	6	6
A-944	Sleeve, Linkscrew	3	3	3
AN380-3-3	Cotter Pin, Linkscrew	3	3	3
A-881	Stop Plate	3	3	3
A-2016	Plate Screws	6	6	6
831-7	(obsolete) FEATHERING SPRING ASSEMBLY	1	1	
B-868A	Pilot Tube	1	1	
A-867	Split Ring	1	1	
A-866	Retainer Ring	1	1	
B-1405	Spring	1	1	
A-871	Mushroom	1	1	
PRP-914-8	Nut "O" Ring	1	1	
831-11	(current) FEATHERING SPRING ASSEMBLY	1	1	1
B-868A	Pilot Tube	1	1	1
A-871	Mushroom	1	1	1
A-866	Spring Retainer	1	1	1
A-867	Split Retainer	1	1	1
B-1363-1	Spring	1	1	1
PRP-914-8	Nut "O" Ring	1	1	1
HYDRAULIC ASSOCIATED PARTS				
A-859	Split Retainer Ring	1	1	1
A-899	Feathering Stop	2	2	2
AN501A10-4	Stop Mounting Screw	4	4	4
A-880-1	Flexlock Nut	1	1	1
PRP-902-46	Piston "O" Ring	1	1	1
A-863	Dust Seal	1	1	1
B-854	Cylinder	1	1	1
PRP-909-13	Cylinder "O" Ring	1	1	1

Part No.	Nomenclature	No. Required		
		2C	2C1	2CL
832-14	PISTON ASSEMBLY	1	1	
C-1401-3	Piston Unit	1	1	
C-1401-3 Det. #1	Piston	1	1	
A-862	Plastic Bushing	1	1	
A-817-2	Guide Rod	3	3	
A-114-B	Rod Staking Pin	3	3	
A-946	Pin Bushing	6	6	
A-2037	Socket Set Screw	3	3	
A-1444	Washer	3	3	
AN316-5R	Jam Nut	3	3	
A-861-3	Link Arm	3	3	
A-1464	Link Pin Unit	3	3	
AN501-A10-6	Screw	3	3	
832-14L	PISTON ASSEMBLY			1
C-1401-3L	Piston Unit			1
C-1401-3L Det. #1	Piston			1
A-862	Plastic Bushing			1
A-817-2	Guide Rod			3
A-114-B	Rod Staking Pin			3
A-946	Pin Bushing			6
A-2037	Socket Set Screw			3
A-1444	Washer			3
AN316-5R	Jam Nut			3
A-861-3L	Link Arm			3
A-1464	Link Pin Unit			3
AN501-A10-6	Screw			3
834-1	GUIDE COLLAR UNIT	1	1	
B-1402	Guide Collar	1	1	
A-116-D-1	Plastic Bushing	3	3	
A-114-C	Staking Pin	6	6	
A-2038-12	Socket Head Cap Screw	1	1	
834-1L	GUIDE COLLAR UNIT			1
B-1402L	Guide Collar			1
A-116-D-1	Plastic Bushing			3
A-114-C	Staking Pin			6
A-2038-12	Socket Head Cap Screw			1
835-10S	SPINNER ASSEMBLY	1	1	
C-888-6	Dome	1	1	
AN526C1032R7	Dome Mounting Screws	12	12	
C-807-7S	Bulkhead (With 830-5 Stops)	1	1	
C-807-10	Bulkhead (Without Stops)	1	1	
830-5	Auto High Pitch Stop Units	3	3	
B-882-5	Bracket	3	3	
A-883	Pin	3	3	
A-884	Spring	3	3	
AN936A10	Washer (Internal Lock)	3	3	
AN380-3-3	Cotter Pin	3	3	
835-11S	SPINNER ASSEMBLY			1
C-888-6	Dome			1
AN526C1032R7	Dome Mounting Screws			12
C-807-7LS	Bulkhead (With 830-5L Stops)			1
C-807-10	Bulkhead (Without Stops)			1
830-5L	Auto High Pitch Stop Units			3
B-882-5L	Brackets			3
A-883	Pin			3
A-884	Spring			3
AN936A10	Washer (Internal Lock)			3
AN380-3-3	Cotter Pin			3

PARTS LIST
Model HC-A2XF-1, -1A, K-1, L-1, and
BHC-A2XF-1, -1A

Assembly Drawing D-985

Part No.	Nomenclature	No. Required						
		HC F-1	BHC F-1	HC F-1A	BHC F-1A	HC K-1	HC L-1	
840-42	HUB SPIDER UNIT	1						
C-981-1	Hub Spider	1						
A-158L	Pilot Tubes	2						
834-4	Guide Collar Unit	1						
.5002x1 $\frac{1}{4}$	Danley Dowel Pins	2						
A-846-3	Spinner Lugs	4						
A-2051	Hex Head Bolts	4						
840-47	HUB SPIDER UNIT		1					
C-981-2	Hub Spider		1					
A-158L	Pilot Tubes		2					
834-4	Guide Collar Unit		1					
A-957-1	Collar Staking Pins		2					
A-846-3	Spinner Lugs		4					
A-2051	Hex Head Bolts		4					
840-50	HUB SPIDER UNIT			1				
C-981-3	Hub Spider			1				
A-158L	Pilot Tubes			2				
834-9	Guide Collar Unit			1				
.5002x1 $\frac{3}{8}$	Danley Dowel Pins			2				
A-846-1 or -4	Spinner Lugs			4				
A-2051	Hex Head Bolts			4				
840-51	HUB SPIDER UNIT					1		
C-981-5	Hub Spider					1		
A-158L	Pilot Tubes					2		
834-9	Guide Collar Unit					1		
A-957	Collar Staking Pins					2		
A-846-1 or -4	Spinner Lugs					4		
A-2051	Hex Head Bolts					4		
840-45	HUB SPIDER UNIT						1	
C-982-2	Hub Spider						1	
A-158L	Pilot Tubes						2	
834-9	Guide Collar Unit						1	
A-1332-2	Collar Staking Pins						2	
A-1333-3	Hex Head Bolts						2	
A-1333-2	Hex Head Bolts						2	
840-44	HUB SPIDER UNIT							1
C-982-1	Hub Spider							1
A-158L	Pilot Tubes							2
834-9	Guide Collar Unit							1
A-1332-2	Collar Staking Pins							2
A-943-1	Hex Head Bolts							4
	HUB ASSOCIATED PARTS							
A-311	Ball Spacer	2	2	2	2	2	2	2
A-971	Blade Bearing (Split)	2	2	2	2	2	2	2
A-2027	Bearing, Wire Retention	2	2	2	2	2	2	2
A-972	Hoop, Bearing Guide	2	2	2	2	2	2	2
A-974	Ring, Wire Retention	2	2	2	2	2	2	2
PRP-909-8	Blade "O" Ring	2	2	2	2	2	2	2
PRP-909-6	Hub "O" Ring	1	1	1	1			
.5002x1	Dowel Pins		2		2			
A-1328-1	12 Point Bolts (A-2040 or A-1333-4 Hex Head	6	6	6	6			
A-1381	Washers (AN960-816 Optional) Optional)	6	6	6	6			
PRP-902-32	Hub "O" Ring						1	1
B-933-1	Shim							1
B-1322	Shim						1	
A-943-1	Hex Head Bolt							2
A-1333-3	Hex Head Bolt						2	

Part No.	Nomenclature	No. Required					
		HC F-1	BHC F-1	HC F-1A	BHC F-1A	HC K-1	F L
838-2	CLAMP ASSEMBLY	2	2	2	2	2	
C-3-1A	Clamp	2	2	2	2	2	
A-295	Linkscrew	2	2	2	2	2	
A-285	Staking Pin, Linkscrew	2	2	2	2	2	
MS-15001-1	Zerk Fittings	4	4	4	4	4	
B-891-1	Counterweight Unit	2	2	2	2	2	
A-65	Staking Pin, Counterweight	2	2	2	2	2	
A-2036-30	Socket Head Cap Screws	4	4	4	4	4	
A-285	Staking Pins, Socket St. (AN380-3-2 Cotter	4	4	4	4	4	
A-47-1	Clamp Gaskets Pin Optional)	4	4	4	4	4	
A-282	Socket Screws, Clamp	4	4	4	4	4	
AN380-3-2	Cotter Pins, Socket Sc.	4	4	4	4	4	
A-2017	Clamp Bolts	4	4	4	4	4	
AN960-616	Washers	4	4	4	4	4	
A-2043	Clamp Nuts	4	4	4	4	4	
838-20	CLAMP ASSEMBLY						2
C-3-1A	Clamp						2
A-295	Linkscrew						2
A-285	Staking Pin, Linkscrew						2
MS-15001-1	Zerk Fitting						4
B-271-2	Counterweight Unit						2
A-65	Counterweight Staking Pin						2
A-2036-30	Counterweight Socket Screws						4
A-285	Counterweight Sc. Staking Pins (AN380-3-2						4
A-47-1	Clamp Gaskets Cotter Pin Optional)						4
A-282	Socket Screws						4
AN380-3-2	Cotter Pins						4
A-2017	Clamp Bolts						4
AN960-616	Washers						4
A-2043	Clamp Nuts						4
	CLAMP ASSOCIATED PARTS						
A-48	Balance Weight		As Needed		As Needed		
AN501A10-6	Weight Screw	4	4	4	4	4	4
B-828	PISTON ASSEMBLY	1	1	1	1		
B-966-1	Piston Unit	1	1	1	1		
B-966	Piston	1	1	1	1		
A-862	Plastic Bushing	1	1	1	1		
A-826-1	Push Rods	2	2	2	2		
A-114-G	Rod Staking Pins	2	2	2	2		
A-921-1	Forks	2	2	2	2		
A-2039	Socket Head Set Screws	2	2	2	2		
A-827-1	Rod Sleeves	2	2	2	2		
A-965	Washers	2	2	2	2		
A-848	Flexlock Nuts	2	2	2	2		
B-828-8	PISTON ASSEMBLY					1	1
B-966-8	Piston Unit					1	1
B-966	Piston					1	1
A-862	Plastic Bushing					1	1
A-826-8	Push Rods					2	2
A-114-G	Rod Staking Pins					2	2
A-921-1	Forks					2	2
A-2039	Socket Head Set Screws					2	2
A-827-1	Rod Sleeves					2	2
A-965	Washers					2	2
A-848-1	Flexlock Nuts					2	2
	HYDRAULIC ASSOCIATED PARTS						
B-806	Cylinder	1	1	1	1	1	1
PRP-909-13	Cylinder "O" Ring	1	1	1	1	1	1
A-810	Dust Seal	1	1	1	1	1	1
PRP-902-46	Piston "O" Ring	1	1	1	1	1	1
A-95-A	Block, Pitch Change	2	2	2	2	2	2

Part No.	Nomenclature	No. Required					
		HC F-1	BHC F-1	HC F-1A	BHC F-1A	HC K-1	HC L-1
835-6	SPINNER ASSEMBLY (No Stops)					1	1
C-888-4	Dome (No doublers, H.T., Not Polished)					1	1
AN526C1032R7	Screws					14	14
C-885	Adaptor Ring					1	1
835-13	SPINNER ASSEMBLY (No Stops)	1	1	1	1		
C-888-4	Dome (Not Polished)	1	1	1	1		
AN526C1032R7	Screws	14	14	14	14		
C-807-1	Bulkhead (No Stops)	1	1	1	1		
	SPINNER MOUNTING PARTS						
AN4-14A	Hex Head Bolts	4	4	4	4		
AN960-416	Washers	4	4	4	4		
H10-4	Kaylock Nuts (AN363-428 Flexlock Optional)	4	4	4	4		

PARTS LIST

Model HC-A2X20-1

Assembly Drawing D-2025

Part No.	Nomenclature	No. Required
840-63	HUB SPIDER UNIT	1
C-2026	Hub Spider	1
A-158L	Pilot Tube	2
A-155	Bushing	1
840-67	HUB SPIDER UNIT (Optional)	1
C-2026-2	Hub Spider	1
A-158L	Pilot Tube	2
A-155	Bushing	1
	HUB ASSOCIATED PARTS	
A-311	Ball Spacer	2
A-971	Blade Bearing	2
A-2027	Bearing Retention Ring	2
A-972	Guide Ring	2
A-974	Wire Retention Ring	2
PRP-909-8	"O" Ring, Blade	2
834-3R	Guide Collar Unit	1
A-50-3	Rear Cone	1
PRP-909-7	"O Ring, Shaft	1
A-63-B	Hub Nut	1
A-870 } or B-2063	Puller Ring (Not Req'd With B-2063)	1
A-847	Pin Safety, Hub Lock	1
838-25	CLAMP ASSEMBLY	2
C-3-1A	Clamp	2
A-295	Linkscrew	2
A-285	Staking Pin	2
MS-15001-1	Zerk Fitting	6
833-24	Counterweight Unit	2
A-65	Counterweight Staking Pin	2
A-2036-32	Counterweight Socket Head Screw	4
A-285	Socket Screw Staking Pin	4
A-47-1	Clamp Gasket	4
A-282	Socket Screw	4
AN380-3-2	Cotter Pin	4
A-2017	Clamp Bolts	4
A-2043	Clamp Nuts	4
AN960-616	Washer	4
No. 3	Lubricaps	4
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weight	As Needed
AN501A10-6	Weight Screws	4

Part No.	Nomenclature	No. Required
B-828-3	PISTON ASSEMBLY	1
B-966-3	Piston Unit	1
B-966	Piston	1
A-862	Plastic Bushing	1
A-826-3	Push Rod	2
A-114G	Rod Staking Pin	2
A-921-1	Fork	2
A-2039	Set Screw	2
A-827-2	Rod Sleeve	2
A-970-4	Spacer	2
A-965	Washer	2
A-848	Flexlock Nut	2
HYDRAULIC ASSOCIATED PARTS		
B-806-1	Cylinder	1
PRP-909-13	Cylinder "O" Ring	1
PRP-902-46	Piston "O" Ring	1
A-810	Dust Seal	1
A-95-A	Block, Pitch Change	2
835-15	SPINNER ASSEMBLY (No Stops)	1
C-888-4	Dome (Not Polished)	1
AN526C1032R7	Dome Mounting Screws	14
C-807-6	Bulkhead	1

Assembly Drawing
D-220

PARTS LIST
Model HC-A2X20-4(*), -4A(*), -4B(*)

Part No.	Nomenclature	No. Required		
		-4	-4A	-4B
840-66	HUB SPIDER UNIT	1	1	1
C-2026-1	Hub Spider	1	1	1
A-158L	Pilot Tube	2	2	2
A-218	Bushing	1	1	1
HUB ASSOCIATED PARTS				
A-311	Ball Spacer	2	2	2
834-3	Guide Collar Unit (Without Spinner)	1		
A-971	Blade Bearing	2	2	2
A-972	Guide Ring	2	2	2
A-974	Wire Retention Ring	2	2	2
PRP-909-8	"O" Ring, Blade	2	2	2
A-219	Puller Ring (Not Req'd With B-2059)	1	1	1
A-2053 } or B-2059		1	1	1
A-2054	Shaft Nut	1	1	1
PRP-909-10	Seal, Shaft Nut	1	1	1
PRP-909-9	"O" Ring, Outer Seal	1	1	1
AN380-3-3	"O" Ring, Inner Seal	1	1	1
834-10	Cotter Pins, Seal Safety	4	4	4
834-11	Guide Collar Unit, Spinner Mtg.		1	
A-2027	Guide Collar Unit, Spinner Mtg.			1
838-2	Wire Bearing Ring	2	2	2
CLAMP ASSEMBLY				
C-3-1A	Clamp	2	2	2
A-295	Linkscrew	2	2	2
A-285	Staking Pin	2	2	2
MS-15001-1	Zerk Fitting	6	6	6
B-891-1	Counterweight Unit	2	2	2
A-65	Counterweight Staking Pin	2	2	2
A-2036-30	Counterweight Socket Head Screw	4	4	4
A-285	Socket Screw Staking Pin (AN380-3-2 Cotter Pin	4	4	4
A-47-1	Clamp Gasket	4	4	4
A-282	Socket Screw	4	4	4
AN380-3-2	Cotter Pin	4	4	4
A-2017	Clamp Bolts	4	4	4
A-2043	Clamp Nuts	4	4	4
AN960-616	Washer	4	4	4
No. 3	Lubricaps	4	4	4

* Denotes dash number of A-224 Oil Seal Assy. — See next chart for breakdown.

Part No.	Nomenclature	No. Required		
		-4	-4A	-4B
CLAMP ASSOCIATED PARTS				
A-48	Balance Weight		As Needed	
AN501A10-6	Weight Screws	4	4	4
PISTON ASSEMBLY				
B-828-3	Piston Unit	1	1	1
B-966-3	Piston	1	1	1
B-966	Piston	1	1	1
A-862	Plastic Bushing	1	1	1
A-826-3	Push Rod	2	2	2
A-114F	Rod Staking Pin	2	2	2
A-921-1	Fork	2	2	2
A-2039	Set Screw	2	2	2
A-827-2	Rod Sleeve	2	2	2
A-965	Washer	2	2	2
A-848	Flexlock Nut	2	2	2
A-970-4	Spacer	2	2	2
HYDRAULIC ASSOCIATED PARTS				
B-806-1	Cylinder	1	1	1
PRP-909-13	Cylinder "O" Ring	1	1	1
PRP-902-46	Piston "O" Ring	1	1	1
A-863	Dust Seal	1	1	1
A-95-A	Block, Pitch Change	2	2	2
A-224-(*)	OIL TRANSFER SEAL ASSEMBLY (See parts list below)	1	1	1

PARTS LIST

Model A-224-(*) Oil Transfer Seal Assy.

Part No.	Nomenclature	No. Required		
		A-224	A-224-1	A-224-2
A-216	Slip Ring Sleeve	1		
A-221	Ring	4	4	4
A-216-1	Slip Ring Sleeve		1	1
B-214	Cap, Slip Ring	1	1	1
A-217	Screw, Oil Transfer	1	1	1
PRP-902-6	"O" Ring, Screw Seal	1	1	1
455354	National Seal	1	1	
AN75A25	Hex Head Bolts	4	4	4
AN960-416	Washers	4	4	4
B-215	Slip Ring	1		
A-135	Gasket	1	1	1
A-228	Slinger, Oil		1	1
A-234	Cone, Rear		1	1
B-241	Slip Ring		1	1
A-237	Ring "B"			1
PRP-909-13	"O" Ring, Compound 12137 or 17507			1
Halogen 6227-236	"O" Ring, Teflon			1
PRP-909-18	"O" Ring, Compound 141-70			1
A-236	Ring "A"			1
A-239	Clip, Spring			4
A-242	Pin (Optional)			1
A-884-3	Spring (Optional)			1
31-S-062-1000	SPS Rolled Pin			1

* Denotes dash number of A-224 Oil Seal Assembly.

PARTS LIST
Optional Spinners for use on the Hartzell
Model HC-A2X20-4, -4A, -4B Propeller

Part No.	Nomenclature	No. Required		
		-4	-4A	-4B
837-6	HARTZELL SPINNER FOR BEECH 35		1	
C-227	Bulkhead		1	
C-226	Dome		1	
AN526C1032R8	Screws		12	
AN7-11	Bolts		4	
AN365-720	Nuts (A-1373, A-2498 Optional)		4	
	BEECH SPINNERS FOR BEECH 35 SERIES			
	For Beech Hub Models B200 and 215			
#35-960026-12	Beech Support Assembly			1
#36-960026-14	Beech Dome			1
AN4-6	Bolts			4
AN310-4	Nuts			4
	For Beech Hub Model R203			
#35-960010-12	Beech Support		1	
#35-960026-14	Beech Dome		1	
AN7-6	Bolts		4	
AN310-7	Nuts		4	

NOTE: FOR BEECH MODELS ONLY: Modify dome as follows:

1. Install B-223 pilot on center cut hole in front bulkhead to clear piston.
2. Enlarge blade cutouts to clear blades, etc.

PARTS LIST
Models HC-A3XF-2, -2A, -2B, -2C; PHC-A3XF-2B

Assembly Drawing D-1495

Part No.	Nomenclature	No. Required				
		HC -2	HC -2A	HC -2B	PHC -2B	HC -2C
840-80	HUB SPIDER UNIT				1	
C-1477-1	Hub Spider				1	
A-158L	Pilot Tubes				3	
840-64	HUB SPIDER UNIT	1	1	1		1
C-1477	Hub Spider	1	1	1		1
A-158L	Pilot Tubes	3	3	3		3
	HUB ASSOCIATED PARTS					
A-971	Blade Bearing, Split	3	3	3	3	3
A-2027	Wire Ring, Bearing	3	3	3	3	3
A-311	Ball Spacer (Optional)	3	3	3	3	3
A-972	Guide Ring	3	3	3	3	3
A-974	Wire Retention Ring	3	3	3	3	3
PRP-909-6	"O" Ring, Blade	3	3	3	3	3
PRP-909-6	"O" Ring, Shaft	1	1	1	1	1
.5002x1	Hub Dowel Pins	2	2	2	2	2
AN960-816	Washers, Hub Mounting	6	6	6*	6*	6
A-2040 or A-1333-4	Hex Head Bolts	6	6	6*	6*	6
838-52	CLAMP ASSEMBLY (For use with 9333C-3 Blades)	3				
C-3-5A	Clamp	3				
A-304	Linkscrew	3				
A-285	Staking Pin, Linkscrew	3				
MS-15001-1	Zerk Fittings	6				
833-26	Counterweight Unit	3				
A-65	Counterweight Staking Pin	3				
A-2036-32	Ctwt. Socket Head Cap Screws	6				
A-285	Staking Pins, Ctwt. Sk. Sc. (AN380-3-2 Cotter Pin	6				
A-47-1	Clamp Gaskets Optional)	6				

* Use (18) AN960-816 Washers or (6) A-2482-1 Washers With (6) A-2041 or A-1333-5 Hex Head Bolts When 836-36P Spinner Assembly Is Installed.

Part No.	Nomenclature	No. Required				
		HC -2	HC -2A	HC -2B	PHC -2B	HC -2C
	CLAMP ASSEMBLY (For 9333C-3 Blades, Cont'd)					
A-282	Socket Screws, Clamp	6				
AN380-3-2	Cotter Pins, Sk. Sc.	6				
A-2017	Clamp Bolts	6				
AN960-616	Washers	6				
A-2043	Clamp Nuts	6				
838-11A	CLAMP ASSEMBLY (For use with 7636D Blades)			3	3	
C-3-5A	Clamp			3	3	
A-304	Linkscrew			3	3	
A-285	Staking Pin, Linkscrew			3	3	
MS15001-1	Zerk Fittings			6	6	
B-271-1A	Counterweight Unit			3	3	
A-65	Counterweight Staking Pin			3	3	
A-2036-30	Ctwt. Socket Head Cap Screws			6	6	
A-285	Staking Pins, Ctwt. Sk. Sc. (AN380-3-2 Cotter Pin Optional)			6	6	
A-47-1	Clamp Gaskets			6	6	
A-282	Socket Screws, Clamp			6	6	
AN380-3-2	Cotter Pins, Sk. Sc.			6	6	
A-2017	Clamp Bolts			6	6	
AN960-616	Washers			6	6	
A-2043	Clamp Nuts			6	6	
838-6	CLAMP ASSEMBLY (For use with 8433 & 8833 Blades)		3			3
C-3-5A	Clamp		3			3
A-304	Linkscrew		3			3
A-285	Staking Pin, Linkscrew		3			3
MS15001-1	Zerk Fittings		6			6
833-4	Counterweight Unit		3			3
A-65	Counterweight Staking Pin		3			3
A-2036-30	Ctwt. Socket Head Cap Screws		6			6
A-285	Staking Pins, Ctwt. Sk. Sc. (AN380-3-2 Cotter Pin Optional)		6			6
A-47-1	Clamp Gaskets		6			6
A-282	Socket Screws, Clamp		6			6
AN380-3-2	Cotter Pins, Sk. Sc.		6			6
A-2017	Clamp Bolts		6			6
AN960-616	Washers		6			6
A-2043	Clamp Nuts		6			6
	CLAMP ASSOCIATED PARTS					
A-29	Weight Slugs			9	9	
A-48	Balance Weights		As Needed			
AN501A10-6	Weight Screws	6	6	6	6	6
A-881	Stop Plate (A-881-2 Optional)	3	3	3	3	
A-2016	Hex Head Bolts	6	6	6	6	
A-944	Sleeve, Linkscrew	3	3	3	3	3
AN380-3-3	Cotter Pin, Sleeve	3	3	3	3	3
830-4	AUTO STOP UNIT					
B-882-4	Bracket		3	3	3	
A-883	Pin		3	3	3	
A-884	Spring		3	3	3	
AN936A10	Washer		3	3	3	
AN380-3-3	Cotter Pin		3	3	3	
	AUTO STOP ASSOCIATED PARTS					
AN74-5	Hex Head Bolts	6	6	6	6	
831-4	FEATHERING SPRING ASSEMBLY					
B-855A	Pilot Tube	1	1	1	1	1
A-856	Mushroom	1	1	1	1	1
B-953	Inner Spring	1	1	1	1	1
B-853	Outer Spring	1	1	1	1	
A-860-3	Spacer Tube	1	1	1	1	1
A-857	Spring Retainer	1	1	1	1	1
A-858	Split Ring	1	1	1	1	1
832-17	PISTON ASSEMBLY					
C-1401-2	Piston Unit	1	1	1	1	1
C-1401-2 Det. #1	Piston	1	1	1	1	1
A-862	Plastic Bushing	1	1	1	1	1

Part No.	Nomenclature	No. Required				
		HC -2	HC -2A	HC -2B	PHC -2B	HC -2C
	PISTON ASSEMBLY (Continued)					
A-817-2	Guide Rods	3	3	3	3	3
A-114-F	Staking Pins, Rod	3	3	3	3	3
A-946	Bronze Bushings	6	6	6	6	6
A-1464	Link Pin Units	3	3	3	3	3
AN501A10-6	Safety Screws	3	3	3	3	3
A-1444	Washers	3	3	3	3	3
A-2037	Socket Head Cap Screws	3	3	3	3	3
AN316-5R	Jam Nuts	3	3	3	3	3
A-861-3	Link Arms	3	3	3	3	3
834-1	GUIDE COLLAR UNIT	1	1	1	1	1
B-1402	Guide Collar	1	1	1	1	1
A-116D-1	Plastic Bushings	3	3	3	3	3
A-2038-12	Socket Head Cap Screw	1	1	1	1	1
A-114-C	Staking Pin	1	1	1	1	1
	ASSOCIATED PARTS					
B-854	Cylinder	1	1	1	1	1
PRP-909-13	"O" Ring, Cylinder	1	1	1	1	1
A-859	Split Retainer Ring	1	1	1	1	1
A-899()	Stop Plates	2	2	2	2	2
AN501A10-6	Screws, Stop Plate	4	4	4	4	4
PRP-902-46	Piston "O" Ring	1	1	1	1	1
A-863	Dust Seal	1	1	1	1	1
PRP-914-12	"O" Ring, Pilot Tube	1	1	1	1	1
A-880-2	Flexlock Nut	1	1	1	1	1
A-1536	Spacer, Spring					1
	SPINNER BOLT, NUT & WASHER KIT					
AN4-16A	Hex Head Bolts	6	6	6	6	6
A-1864	Plastic Washers (Thick)			6	6	
AN960-416	Washers	6	6			
AN960-416L	Washers	12	12	12	12	12
H10-4	Kaylock Nuts	6	6	6	6	6
836-18P	SPINNER ASSEMBLY (No Stops)	1	1			1
D-1367-6	Dome (Polished)	1	1			1
D-1415-4	Bulkhead Unit	1	1			1
AN526C1032R8	Screws	12	12			12
836-19P	ANTI-ICING SPINNER ASSEMBLY (No Stops)	1	1			1
D-1367-7P	Dome (Polished)	1	1			1
AN526C1032R8	Screws	12	12			12
D-1415-6	Bulkhead Assembly	1	1			1
D-1415-5	Bulkhead Unit	1	1			1
D-1433	Slinger Ring	1	1			1
836-37P	SPINNER ASSEMBLY (No Stops)			1	1	
C-1872-4	Dome (Polished)			1	1	
D-1976-8R	Bulkhead Assembly			1	1	
AN526C1032R8	Screws			18	18	
**836-36P	ANTI-ICING SPINNER ASSEMBLY (No Stops)			1	1	
C-1872-4	Dome (Polished)			1	1	
AN526C1032R8	Screws			18	18	
D-1976-6R	Bulkhead Assembly			1	1	
D-1976-5R	Bulkhead Unit			1	1	
A-2588	Anti-Icing Kit			1	1	

** Use (18) AN960-816 Washers or (6) A-2482-1 Washers With (6) A-2041 or A-1333-5 Hex Head Bolts When 836-36P Spinner Assembly Is Installed.

PARTS LIST

Assembly Drawing D-1446

Model HC-A3XK-2, -2A

Part No.	Nomenclature	No. Required	
		-2	-2A
840-56	HUB SPIDER SUB-ASSEMBLY	1	1
C-1476	Hub Spider	1	1
A-158L	Pilot Tube	3	3
	HUB ASSOCIATED PARTS		
A-2027	Bearing Retention Ring	3	3
A-971	Blade Bearing, Split	3	3
A-972	Guide Ring	3	3
A-974	Wire Ring	3	3
PRP-909-6	"O" Ring, Blade	3	3
B-1322	Shim, Hub Mounting	1	1
PRP-902-32	"O" Ring	1	1
A-1333-3	Hex Head Bolt	3	3
A-1328	Screw, Ferry	3	3
A-311	Ball Spacer	3	3
838-51	CLAMP ASSEMBLY	3	
C-3-5A	Clamp	3	
A-304	Linkscrew	2	
A-285	Staking Pin, Linkscrew	3	
MS-15001-1	Zerk Fitting	6	
833-15	Counterweight Assembly	3	
A-65	Counterweight Staking Pin	3	
A-2036-30	Counterweight Screws	6	
AN380-3-2	Cotter Pin, Counterweight	6	
A-47-1	Clamp Gasket	6	
A-282	Socket Screw	6	
A-2017	Clamp Bolts	6	
AN960-616	Mounting Washer	6	
A-2043	Clamp Nut	6	
A-285	Staking Pins, Socket Head Cap Screw	6	
838-60	CLAMP ASSEMBLY		3
C-3-5A	Clamp		3
A-304	Linkscrew		3
A-285	Staking Pin, Linkscrew		3
MS-15001-1	Zerk Fitting		6
B-1437-1	Counterweight Assembly		3
A-65	Counterweight Staking Pin		3
A-2036-32	Counterweight Screws		6
AN380-3-2	Cotter Pin		6
A-47-1	Clamp Gasket		6
A-282	Socket Screw		6
A-2017	Clamp Bolts		6
AN960-616	Mounting Washer		6
A-2043	Clamp Nuts		6
A-285	Staking Pins, Socket Head Cap Screw		6
	CLAMP ASSOCIATED PARTS		
A-48	Balance Weights	As Needed	
AN501-A10-6	Screw, Balance Weight	6	6
A-881	Auto, Stop Plate	3	3
AN3H5A	Hex Head Bolts, Plate	6	6
A-944	Screw Bushing	3	3
AN380-3-3	Cotter Pin, Sleeve	3	3
830-9B	AUTO STOP UNIT	3	3
B-984-2	Bracket	3	3
A-883	Pin	3	3
A-884	Spring	3	3
AN380-3-3	Cotter Pin	3	3
AN936A10	Washer	3	3
	AUTO STOP MOUNTING PARTS		
AN74-5	Hex Head Bolts	6	6

Part No.	Nomenclature	No. Required	
		-2	-2A
831-4	FEATHERING SPRING UNIT	1	1
B-855A	Pilot Tube Unit	1	1
A-858	Split Ring	1	1
A-857	Spring Retainer	1	1
A-860-3	Spacer Tube	1	1
B-953	Inner Spring	1	1
B-853	Outer Spring	1	1
A-856	Mushroom	1	1
832-17	PISTON ASSEMBLY	1	1
C-1401-2	Piston Unit	1	1
C-1401-2 Det. #1	Piston	1	1
A-862	Plastic Bushing	1	1
A-817-2	Guide Rod	3	3
A-114-B	Staking Pin	3	3
A-946	Bushing	6	6
A-1444	Washer	3	3
AN316-5R	Jam Nut	3	3
A-2037	Socket Set Screw	3	3
A-1464	Safety Link	3	3
AN501A10-6	Safety Screw	3	3
A-861-3	Link Arm	3	3
834-1	GUIDE COLLAR UNIT	1	1
B-1402	Guide Collar	1	1
A-116D-1	Plastic Bushing	3	3
A-114C	Staking Pin	1	1
A-2038-12	Socket Cap Screw	1	1
	ASSOCIATED PARTS		
B-854	Cylinder	1	1
PRP-909-13	"O" Ring, Cylinder	1	1
PRP-902-46	"O" Ring, Piston	1	1
A-863	Dust Seal	1	1
A-859	Split Retainer Ring	1	1
A-899	Stop Plate	2	2
AN501-A10-6	Screws, Stop Plate	4	4
PRP-914-12	"O" Ring	1	1
A-880-2	Flexlock Nut	1	1
835-14	SPINNER ASSEMBLY	1	
C-888-6	Spinner Dome	1	
AN526C1032R7	Screws	15	
C-885-1	Spinner Adaptor	1	
C-2513	SPINNER ASSEMBLY (AERO DESIGN)	1	1
C-2531-1	Dome	1	1
C-2512	Adaptor Assembly	1	1
AN526C1032R8	Screws	15	15
AN526C1032R7	Screws	6	6

PARTS LIST

Model HC-A3X20-2, -2L

Assembly Drawing D-1485

Part No.	Nomenclature	No. Required	
		-2	-2L
840-65	HUB SPIDER UNIT	1	1
C-1482	Hub Spider	1	1
A-158L	Pilot Tube	3	3
A-155	Bushing	1	1

Part No.	Nomenclature	No. Required	
		-2	-2L
HUB ASSOCIATED PARTS			
A-311	Ball Spacer	3	3
A-971	Blade Bearing	3	3
A-2027	Wire Ring, Bearing	3	3
A-972	Guide Ring	3	3
A-974	Wire Retention Ring	3	3
PRP-909-8	Blade "O" Ring	3	3
A-50-3	Rear Cone	1	1
PRP-909-7	"O" Ring Shaft	1	1
A-63-B	Hub Nut	1	1
A-870	Puller Ring (Not Req'd With B-2063)	1	1
A-847		Pin, Safety	1
838-6	CLAMP ASSEMBLY (8433, 8833 Blades)	3	
C-3-5A	Clamp	3	
833-4	Counterweight Unit	3	
838-23	CLAMP ASSEMBLY (9333 Blades)	3	
C-3-5A	Clamp	3	
833-4R	Counterweight Unit	3	
A-890	Weight Slugs	3	
AN4H7A	Hex Head Bolts	6	
838-18	CLAMP ASSEMBLY (L8433, L8433H Blades)		3
C-3-5AL	Clamp		3
833-4	Counterweight Unit		3
838-23L	CLAMP ASSEMBLY (L9333CH-3, -5 Blades)		3
C-3-5AL	Clamp		3
833-4L	Counterweight Unit		3
A-890-5	Weight Slugs		3
AN4H10A	Hex Head Bolts		6
838-52	CLAMP ASSEMBLY (9333C-3 Blades)	3	
C-3-5A	Clamp	3	
833-26	Counterweight Unit	3	
COMMON CLAMP PARTS			
A-304	Linkscrews	3	3
A-285	Staking Pin, Linkscrew	3	3
MS-15001-1	Zerk Fitting	6	6
A-65	Counterweight Staking Pin	3	3
A-2036-30 (-32 for	Counterweight Socket Head Screws	6	6
A-285	Counterweight Sc. Staking Pin (AN380-3-2 Cotter	6	6
A-47-1	Clamp Gasket	6	6
A-282	Socket Screw	6	6
AN380-3-2	Cotter Pin	6	6
A-2017	Clamp Bolts	6	6
AN960-616	Washer	6	6
A-2043	Clamp Nuts	6	6
No. 3	Lubricaps	6	6
CLAMP ASSOCIATED PARTS			
A-48	Balance Weight	As Needed	
AN501A10-6	Weight Screw	6	6
A-944	Sleeve, Linkscrew	3	3
AN380-3-3	Cotter Pin, Linkscrew	3	3
A-881	Stop Plate	3	3
A-2016	Plate Screw	6	6
832-14	PISTON ASSEMBLY	1	
C-1401-3	Piston Unit	1	
C-1401-3 Det. #1	Piston	1	
A-862	Plastic Bushing	1	
A-817-2	Guide Rod	3	
A-114-B	Rod Staking Pin	3	

Part No.	Nomenclature	No. Required	
		-2	-2L
A-946	Bronze Bushing	6	
A-2037	Socket Screw	3	
A-1444	Washer	3	
AN316-5R	Jam Nut	3	
A-861-3	Link Arm	3	
A-1464	Link Pin Unit	3	
AN501A10-6	Safety Screw	3	
832-14L	PISTON ASSEMBLY		1
C-1401-3L	Piston Unit		1
C-1401-3L Det. #1	Piston		1
A-862	Plastic Bushing		1
A-817-2	Guide Rod		3
A-114-B	Rod Staking Pin		3
A-946	Bronze Bushing		6
A-2037	Socket Screw		3
A-1444	Washer		3
AN316-5R	Jam Nut		3
A-861-3L	Link Arm		3
A-1464	Link Pin Unit		3
AN501A10-6	Safety Screw		3
834-1	GUIDE COLLAR UNIT	1	
B-1402	Guide Collar	1	
A-116D-1	Plastic Bushing	3	
A-114-C	Staking Pin	1	
A-2038-12	Socket Head Cap Screw	1	
834-1L	GUIDE COLLAR UNIT		1
B-1402L	Guide Collar		1
A-116D-1	Plastic Bushing		3
A-114-C	Staking Pin		1
A-2038-12	Socket Head Cap Screw		1
831-11	FEATHERING SPRING ASSEMBLY	1	1
B-868A	Pilot Tube	1	1
A-871	Mushroom	1	1
B-1363-1	Spring	1	1
A-866	Spring Retainer, Rear	1	1
A-867	Split Retainer, Rear	1	1
	HYDRAULIC ASSOCIATED PARTS		
B-854	Cylinder	1	1
PRP-909-13	Cylinder "O" Ring	1	1
A-859	Split Retainer, Front	1	1
A-899	Feathering Stop	2	2
AN501A10-6	Stop Mounting Screw	4	4
PRP-914-8	Nut "O" Ring	1	1
PRP-902-46	Piston "O" Ring	1	1
A-863	Dust Seal	1	1
A-880-1	Flexlock Nut, Piston	1	1
835-10S	SPINNER ASSEMBLY (With Stops)	1	
C-888-6	Dome	1	
AN526C1032R7	Dome Mounting Screw	15	
C-807-7S	Bulkhead (With 830-5 Stops)	1	
C-807-10	Bulkhead (Without Stops)	1	
830-5	Auto High Pitch Stop Units	3	
B-882-5	Bracket	3	
A-883	Pin	3	
A-884	Spring	3	
AN936A10	Washer (Internal Lock)	3	
AN380-3-3	Cotter Pin	3	
AN4-15A	Hex Head Bolt	6	
AN960-416	Washer	6	
H10-4	Kaylock Nut	6	

Part No.	Nomenclature	No. Required	
		-2	-2L
835-11S	SPINNER ASSEMBLY (With Stops)		1
C-888-6	Dome		1
AN526C1032R7	Dome Mounting Screw		15
C-807-7LS	Bulkhead (With 830-5L Stops)		1
C-807-10	Bulkhead (Without Stops)		1
830-5L	Auto High Pitch Stop Unit		3
B-882-5L	Bracket		3
A-883	Pin		3
A-884	Spring		3
AN936A10	Washer (Internal Lock)		3
AN380-3-3	Cotter Pin		3
AN4-15A	Hex Head Bolt		6
AN960-416	Washer		6
H10-4	Kaylock Nut		6
836-6SP	SPINNER ASSEMBLY (Polished, With Stops)	1	
D-1367-6P	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screws	24	
D-1414-6	Bulkhead (With 830-5 Stops)	1	
836-7SP	SPINNER ASSEMBLY (Anti-Icing, Polished, With Stops)	1	
D-1367-7P	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screw	24	
D-1414-7	Anti-Icing Bulkhead (With 830-5 Stops)	1	
836-7ASP	SPINNER ASSEMBLY (Anti-Icing, Polished, With Stops)	1	
D-1367-7AP	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screw	24	
D-1414-7	Anti-Icing Bulkhead (With 830-5 Stops)	1	
836-22SPR	SPINNER ASSEMBLY (Anti-Icing, Polished, With Stops)	1	
C-1888P	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screw	24	
D-1871-7R	Anti-Icing Bulkhead (With 830-18 Stops)	1	

PARTS LIST
Model HC-A3XK-4

Assembly Drawing D-1484

Part No.	Nomenclature	No. Required
840-56	HUB SPIDER UNIT	1
C-1476	Hub Spider	1
A-158L	Pilot Tube	3
	HUB ASSOCIATED PARTS	
A-311	Ball Spacer (Optional)	3
A-971	Split Bearing, Blade	3
A-2027	Wire Retention Ring, Bearing	3
A-972	Guide Ring	3
A-974	Wire Retention Ring	3
PRP-909-6	"O" Ring, Blade	3
PRP-902-32	"O" Ring, Shaft	1
B-1322	Shim	1
A-1333-3	Hex Head Bolts	6

Part No.	Nomenclature	No. Required
838-58	CLAMP ASSEMBLY	3
C-3-1E	Clamp	3
MS-15001-1	Zerk Fitting	6
B-1480	Counterweight	3
A-2036-22	Socket Head Cap Screw, Counterweight	6
A-47-1	Gaskets, Clamp	6
A-282	Socket Screw, Clamp	6
AN380-3-2	Cotter Pin, Sk. Sc.	6
A-2017	Clamp Bolts	6
AN960-616	Washer	6
A-2043	Clamp Nuts	6
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weight	As Needed
AN501A10-6	Weight Screw	6
A-944	Sleeve	3
AN380-3-3	Cotter Pin, Sleeve	3
832-33	PISTON ASSEMBLY	1
C-1881-1	Piston Unit	1
C-1881-1 Det. #1	Piston	1
A-862-2	Plastic Bushing	1
A-946	Bronze Bushing	6
A-817-4	Guide Rod	3
A-114-G	Staking Pin	3
A-2037	Socket Head Cap Screw	3
AN316-5R	Check Nut	3
A-1444	Washer	3
A-1464	Link Pin Unit	3
AN501A10-6	Safety Screw	3
A-861-3L	Link Arm	3
	HYDRAULIC ASSOCIATED PARTS	
B-1882	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
PRP-902-50	"O" Ring, Piston	1
B-1843	Dust Seal	1
834-7B	Guide Collar Unit	1
C-2513	SPINNER ASSEMBLY (Optional)	1
C-2531-1	Spinner Dome	1
AN526C1032R8	Screw, Dome Mounting	15
C-2512	Adaptor Ring Assembly	1
AN526C1032R7	Screw, Dome Mounting	6

PARTS LIST
Model HC-92ZK-1D

Assembly Drawing D-1334

Part No.	Nomenclature	No. Required
840-32	HUB ASSEMBLY	1
C-1314-4	Hub Spider	1
A-1308	Pilot Tubes	2
834-9	Guide Collar Unit	1
A-1332-2	Staking Pins, Guide Collar	2
A-1333	Hex Head Bolts	2
A-1333-2	Hex Head Bolts	2
	HUB ASSOCIATED PARTS	
A-1889	Ball Spacer	2
A-1303A	Bearing, Blade	2
A-1331	Split Ring	2
PRP-909-7	"O" Ring, Blade Seal	2
PRP-902-32	"O" Ring, Shaft Seal	1
A-1333	Hex Head Bolts	2
B-1322	Shim	1

Part No.	Nomenclature	No. Required
838-68	CLAMP & COUNTERWEIGHT ASSEMBLY	2
C-1301-1	Clamp	2
A-295	Linkscrew	2
A-285	Linkscrew Staking Pin	2
MS-15001-1	Zerk Fitting	2
B-1354-4	Counterweight	2
A-2036-32	Socket Head Cap Screws, Ctwt.	4
A-285	Staking Pins, Sk. Sc.	4
A-65	Staking Pin, Ctwt.	2
A-1306	Gaskets	4
A-282	Socket Screws	4
AN380-3-2	Cotter Pins	4
A-1372	Clamp Bolts	4
A-1373	Clamp Nuts	4
No. 3	Lubricaps	4
	CLAMP ASSOCIATED PARTS	
2-45	Parker "O" Ring, Blade	2
A-1305	Balance Weight	As Needed
AN501A10-6	Weight Screws	4
B-828-8	PISTON ASSEMBLY	1
B-966-8	Piston Unit	1
B-966	Piston	1
A-862	Plastic Bushing	1
A-826-8	Push Rods	2
A-114G	Rod Staking Pins	2
A-921-1	Forks	2
A-2039	Set Screws, Fork	2
A-827-1	Rod Sleeves	2
A-965	Washers	2
A-848	Flexlock Nuts	2
	ASSOCIATED HYDRAULIC PARTS	
B-806	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
PRP-902-46	"O" Ring, Piston	1
A-810	Felt Seal	1
A-95-A	Block, Pitch Change	2
C-2513-3	SPINNER ASSEMBLY	1
C-2512-3	Spinner Adaptor Ring Unit	1
C-2531-8	Spinner Dome	1
AN526C1032R7	Screws, Dome Mounting	16

PARTS LIST
Model BHC-92ZF-8D

Assembly Drawing D-1334

Part No.	Nomenclature	No. Required
		-8D
840-68	HUB ASSEMBLY	1
C-1304-6	Hub Spider	1
A-1308	Pilot Tubes	2
834-8	Guide Collar Unit	1
A-957-1	Staking Pins, Guide Collar	2
A-846-4	Brackets, Spinner	4
A-2051	Hex Head Bolts, Bracket Mtg.	4

Part No.	Nomenclature	No. Required
		-8D
HUB ASSOCIATED PARTS		
A-1889	Ball Spacer	2
A-1303A	Bearing, Blade	2
A-1331	Split Ring	2
PRP-909-7	"O" Ring, Blade Seal	2
PRP-909-6	"O" Ring, Shaft Seal	1
A-2040 or A-1333-4	Hex Head Bolts	6
AN960-816	Washers	6
.5002x1	Danley Dowel Pins	2
CLAMP ASSEMBLY		
838-31	Clamp	2
C-1301-2	Clamp	2
A-295	Linkscrew	2
A-285	Linkscrew Staking Pin	2
MS-15001-1	Zerk Fitting	2
A-1306	Gaskets, Clamp	4
A-282	Screws, Socket Head	4
AN380-3-2	Cotter Pins	4
A-1372	Clamp Bolts	4
A-1373	Clamp Nuts	4
No. 3	Lubricaps	4
CLAMP ASSOCIATED PARTS		
2-45	Parker "O" Ring, Blade	2
A-1305	Balance Weight	As Needed
AN501A10-6	Weight Screws	4
PISTON ASSEMBLY		
B-828-9L	Piston Unit	1
B-966-11	Piston	1
B-966	Piston	1
A-862	Plastic Bushing	1
A-826-11	Push Rods	2
A-114G	Rod Staking Pins	2
A-921L-1	Forks	2
A-2039	Set Screws, Fork	2
A-827-1	Rod Sleeves	2
A-965	Washers	2
A-848	Flexlock Nuts	2
ASSOCIATED HYDRAULIC PARTS		
B-806	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
PRP-902-46	"O" Ring, Piston	1
A-810	Felt Seal	1
A-95-A	Blocks, Pitch Change	2
SPINNER ASSEMBLY		
835-13	Spinner Bulkhead	1
C-807-1	Spinner Bulkhead	1
C-888-4	Spinner Dome (Not Polished)	1
AN526C1032R7	Screw, Dome Mounting	14
AN4-14A	Hex Head Bolts	4
AN960-416L	Washers	4
H10-4	Kaylock Nuts	4

PARTS LIST
Model HC-92ZK-8D, -8L

Part No.	Nomenclature	No. Required	
		-8D	-8L
840-32	HUB ASSEMBLY		1
C-1314-4	Hub Spider		1
A-1308	Pilot Tubes		2
834-9	Guide Collar Unit		1
A-1332-2	Staking Pins, Guide Collar		2
A-1333	Hex Head Bolts		2
A-1333-2	Hex Head Bolts		2
840-32L	HUB ASSEMBLY	1	
C-1314-4	Hub Spider	1	
A-1308	Pilot Tubes	2	
834-8	Guide Collar Unit	1	
A-1332-2	Staking Pins, Guide Collar	2	
A-1333	Hex Head Bolts	2	
A-1333-2	Hex Head Bolts	2	
	HUB ASSOCIATED PARTS		
A-1889	Ball Spacer	2	2
A-1303A	Bearing, Blade	2	2
A-1331	Split Ring	2	2
PRP-909-7	"O" Ring, Blade Seal	2	2
PRP-902-32	"O" Ring, Shaft Seal	1	1
A-1333	Hex Head Bolts	2	2
B-1322	Shim	1	1
838-31	CLAMP ASSEMBLY	2	
C-1301-2	Clamp	2	
A-295	Linkscrew	2	
A-285	Linkscrew Staking Pin	2	
MS-15001-1	Zerk Fitting	2	
A-1306	Gaskets, Clamp	4	
A-282	Screws, Socket Head	4	
AN380-3-2	Cotter Pins	4	
A-1372	Clamp Bolts	4	
A-1373	Clamp Nuts	4	
No. 3	Lubricaps	4	
838-35	CLAMP ASSEMBLY		2
C-1301-4	Clamp		2
A-295	Linkscrew		2
A-285	Staking Pin, Linkscrew		2
MS-15001-1	Zerk Fitting		2
A-1306	Gaskets		4
A-282	Socket Screws		4
AN380-3-2	Cotter Pins		4
A-1372	Clamp Bolts		4
A-1373	Clamp Nuts		4
No. 3	Lubricaps		4
	CLAMP ASSOCIATED PARTS		
2-45	Parker "O" Ring, Blade	2	2
A-1305	Balance Weight	As Needed	
AN501A10-6	Weight Screw	4	4
B-828-8L	PISTON ASSEMBLY	1	
B-966-8	Piston Unit	1	
B-966	Piston	1	
A-862	Plastic Bushing	1	
A-826-8	Push Rods	2	
A-114G	Rod Staking Pins	2	
A-921L-1	Forks	2	
A-2039	Set Screws, Fork	2	
A-827-1	Rod Sleeves	2	
A-965	Washers	2	
A-848	Flexlock Nuts	2	

Part No.	Nomenclature	No. Required	
		-8D	-8L
B-828	PISTON ASSEMBLY		1
B-966-8	Piston Unit		1
B-966	Piston		1
A-862	Plastic Bushing		1
A-826-8	Push Rods		2
A-114G	Rod Staking Pins		2
A-921-1	Forks		2
A-2039	Set Screws, Fork		2
A-827-1	Rod Sleeves		2
A-965	Washers		2
A-848	Flexlock Nuts		2
	ASSOCIATED HYDRAULIC PARTS		
B-806	Cylinder	1	1
PRP-909-13	"O" Ring, Cylinder	1	1
PRP-902-46	"O" Ring, Piston	1	1
A-810	Felt Seal	1	1
A-95-A	Blocks, Pitch Change	2	2
835-6P	SPINNER ASSEMBLY	1	1
C-885P	Spinner Adaptor	1	1
C-888-4P	Spinner Dome (Polished)	1	1
AN526C1032R7	Screws, Dome Mounting	14	14
835-16	SPINNER ASSEMBLY	1	1
C-885	Spinner Adaptor	1	1
C-888-4	Spinner Dome (Not Polished)	1	1
AN526C1032R7	Screws, Dome Mounting	14	14

PARTS LIST
Model HC-93ZF-2

Part No.	Nomenclature	No. Required	
		-2A	-2B
840-7	HUB SPIDER ASSEMBLY	1	1
C-1951	Hub Spider	1	1
A-1308	Pilot Tube	3	3
	ASSOCIATED PARTS		
A-2040	Bolts, Hub Mounting	6	6
.5002 x 1	Dowel Pin	2	2
A-1303A	Bearing, Blade	3	3
A-1331	Split Ring	3	3
PRP-909-6	"O" Ring, Shaft	1	1
PRP-909-7	"O" Ring, Blade	3	3
838-22	CLAMP & COUNTERWEIGHT SUB-ASSY.	3	3
C-1301	Clamp	3	3
833-11	Counterweight (For Cessna 620)	3	3
B-1953	(Alternate Counterweight)		
A-65	Pin, Counterweight Staking	3	3
A-304	Linkscrew	3	3
A-1306	Gasket, Clamp	6	6
A-282	Screw, Socket Head	6	6
A-2036-30	Screw, Socket Head	6	6
A-1372	Clamp Bolts	6	6
A-285	Staking Pin, Linkscrew	2	2
AN380-3-2	Cotter Pin	4	4
MS15001-1	Zerk Fitting	4	4
A-1373	Clamp Nut	4	4
No. 3	Lubricaps	4	4
A-285	Staking Pin, Socket Screw	4	4
	CLAMP ASSOCIATED PARTS		
A-881-1	Stop Plate	3	3
AN3H2A	Plate Bolt	6	6
AN501A10-6	Screw, Balance Weight	As Needed	
A-1305	Balance Weights	As Needed	
AN380-3-3	Cotter Pin	3	3
A-944	Sleeve, Linkscrew	3	3
830-4	AUTOMATIC HIGH PITCH STOP ASSY.	3	3
B-882-4	Bracket, High Pitch Stop	3	3
A-883	Pin, High Pitch Stop	3	3
A-884	Spring, High Pitch Stop	3	3
AN-380-3-3	Cotter Pin	3	3
AN936A10	Washer	3	3
831-4	FEATHERING SPRING SUB-ASSEMBLY	1	
B-855A	Pilot Tube	1	
B-853	Spring, Feathering, Outer	1	
A-856	Mushroom	1	
A-857	Retainer, Spring	1	
A-858	Split Ring	1	
B-953	Spring, Feathering, Inner	1	
A-860-3	Tube Spacer	1	
831-8	FEATHERING SPRING SUB-ASSEMBLY		
B-868A	Pilot Tube		1
B-1428	Spring, Outer		1
B-1405	Spring		1
A-867	Split Ring		1
A-871	Mushroom		1
A-1427	Retainer, Spring		1
A-1955	Spacer Spring		1

Part No.	Nomenclature	No. Required	
		-2A	-2B
832-14	PISTON SUB-ASSEMBLY		1
C-1401-3	Piston		1
A-862	Bushing, Plastic		1
A-861-3	Link, Arm		3
A-1464	Link Pin Unit		3
AN501A10-6	Safety Screw		3
A-946	Bushing		6
A-114-F	Pin, Guide		3
A-817-2	Rod, Guide		3
AN316-5R	Nut, Jam		3
A-1444	Washer		3
A-2037	Socket Screw		3
832-17	PISTON SUB-ASSEMBLY	1	
C-1401-2	Piston	1	
A-862	Bushing, Plastic	1	
A-861-3	Link, Arm	3	
A-1464	Link Pin Unit	3	
AN501A10-6	Safety Screw	3	
A-946	Bushing	6	
A-114-B	Pin, Guide	3	
A-817-2	Rod, Guide	3	
AN316-5R	Nut, Jam	3	
A-1444	Washer	3	
A-2037	Socket Screw	3	
	HYDRAULIC ASSOCIATED PARTS		
B-854	Cylinder	1	1
PRP-909-13	"O" Ring	1	1
A-863	Seal, Dust	1	1
PRP-902-46	"O" Ring	1	1
A-859	Split, Retainer	1	1
A-899	Stop, Feathering	2	2
A-880-1	Nut		1
A-880-2	Nut	1	
AN501A10-4	Stop Screws	4	4
PRP-914-12	Pilot Tube "O" Ring	1	
PRP-914-8	Pilot Tube "O" Ring		1
834-1	GUIDE COLLAR SUB-ASSEMBLY	1	1
B-1402	Collar, Pilot	1	1
A-2038-12	Screw, Socket Head	1	1
A-116-D-1	Bushing, Plastic	3	3
A-114-C	Staking Pin	1	1
836-2	SPINNER SUB-ASSEMBLY (LARGE)		
D-1409	Spinner Dome	1	1
D-1415	Spinner Bulkhead Assembly	1	1
AN526C1032R8	Screws, Button, Head	18	18

PARTS LIST

Model HC-93Z20-1A1, -1B1

Assembly Drawing D-1375

Part No.	Nomenclature	No. Required	
		-1A1	-1B1
840-15	HUB SPIDER UNIT	1	1
C-1351	Hub Spider	1	1
A-1308	Pilot Tube	1	1
A-155	Bushing Shaft	1	1

Part No.	Nomenclature	No. Required	
		-1A1	-1B1
	HUB ASSOCIATED PARTS		
A-1303A	Bearing, Blade	3	3
A-1331	Split Ring	3	3
PRP-909-7	"O" Ring, Blade	3	3
PRP-909-7	"O" Ring, Shaft	1	1
A-50-5	Rear Cone	1	1
A-63-B	Nut, Hub Retention	1	1
A-870 } or B-2063	Ring, Hub Puller (Not Req'd With B-2063)	1	1
A-847	Pin, Safety	1	1
A-1889	Ball Spacer (Optional)	3	3
838-41	CLAMP & COUNTERWEIGHT SUB-ASSY.	3	
C-1301-1	Clamp	3	
A-295	Linkscrew	3	
A-285	Staking Pin, Linkscrew	3	
MS15001-1	Zerk Fitting	3	
833-16	Counterweight Unit	3	
A-2036-32	Screw, Socket Head Ctwt.	6	
A-285	Staking Pin, Socket Screw	6	
A-65	Pin, Counterweight, Staking	3	
A-1306	Gasket, Clamp	6	
A-282	Screw, Socket Head	6	
AN380-3-2	Cotter Pin	6	
A-1372	Clamp Bolts	6	
A-1373	Clamp Nuts	6	
No. 3	Lubricaps	6	
838-42	CLAMP & COUNTERWEIGHT SUB-ASSY.		3
C-1301-1	Clamp		3
A-295	Linkscrew		3
A-285	Staking Pin, Linkscrew		3
MS15001-1	Zerk Fitting		3
833-16R	Counterweight Unit		3
A-2036-32	Ctwt. Socket Screws		6
A-285	Staking Pins, Socket Screw		6
A-65	Ctwt. Staking Pin		3
A-1306	Clamp Gasket		6
A-282	Clamp Socket Screw		6
AN380-3-2	Cotter Pin, Socket Sc.		6
A-1372	Clamp Bolts		6
A-1373	Clamp Nuts		6
No. 3	Lubricaps		6
	CLAMP ASSOCIATED PARTS		
A-1305	Balance Weights	As Needed	
AN501A10-6	Weight Screws	6	6
B-1378	PISTON JACK ASSEMBLY	1	1
B-1421	Piston	1	1
A-862	Plastic Bushing	1	1
A-114-F	Rod Staking Pin	3	3
A-826-5	Push Rod	3	3
A-921-1	Fork	3	3
A-2039	Socket Set Screw	3	3
A-827-3	Rod Sleeve	3	3
A-970-2	High Stop	3	3
A-965	Washer	3	3
A-848	Flexlock Nut	3	3
	ASSOCIATED PARTS		
B-806-1	Cylinder	1	1
PRP-909-13	"O" Ring, Cylinder	1	1
A-863	Dust Seal	1	1
PRP-902-46	"O" Ring	1	1
A-95-A	Pitch Change Block	2	2

Part No.	Nomenclature	No. Required	
		-1A1	-1B1
836-15R	SPINNER SUB-ASSY. (Not Polished, No Stops)	1	1
D-1367-6	Spinner Dome (Not Polished)	1	1
D-1387RH	Bulkhead (No Stops)	1	1
AN526C1032R8	Screws, Dome Mounting	12	12
AN526C1032R7	Screws, Dome Mounting	12	12
836-23P	SPINNER ASSEMBLY	1	1
C1872P	Spinner Dome	1	1
AN526C1032R8	Screws, Dome Mounting	24	24
D-1389	Bulkhead	1	1

PARTS LIST
Model HC-B3Z20-1

Assembly Drawing D-1980

Part No.	Nomenclature	No. Required
840-55	HUB SPIDER UNIT	1
C-1968	Hub Spider	1
A-1308	Pilot Tube	3
A-155	Bushing, Shaft	1
	HUB ASSOCIATED PARTS	
A-1854	Wire Retention Ring	3
A-1851	Split Bearing	3
A-1852	Guide Ring	3
PRP-909-10	"O" Ring, Blade	3
PRP-909-7	"O" Ring Shaft	1
A-50-5	Rear Cone	1
A-63-B	Nut, Hub Retention	1
A-870 } or B-2063	Ring, Hub Puller (Not Req'd With B-2063)	1
A-847	Pin, Safety	1
A-1889	Ball Spacer (Optional)	3
838-42	CLAMP & COUNTERWEIGHT SUB-ASSY.	3
C-1301-1	Clamp	3
A-295	Linkscrew	3
A-285	Staking Pin, Linkscrew	3
MS-15001-1	Zerk Fitting	3
833-16R	Counterweight Unit	3
A-2036-32	Screw, Socket Head Ctw.	6
A-285	Staking Pin, Socket Screw (AN380-3-2 Optional)	6
A-65	Pin, Counterweight, Staking	3
A-1306	Gasket, Clamp	6
A-282	Screw, Socket Head	6
AN380-3-2	Cotter Pin	6
A-1372	Clamp Bolts	6
A-1373	Clamp Nuts	6
No. 3	Lubricaps	6
	CLAMP ASSOCIATED PARTS	
A-1305	Balance Weights	As Needed
AN501A10-6	Weight Screws	6
B-1378	PISTON JACK ASSEMBLY	1
B-1421-5	Piston Unit	1
B-1421	Piston	1
A-862	Plastic Bushing	1
A-114-G	Rod Staking Pin	3
A-826-5	Push Rod	3
A-921-1	Fork	3
A-2039	Socket Set Screws	3
A-827-3	Rod Sleeve	3
A-970-()	High Stop	3
A-965	Washer	3
A-848	Flexlock Nut	3

Part No.	Nomenclature	No. Required
	ASSOCIATED PARTS	
B-806-1	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
A-863	Dust Seal	1
PRP-902-46	"O" Ring	1
A-95-A	Pitch Change Block	2
836-15R	SPINNER ASSY. (Not Polished, No Stops)	1
D-1367-6	Spinner Dome (Not Polished)	1
D-1387RH	Bulkhead (No Stops)	1
AN526C1032R8	Screws, Dome Mounting	12
AN526C1032R7	Screws, Dome Mounting	12
836-23P	SPINNER ASSEMBLY (Anti-Icing, No Stops)	1
C-1872P	Spinner Dome	1
D-1389	Bulkhead, Anti-Icing (No Stops)	1
AN526C1032R8	Screws	24

PARTS LIST
Model HA-B3Z30-1

Assembly Drawing C-1885

Part No.	Nomenclature	No. Required
840-34	HUB SPIDER UNIT	1
C-1853	Hub Spider	1
A-1817	Bushing	1
A-1308	Pilot Tube	3
	HUB ASSOCIATED PARTS	
A-1851	Split Bearing, Blade	3
A-1852	Guide Ring	3
A-1854	Wire Retention Ring	3
A-1877	Wire Ring, Bearing	3
PRP-909-7	"O" Ring, Blade	3
A-1856	Rear Cone	1
B-1814 Or B-1894	Hub Nut	1
A-1813	Puller Ring (Not Req'd With B-1894)	1
A-1848 or A-847	Hub Nut Safety	1
838-50	CLAMP ASSEMBLY	3
C-1301	Clamp	3
A-304	Linkscrew	3
A-285	Staking Pin, Linkscrew	3
MS-15001-1	Zerk Fitting	3
B-1311	Counterweight	3
A-2036-32	Ctwt. Socket Screws	6
A-285	Staking Pins, Socket Screw	6
A-65	Staking Pin, Counterweight	3
A-1306	Clamp Gaskets	6
A-282	Socket Screws, Clamp	6
A-1372	Clamp Bolts	6
A-1373	Clamp Nuts	6
	CLAMP ASSOCIATED PARTS	
A-1305	Balance Weights	As Needed
AN501A10-6	Weight Screws	6
A-944	Sleeve, Linkscrew	3
AN380-3-3	Cotter Pin, Sleeve	3
	ASSOCIATED PARTS	
B-1859	Cylinder, Adjustable	1
PRP-909-13	"O" Ring, Cylinder	1
B-1875	Nut, Piston Adjusting	1
C-1874	Piston, Adjustable	1
B-1876	Nut, Piston Lock	1
A-1464	Link Pin Units	3
A-1868	Link Arms	3
A-1857	Shaft Plug	1
PRP-902-15	"O" Ring, Plug	1

PARTS LIST
Model HC-B3ZF-2A, -2B

Assembly Drawing D-1975

Part No.	Nomenclature	No. Required	
		-2A	-2B
840-57	HUB SPIDER ASSEMBLY	1	1
C-1967	Hub Spider	1	1
A-1308	Pilot Tubes	3	3
	HUB ASSOCIATED PARTS		
A-1851	Split Bearing, Blade	3	3
A-1877	Bearing Retention Ring	3	3
A-1852	Guide Ring	3	3
A-1854	Wire Retention Ring	3	3
PRP-909-7	"O" Ring, Blade	3	3
PRP-909-6	"O" Ring, Hub Mounting	1	1
.5002x1	Danley Dowel Pin	2	2
A-1328-1	12 Point Bolts	6	6
A-1381	Washer	6	6
A-1889	Ball Spacer (Optional)	3	3
838-17	CLAMP & COUNTERWEIGHT ASSEMBLY	3	3
C-1301	Clamp	3	3
A-304	Linkscrew	3	3
A-285	Staking Pin, Linkscrew	3	3
MS-15001-1	Zerk Fitting	3	3
833-16	Counterweight Unit	3	3
A-2036-32	Cap Screws, Counterweight	6	6
A-65	Pin, Counterweight Staking	3	3
A-1306	Gaskets, Clamp	6	6
A-282	Socket Head Screws, Clamp	6	6
AN380-3-2	Cotter Pins	6	6
A-1372	Clamp Bolts	6	6
A-1373	Clamp Nuts	6	6
A-285	Staking Pins, Socket Screw (AN380-3-2 Cotter Pin Optional)	6	6
	CLAMP ASSOCIATED PARTS		
A-944	Sleeve, Linkscrew	3	3
AN380-3-3	Cotter Pin	3	3
A-881-1	Stop Plate	3	3
A-2016	Hex Head Bolts	6	6
A-1305	Balance Weight	As Needed	
AN501A10-6	Weight Screws	6	6
831-4	FEATHERING SPRING ASSEMBLY	1	
B-855A	Pilot Tube	1	
A-856	Mushroom	1	
A-860-3	Spacer Tube	1	
B-953	Spring, Inner	1	
B-853	Spring, Outer	1	
A-857	Spring Retainer	1	
A-858	Split Retainer	1	
831-8	FEATHERING SPRING ASSEMBLY		1
B-868A	Pilot Tube		1
A-871	Mushroom		1
B-1363-1	Spring, Inner		1
A-1955	Spring Spacer		1
B-1428	Spring, Outer		1
A-1427	Spring Retainer		1
A-867	Split Retainer		1

Part No.	Nomenclature	No. Required	
		-2A	-2B
832-14	PISTON ASSEMBLY		1
C-1401-3	Piston Unit		1
C-1401-3 Det. #1	Piston		1
A-862	Bushing, Plastic		1
A-946	Bushing		6
A-817-2	Guide Rods		3
A-114-B	Staking Pins, Rod		3
A-1444	Washers		3
AN316-5R	Jam Nuts		3
A-2037	Socket Head Cap Screws		3
A-1464	Link Pin Units		3
AN501A10-6	Safety Screws		3
A-861-3	Link Arms		3
832-17	PISTON ASSEMBLY	1	
C-1401-2	Piston Unit	1	
C-1401-2 Det. #1	Piston	1	
A-862	Bushing, Plastic	1	
A-946	Bushing	6	
A-817-2	Guide Rods	3	
A-114-B	Staking Pins, Rod	3	
A-1444	Washers	3	
AN316-5R	Jam Nuts	3	
A-2037	Socket Head Cap Screws	3	
A-1464	Link Pin Units	3	
AN501A10-6	Safety Screws	3	
A-861-3	Link Arms	3	
834-1	GUIDE COLLAR SUB-ASSEMBLY	1	1
B-1402	Collar, Pilot	1	1
A-2038-12	Screw, Socket Head	1	1
A-116D-1	Bushing Plastic	3	3
A-114-C	Staking Pin	1	1
	HYDRAULIC ASSOCIATED PARTS		
B-854	Cylinder	1	1
PRP-909-13	"O" Ring, Cylinder	1	1
A-859	Split Retainer	1	1
A-899	Stops, Feathering	2	2
AN501A10-6	Screws, Feathering Stop	4	4
A-863	Dust Seal	1	1
PRP-902-46	"O" Ring, Piston	1	1
PRP-914-8	"O" Ring, Pilot Tube		1
PRP-914-12	"O" Ring, Pilot Tube	1	
A-880-1	Nut		1
A-880-2	Nut	1	
830-15	AUTO HIGH PITCH STOP ASSEMBLY	3	3
B-882-4B	Bracket, High Pitch Stop	3	3
A-883	Pin, High Pitch Stop	3	3
A-884	Spring, High Pitch Stop	3	3
AN936A10	Washer	3	3
AN380-3-3	Cotter Pin	3	3
	AUTO STOP MOUNTING PARTS		
AN4H5A	Hex Head Bolts	6	6
AN4-15A	Hex Head Bolts	6	6
AN960-416	Washers	6	6
H10-4	Kaylock Nuts	6	6
836-26	SPINNER ASSEMBLY (Anti-Icing, No Stops)	1	1
C-1888	Spinner Dome	1	1
D-1976-2R	Bulkhead Assembly, Anti-Icing	1	1
AN526C1032R8	Screws, Dome Mounting	24	24
836-25	SPINNER ASSEMBLY (No Anti-Icing)	1	1
	(No Stops)		
C-1888	Spinner Dome	1	1
D-1976-4R	Bulkhead Assembly	1	1
AN526C1032R8	Screw, Dome Mounting	24	24

Assembly Drawing
E-2030

PARTS LIST

Model HC-A3X20-5L—Left Hand - Reversible

Part No.	Nomenclature	No. Required
840-65	HUB SPIDER UNIT	1
C-1482	Hub Spider	1
A-158L	Pilot Tubes	3
A-155	Bushing	1
	HUB ASSOCIATED PARTS	
A-971	Blade Bearing, Split	3
A-2027	Bearing Retention Ring	3
A-972	Guide Ring	3
A-974	Wire Retention Ring	3
PRP-909-6	Blade "O" Ring	3
A-50-3, -1	Rear Cone (-3 with spinner) (-1 without spinner)	1
PRP-909-7	Shaft "O" Ring	1
A-63-B	Hub Nut	1
A-870 } or B-2063	Puller Ring (Not Req'd With B-2063)	1
A-847	Hub Nut Lock	1
A-311	Ball Spacer (Optional)	3
838-36	CLAMP ASSEMBLY	3
C-3-1AL	Clamp	3
A-304	Linkscrew	3
A-285	Staking Pin, Linkscrew	3
MS-15001-1	Zerk Fittings	9
B-2007	Counterweight	3
A-2036-16	Counterweight Socket Screws	6
A-285	Staking Pins, Ctwt. Sk. Sc.	6
A-65	Counterweight Staking Pin	3
A-47-1	Clamp Gaskets	6
A-282	Socket Screws	6
AN380-3-2	Cotter Pins	6
A-2017	Clamp Bolts	6
AN960-616	Washers	6
A-2043	Clamp Nuts	6
No. 3	Lubricaps	6
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weight	As Needed
AN501A10-6	Weight Screws	6
A-944	Sleeve, Linkscrew	3
AN380-3-3	Sleeve Cotter Pin	3
831-15	FEATHERING SPRING ASSEMBLY	1
B-2001	Pilot Tube	1
A-2010	Spacer Ring	1
A-871	Mushroom	1
B-1363-1	Feathering Spring	1
A-866-2	Spring Retainer	1
A-867	Split Retainer	1
832-27	PISTON ASSEMBLY	1
C-1401-5L	Piston Unit	1
C-1401-5L Det. #1	Piston	1
A-862	Plastic Bushing	1
A-946	Bronze Bushings	6
A-817-5	Guide Rods	3
A-114-B	Rod Staking Pins	3
A-1464	Link Pin Units	3
AN501A10-6	Safety Screws	3
A-1444	Washers	3
AN316-5R	Check Nuts	3
A-2037	Socket Screws	3
A-2008	Link Arms	3

Part No.	Nomenclature	No. Required
834-1L	GUIDE COLLAR UNIT	1
B-1402L	Guide Collar	1
A-116D-1	Plastic Bushings	3
A-114-C	Staking Pin	1
A-2038-12	Socket Screw	1
D-2006	VALVE ASSEMBLY "E"	1
A-2004	Tube End "A"	1
B-2002	Tube "D"	1
A-2011	Staking Pin, Valve	1
A-2005	Tube "C"	1
A-2003	Tube End "B"	1
PRP-902-21	"O" Ring, End "A"	2
PRP-902-21	"O" Ring, End "B"	1
	HYDRAULIC ASSOCIATED PARTS	
B-854	Cylinder	1
PRP-909-13	Cylinder "O" Ring	1
PRP-914-8	Tube "O" Ring	1
A-880-1	Piston Flexlock Nut	1
A-863	Dust Seal	1
PRP-902-46	Piston "O" Ring	1
A-859	Split Retainer	1
A-899-1	Feathering Stops	2
AN501A10-6	Stop Screws	4
835-10	SPINNER ASSEMBLY	1
C-888-6	Dome	1
C-807-7	Bulkhead Assembly	1
AN526C1032R7	Screws, Mounting	15

PARTS LIST

Model HC-A2X20-5L—Left Hand - Reversible

Assembly Drawing E-2015

Part No.	Nomenclature	No. Required
840-67	HUB SPIDER UNIT	1
C-2026-2	Hub Spider	1
A-158L	Pilot Tubes	2
A-155	Bushing	1
840-70	HUB SPIDER UNIT	1
C-2026-3	Hub Spider	1
A-158L	Pilot Tubes	2
A-155	Bushing	1
	HUB ASSOCIATED PARTS	
A-971	Blade Bearing, Split	2
A-2027	Bearing Retention Ring	2
A-972	Guide Ring	2
A-974	Wire Retention Ring	2
PRP-909-6	Blade "O" Ring	2
A-50-3, -1	Rear Cone (-3 with spinner) (-1 without spinner)	1
PRP-909-7	Shaft "O" Ring	1
A-63-B	Hub Nut	1
A-870 } or B-2063	Puller Ring (Not Req'd With B-2063)	1
A-847	Hub Nut Lock	1

Part No.	Nomenclature	No. Required
838-36	CLAMP ASSEMBLY	
C-3-1AL	Clamp	2
A-304	Linkscrew	2
A-235	Staking Pin, Linkscrew	2
MS-15001-1	Zerk Fittings	6
B-2007	Counterweight	2
A-2036-16	Counterweight Mounting Screws	4
A-285	Staking Pins, Sk. Hd. Screws	4
A-65	Counterweight Staking Pin	2
A-47-1	Clamp Gaskets	4
A-282	Socket Screws	4
AN380-3-2	Cotter Pins	4
A-2017	Clamp Bolts	4
AN960-616	Washers	4
A-2043	Clamp Nuts	4
No. 3	Lubricaps	4
	CLAMP ASSOCIATED PARTS	
A-48	Balance Weight	As Needed
AN501A10-6	Weight Screws	4
A-944	Sleeve, Linkscrew	2
AN380-3-3	Sleeve Cotter Pin	2
831-15	FEATHERING SPRING ASSEMBLY	1
B-2001	Pilot Tube	1
A-2010	Spacer Ring	1
A-871	Mushroom	1
B-1363-1	Feathering Spring	1
A-866-2	Spring Retainer	1
A-867	Split Retainer	1
832-25L	PISTON ASSEMBLY	1
C-852-8	Piston Unit	1
C-852-8 Det. #1	Piston	1
A-862	Plastic Bushing	1
A-817-2	Guide Rod	2
A-114-B	Rod Staking Pins	2
A-1464	Link Pin Units	2
AN501A10-6	Safety Screws	2
A-1444	Washers	2
AN316-5R	Check Nuts	2
A-2037	Socket Screws	2
A-2008	Link Arms	2
834-2	GUIDE COLLAR UNIT	1
B-892	Guide Collar	1
A-116D-1	Plastic Bushing	2
A-2038-12	Socket Screw	2
D-2006	VALVE ASSEMBLY "E"	1
A-2004	Tube End "A"	1
A-2005	Tube "C"	1
A-2003	Tube End "B"	1
PRP-902-21	"O" Ring, End "B"	1
PRP-902-21	"O" Ring, End "A"	2
A-2011	Staking Pin, Valve	1
B-2002	Tube "D"	1
	HYDRAULIC ASSOCIATED PARTS	
B-854	Cylinder	1
PRP-909-13	Cylinder "O" Ring	1
PRP-914-8	Tube "O" Ring	1
A-880-1	Piston Flexlock Nut	1
A-863	Dust Seal	1
PRP-902-46	Piston "O" Ring	1
A-859	Split Retainer	1
A-899-1	Feathering Stops	2
AN501A10-6	Stop Screws	4
835-17	SPINNER ASSEMBLY	1
C-888-4	Dome	1
C-807-11	Bulkhead	1
AN526C1032R7	Screws, Mounting	14

PARTS LIST

Model HC-83XF-3A, -3AL, -3B Feathering and Reversing

Assembly Drawing D-1450

Part No.	Nomenclature	No. Required		
		3A	3AL	3B
840-20	HUB SPIDER UNIT	1	1	1
C-1426-2	Hub Spider	1	1	1
A-158L	Pilot Tube	3	3	3
	HUB ASSOCIATED PARTS			
A-14-B	Blade Bearing	3	3	3
A-969	Split Ring	3	3	3
PRP-909-6	Blade "O" Ring	3	3	3
PRP-909-6	Hub "O" Ring	1	1	1
.5002x1	Danley Dowel Pin	2	2	2
A-1328-1	12 Point Bolt	6	6	6
A-1381	Washer	6	6	6
A-311	Ball Spacer	3	3	3
838-33	CLAMP ASSEMBLY	3		3
C-3-1C	Clamp	3		3
A-304	Link Screw	3		3
A-285	Staking Pin, Linkscrew	3		3
MS-15001-1	Zerk Fitting	9		9
833-4	Counterweight Unit	3		3
A-2036-30	Counterweight Socket Head Screws	6		6
A-285	Staking Pin, Socket Screw (AN380-3-2 Cotter Pin	6		6
A-65	Counterweight Staking Pin Optional)	3		3
A-47-1	Clamp Gasket	6		6
A-282	Socket Screw	6		6
AN380-3-2	Cotter Pin	6		6
A-2017	Clamp Bolts	6		6
AN960-616	Washer	6		6
A-2043	Clamp Nuts	6		6
838-53	CLAMP ASSEMBLY		3	
C-3-1CL	Clamp		3	
A-304	Linkscrew		3	
A-285	Staking Pin, Linkscrew		3	
MS-15001-1	Zerk Fitting		9	
833-4L	Counterweight Unit		3	
A-2036-30	Ctwt. Socket Screw		6	
A-285	Staking Pin, Socket Sc. (AN380-3-2 Cotter Pin		6	
A-65	Ctwt. Staking Pin Optional)		3	
A-47-1	Clamp Gasket		6	
A-282	Socket Screw		6	
AN380-3-2	Cotter Pin, Socket Screw		6	
A-2017	Clamp Bolts		6	
AN960-616	Washer		6	
A-2043	Clamp Nuts		6	
	CLAMP ASSOCIATED PARTS			
A-48	Balance Weight		As Needed	
AN501-A10-6	Weight Screw	6	6	6
A-881	Stop Plate	3	3	3
A-2016	Plate Screws	6	6	6
A-944	Sleeve, Linkscrew	3	3	3
AN380-3-3	Sleeve Cotter Pin	3	3	3
AN960-10L	Washers	18	18	18

Part No.	Nomenclature	No. Required		
		3A	3AL	3B
831-13	FEATHERING & REV. SPRING ASSY.	1	1	1
B-1465	Pilot Tube	1	1	1
A-1459	Spring Retainer Unit	1	1	1
A-1452	Spring Cup Retainer	1	1	1
A-1458	Retainer Sleeve	1	1	1
B-1461	Spacer Tube	1	1	1
B-1454	Spring, Inner	1	1	1
B-1453	Spring, Outer	1	1	1
A-1460	Spring Retainer	1	1	1
A-867	Split Retainer	1	1	1
A-1466	Reverse Indicator (Optional)	1	1	1
B-1470	VALVE ASSEMBLY "C"			1
B-1469	Valve "B"			1
B-1468	Valve "A"			1
A-114-G	Staking Pin			1
PRP-902-17	"O" Ring			2
#5008-150	Truarc Snap Ring			1
B-1457	VALVE ASSEMBLY "C"	1	1	
B-1456	Member "B"	1	1	
B-1455	Member "A"	1	1	
PRP-902-17	"O" Ring	3	3	
1/8x1	Staking Pin	1	1	
1/8x1/2	Staking Pin	1	1	
834-1A	GUIDE COLLAR UNIT	1		1
B-1402A	Guide Collar	1		1
A-116D-1	Bushing	3		3
A-2038-12	Socket Head Screw	1		1
A-114C	Staking Pin	1		1
834-1AL	GUIDE COLLAR UNIT		1	
B-1402AL	Guide Collar		1	
A-116D-1	Bushing		3	
A-2038-12	Socket Head Cap Screw		1	
A-114C	Staking Pin		1	
B-1368-4	PISTON ASSEMBLY	1		1
C-1451-1	Piston	1		1
C-1451-1 Det. #1	Piston Casting	1		1
A-862	Plastic Bushing	1		1
A-817-1	Guide Rod	3		3
A-114E	Rod Staking Pin	3		3
A-946	Bronze Bushing	6		6
A-1444	Washer	3		3
AN316-5R	Jam Nut	3		3
A-2037	Socket Head Screw	3		3
A-1464	Link Pin Unit	3		3
AN501-A10-6	Safety Screw	3		3
B-1901	Link Arm	3		3
B-1368-4L	PISTON ASSEMBLY		1	
C-1451-1L	Piston Unit		1	
C-1451-1L Det. #1	Piston Casting		1	
A-862	Plastic Bushing		1	
A-817-1	Guide Rod		3	
A-114E	Rod Staking Pin		3	
A-946	Bronze Bushing		6	
A-1444	Washer		3	
AN316-5R	Jam Nut		3	
A-2037	Socket Head Cap Screw		3	
A-1464	Link Pin Unit		3	
AN501A10-6	Safety Screw		3	
B-1901L	Link Arm		3	

Part No.	Nomenclature	No. Required		
		3A	3AL	3B
HYDRAULIC ASSOCIATED PARTS				
B-854-1	Cylinder	1	1	1
PRP-909-13	Cylinder "O" Ring	1	1	1
A-859	Split Retainer, Front	1	1	1
A-1467	Stop Plate	1	1	1
AN501A10-6	Plate Screws	4	4	4
AN501A10-10	Stop Screws	4	4	4
AN960-10	Washers, Stop Screw	28±4	28±4	28±4
PRP-902-46	Piston "O" Rings	1	1	1
A-863	Dust Seal	1	1	1
PRP-914-8	"O" Ring	1	1	1
A-880-1	Flexlock Nut	1	1	1
830-4 AUTO HIGH PITCH STOP UNIT				
B-882-4	Bracket	3		3
A-883	Pin	3		3
A-884	Spring	3		3
AN936A10	Washer	3		3
AN380-3-3	Cotter Pin	3		3
830-4L AUTO HIGH PITCH STOP UNIT				
B-882-4L	Bracket		3	
A-883	Pin		3	
A-884	Spring		3	
AN936A10	Washer		3	
AN380-3-3	Cotter Pin		3	
AUTO STOP ASSOCIATED PARTS				
AN4H5A	Hex Head Bolt	6	6	6
AN4-15A	Hex Head Bolt	6	6	6
AN960-416	Washer	6	6	6
AN960-416L	Washer	6	6	6
H10-4	Kaylock Nut	6	6	6
836-25P SPINNER ASSEMBLY				
C1888P	Spinner Dome	1	1	1
D-1976-4R	Spinner Bulkhead	1	1	1
AN526C1032R8	Mounting Screws	24	24	24
836-26P SPINNER ASSEMBLY (Anti-Icing)				
C1888P	Spinner Dome	1	1	1
D-1976-2R	Spinner Bulkhead	1	1	1
AN526C1032R8	Mounting Screws	24	24	24
	Governor, Woodward 210,000 Series or Hartzell B-3	1	1	1
A-2528	Valve Assembly	1	1	1
C-2014	Plumbing Layout Drawing	1	1	1

PARTS LIST

Models EHC-A3VF-4; PHC-A3VF-4 & -4(D); & HC-A3VK-4

Assembly Drawing D-1484

Part No.	Nomenclature	No. Required			
		EHC-A3VF-4	PHC-A3VF-4	PHC-A3VF-4(D)	HC-A3VK-4
840-77	HUB SPIDER UNIT				1
C-1476	Hub Spider				1
A-1496	Pilot Tubes				3
840-83	HUB SPIDER UNIT		1	1	
C-1477-1	Hub Spider		1	1	
A-1496	Pilot Tubes		3	3	
840-102	HUB SPIDER UNIT	1			
C-1477-3	Hub Spider	1			
A-1496	Pilot Tubes	3			
	HUB ASSOCIATED PARTS				
PRP-909-8	"O" Rings, Blade	3	3	3	3
A-971	Split Bearings, Blade	3	3	3	3
A-2027	Wire Rings, Bearing	3	3	3	3
A-311	Ball Spacers, Bearing	3	3	3	3
A-972	Guide Rings, Bearing	3	3	3	3
A-974	Wire Rings, Guide Retention	3	3	3	3
.5002 x 1"	Danley Dowel Pins	2	2	2	
PRP-909-6	"O" Ring, Shaft	1	1	1	
B-1344	Plate, Spinner Mounting		1	1	
A-1328-2	12 Point Bolts	6	6	6	
PRP-902-32	"O" Ring, Shaft				1
B-1322	Shim				1
A-1333-3	Hex Head Bolts				6
A-2482-1	Washers	6			
A-1381	Washers		6	6	
838-58	CLAMP & COUNTERWEIGHT ASSEMBLY	3	3	3	3
C-3-1E	Clamp	3	3	3	3
B-1480	Counterweight Unit	3	3	3	3
A-1372	12 Point Bolts, Counterweight	6	6	6	6
MS15001-1	Zerk Fittings	6	6	6	6
A-47-1	Clamp Gaskets	6	6	6	6
A-282	Socket Screws, Clamp	6	6	6	6
AN380-3-2	Cotter Pins, Socket Screw	6	6	6	6
A-2017	Clamp Bolts, 12 Point	6	6	6	6
AN960-616	Washers	6	6	6	6
A-2043	Clamp Nuts	6	6	6	6
No. 3	Lubricaps	6	6	6	6
	CLAMP ASSOCIATED PARTS				
A-48	Balance Weights		As Needed		
AN501A10-(6)	Screws, Balance Weight		As Needed		
A-944	Sleeves, Counterweight Pin	3	3	3	3
AN380-3-3	Cotter Pins, Sleeve	3	3	3	3
834-7B	GUIDE COLLAR UNIT	1	1	1	1
B-1836-2	Guide Collar	1	1	1	1
A-116D-1	Plastic Bushings	3	3	3	3
A-114-2	Staking Pin, Bushing	1	1	1	1
A-2038-14	Nylock Socket Head Cap Screw	1	1	1	1

Part No.	Nomenclature	No. Required			
		EHC-A3VF -4	PHC-A3VF -4	PHC-A3VF -4(D)	HC-A3VK -4
832-33	PISTON ASSEMBLY	1	1	1	1
C-1881-1	Piston Unit	1	1	1	1
C-1881-1 Det. #1	Piston	1	1	1	1
A-862-2	Plastic Bushing	1	1	1	1
A-817-4	Guide Rods	3	3	3	3
A-114-B	Staking Pins, Rod	3	3	3	3
A-946	Bronze Bushings	6	6	6	6
A-2037	Socket Head Cap Screws, Rod	3	3	3	3
AN316-5R	Check Nuts, Guide Rod	3	3	3	3
A-1444	Washers, Guide Rod	3	3	3	3
A-1464	Link Pin Units	3	3	3	3
AN501A10-6	Safety Screws, Link Pin Unit	3	3	3	3
A-861-3L	Link Arms	3	3	3	3
	HYDRAULIC ASSOCIATED PARTS				
PRP-909-13	"O" Ring, Cylinder Mounting	1	1	1	1
B-1882	Cylinder	1	1	1	1
B-1843	Dust Seal, Piston	1	1	1	1
PRP-902-50	"R" Ring, Piston	1	1	1	1
837-8	SPINNER ASSEMBLY		1		
C-226-1	Dome, Spinner		1		
AN526C1032R8	Screws, Dome Mounting		12		
C-1399	Bulkhead Unit		1		
B-1345-1	Ring, Spinner Mounting		1		
AN5-10A	Hex Head Bolts		4		
AN960-516L	Washers		4		
H10-5	Kaylock Nuts		4		
837-9	SPINNER ASSEMBLY			1	
C-226-2	Dome, Spinner			1	
AN526C1032R8	Screws, Dome Mounting			12	
C-1399	Bulkhead Unit			1	
B-1345	Ring, Spinner Mounting			1	
AN5-14A	Hex Head Bolts			4	
AN960-516	Washers			4	
H10-5	Kaylock Nuts			4	
C-2513	SPINNER ASSEMBLY				1
C-2531-1	Dome, Spinner				1
AN526C1032R8	Screws, Dome Mounting				21
C-2512	Adaptor Ring Unit				1

PARTS LIST

Assembly Drawing D-1446 Models HC-A3VK-2, -2A, -2B, & -2C

Part No.	Nomenclature	No. Required			
		HC-A3VK			
		-2	-2A	-2B	-2C
840-77	HUB SPIDER UNIT	1	1	1	1
C-1476	Hub Spider	1	1	1	1
A-1496	Pilot Tubes	3	3	3	3
	HUB ASSOCIATED PARTS				
PRP-909-8	"O" Rings, Blade	3	3	3	3
A-971	Split Bearings, Blade	3	3	3	3
A-2027	Wire Rings, Bearing	3	3	3	3
A-311	Ball Spacers, Bearing	3	3	3	3
A-972	Guide Rings, Bearing	3	3	3	3
A-974	Wire Rings, Guide Retention	3	3	3	3
PRP-902-32	"O" Ring, Shaft	1	1	1	1
B-1322	Shim	1	1	1	1
A-1333-3	Hex Head Bolts	3	3	3	3
A-1328	12 Point Bolts	3	3	3	3

Part No.	Nomenclature	No. Required			
		-2	-2A	-2B	-2C
	COMMON CLAMP PARTS				
C-3-5A	Clamp	3	3	3	3
A-304	Linkscrew	3	3	3	3
A-285	Staking Pin, Linkscrew	3	3	3	3
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter	6	6	6	6
A-65	Staking Pin, Counterweight Pin Optional)	3	3	3	3
MS15001-1	Zerk Fittings	6	6	6	6
A-47-1	Clamp Gaskets	6	6	6	6
A-282	Socket Screws, Clamp	6	6	6	6
AN380-3-2	Cotter Pins, Socket Screw	6	6	6	6
A-2017	Clamp Bolts, 12 Point	6	6	6	6
AN960-616	Washers	6	6	6	6
A-2043	Clamp Nuts	6	6	6	6
No. 3	Lubricaps	6	6	6	6
838-6	CLAMP & COUNTERWEIGHT ASSEMBLY				3
833-4	Counterweight Unit				3
A-2036-30	Socket Head Cap Screws, Ctwt.				6
838-11A	CLAMP & COUNTERWEIGHT ASSEMBLY				3
B-271-1A	Counterweight				3
A-2036-30	Socket Head Cap Screws, Ctwt.				6
838-51	CLAMP & COUNTERWEIGHT ASSEMBLY	3			
833-15	Counterweight Unit	3			
A-2036-30	Socket Head Cap Screws, Ctwt.	6			
838-60	CLAMP & COUNTERWEIGHT ASSEMBLY		3		
B-1437-1	Counterweight		3		
A-2036-32	Socket Head Cap Screws, Ctwt.		6		
	CLAMP ASSOCIATED PARTS				
A-48	Balance Weights		As Needed		
AN501A10-(6)	Screws, Balance Weight		As Needed		
A-881	Stop Plates, High Pitch	3	3	3	3
AN960-10	Washers, Plate Mounting	24	24	24	24
AN3H5A	Hex Head Bolts, Plate	6	6	6	6
A-944	Sleeves, Linkscrew	3	3	3	3
AN380-3-3	Cotter Pins, Sleeve	3	3	3	3
A-29	Weight Slugs, Counterweight			9	
AN501A10-8	Screws, Weight Slug			6	
830-9B	AUTO HIGH PITCH STOP UNITS	3	3	3	3
B-984-2	Bracket	3	3	3	3
A-883	Pin	3	3	3	3
A-884	Spring	3	3	3	3
AN936A10	Washer	3	3	3	3
AN380-3-3	Cotter Pin	3	3	3	3
	AUTO STOP MOUNTING PARTS				
AN74-5	Hex Head Bolts	6	6	6	6
834-1	GUIDE COLLAR UNIT	1	1	1	1
B-1402	Guide Collar	1	1	1	1
A-116D-1	Plastic Bushings	3	3	3	3
A-114-C	Staking Pin, Bushing	1	1	1	1
A-2038-12	Nylock Socket Head Cap Screw	1	1	1	1
831-4	SPRING ASSEMBLY	1	1	1	1
B-855A	Pilot Tube	1	1	1	1
A-856	Mushroom	1	1	1	1
A-860-3	Spacer Tube	1	1	1	1
B-953	Spring, Inner	1	1	1	1
B-853	Spring, Outer	1	1	1	1
A-857	Spring Retainer, Rear	1	1	1	1
A-858	Split Retainer, Rear	1	1	1	1

Part No.	Nomenclature	No. Required			
		HC-A3VK			
		-2	-2A	-2B	-2C
832-17	PISTON ASSEMBLY	1	1	1	1
C-1401-2	Piston Unit	1	1	1	1
C-1401-2 Det. #1	Piston	1	1	1	1
A-862	Plastic Bushing	1	1	1	1
A-817-2	Guide Rods	3	3	3	3
A-114-B	Staking Pins, Guide Rod	3	3	3	3
A-946	Bronze Bushings	6	6	6	6
A-2037	Socket Head Cap Screw, Rod	3	3	3	3
AN316-5R	Check Nuts, Guide Rod	3	3	3	3
A-1444	Washers, Guide Rod	3	3	3	3
A-1464	Link Pin Units	3	3	3	3
AN501A10-6	Safety Screws, Link Pin Unit	3	3	3	3
A-861-3	Link Arms	3	3	3	3
A-970	Low Stop Spacer (Optional)	3	3	3	3
	HYDRAULIC ASSOCIATED PARTS				
PRP-909-13	"O" Ring, Cylinder Mounting	1	1	1	1
B-854	Cylinder	1	1	1	1
A-859	Split Retainer, Front	1	1	1	1
A-899-()	Feathering Stop Plates	2	2	2	2
AN501A10-6	Screws, Stop Plate	4	4	4	4
A-863	Dust Seal, Piston	1	1	1	1
PRP-902-46	"O" Ring, Piston	1	1	1	1
PRP-914-12	"O" Ring, Pilot Tube	1	1	1	1
A-880-2	Flexlock Nut, Piston	1	1	1	1
835-14	SPINNER ASSEMBLY	1			1
C-885-1	Adaptor Ring Unit	1			1
C-888-6	Dome, Spinner	1			1
AN526C1032R7	Screws, Dome Mounting	15			15
C-2513	SPINNER ASSEMBLY	1	1		
C-2512	Adaptor Ring Unit	1	1		
C-2531-1	Dome, Spinner	1	1		
AN526C1032R8	Screws, Dome Mounting	16	16		
AN526C1032R7	Screws, Dome Mounting	5	5		
C-2513-2	SPINNER ASSEMBLY	1	1	1	
C-2512-2	Adaptor Ring Unit	1	1	1	
C-2531-5	Dome, Spinner	1	1	1	
AN526C1032R7	Screws, Dome Mounting	15	15	15	
A-2350	ANTI-ICING KIT (Optional)	1	1	1	1
A-2351	Elbow, 90°	3	3	3	3
A-2352	Flexible Tube Assembly	3	3	3	3
B-2353	Travel Tube Unit	3	3	3	3
835-40	SPINNER ASSEMBLY	1			
C-1904	Dome	1			
AN526C1032R7	Screws, Dome Mounting	15			
C-885-1	Adaptor Ring	1			

PARTS LIST

Models HC-A3VF-2, -2B, -2D; EHC-A3VF-2B; & PHC-A3VF-2B, -2C, -2D

Assembly Drawing D-1495

Part No.	Nomenclature	No. Required				
		HC -2	EHC -2B	HC & PHC -2B	PHC -2C	HC & PHC -2D
840-82	HUB SPIDER UNIT FOR HC-A3VF	1		1		1
C-1477	Hub Spider	1		1		1
A-1496	Pilot Tubes	3		3		3
840-83	HUB SPIDER UNIT FOR PHC-A3VF			1	1	1
C-1477-1	Hub Spider			1	1	1
A-1496	Pilot Tubes			3	3	3
840-102	HUB SPIDER UNIT FOR EHC-A3VF		1			
C-1477-3	Hub Spider		1			
A-1496	Pilot Tubes		3			
	HUB ASSOCIATED PARTS					
PRP-909-8	"O" Rings, Blade	3	3	3	3	3
A-971	Split Bearings, Blade	3	3	3	3	3
A-2027	Wire Rings, Bearing	3	3	3	3	3
A-311	Ball Spacers, Bearing	3	3	3	3	3
A-972	Guide Rings, Bearing	3	3	3	3	3
A-974	Wire Rings, Guide Retention	3	3	3	3	3
.5002 x 1"	Danley Dowel Pins	2	2	2	2	2
PRP-909-6	"O" Ring, Shaft	1	1	1	1	1
A-1328-()	12 Point Bolts—A-1328-2 used only on EHC Models on Heron (Caribbean)	6	6	6	6	6
A-2040 or A-1333-4	Hex Head Bolts (Optional)	6	6		6	*6
A-2041 or A-1333-5	Hex Head Bolts (Optional)		**6	6		
A-1381	Washers	6	6	6	6	
A-2482-1	Washers (Optional)			6		
838-6	CLAMP & COUNTERWEIGHT ASSEMBLY				3	
C-3-5A	Clamp				3	
A-304	Linkscrew				3	
A-285	Staking Pin, Linkscrew				3	
833-4	Counterweight Unit				3	
A-2036-30	Socket Head Cap Screws, Ctw.				6	
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter				6	
A-65	Staking Pin, Counterweight Pin Optional)				3	
MS15001-1	Zerk Fittings				6	
A-47-1	Clamp Gaskets				6	
A-282	Socket Screws, Clamp				6	
AN380-3-2	Cotter Pins, Socket Screw				6	
A-2017	Clamp Bolts, 12 Point				6	
AN960-616	Washers				6	
A-2043	Clamp Nuts				6	
No. 3	Lubricaps				6	
838-11A	CLAMP & COUNTERWEIGHT ASSEMBLY		3	3		
C-3-5A	Clamp		3	3		
A-304	Linkscrew		3	3		
A-285	Staking Pin, Linkscrew		3	3		
B-271-1A	Counterweight		3	3		
A-2036-30	Socket Head Cap Screws, Ctw.		6	6		
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter		6	6		
A-65	Staking Pin, Counterweight Pin Optional)		3	3		
MS15001-1	Zerk Fittings		6	6		
A-47-1	Clamp Gaskets		6	6		
A-282	Socket Screws, Clamp		6	6		
AN380-3-2	Cotter Pins, Socket Screw		6	6		
A-2017	Clamp Bolts, 12 Point		6	6		
AN960-616	Washers		6	6		
A-2043	Clamp Nuts		6	6		
No. 3	Lubricaps		6	6		

* NOTE: Only HC Models on Aero and Beagle.

** NOTE: Only EHC Models on Heron (Caribbean).

Part No.	Nomenclature	No. Required				
		HC -2	EHC -2B	HC & PHC -2B	PHC -2C	HC & PHC -2D
838-23	CLAMP & COUNTERWEIGHT ASSEMBLY					3
C-3-5A	Clamp					3
A-304	Linkscrew					3
A-285	Staking Pin, Linkscrew					3
833-4R	Counterweight Unit					3
A-2036-30	Socket Head Cap Screws, Cwt.					6
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter					6
A-65	Staking Pin, Counterweight Pin Optional)					3
MS15001-1	Zerk Fittings					6
A-47-1	Clamp Gaskets					6
A-282	Socket Screws, Clamp					6
AN380-3-2	Cotter Pins, Socket Screw					6
A-2017	Clamp Bolts, 12 Point					6
AN960-616	Washers					6
A-2043	Clamp Nuts					6
No. 3	Lubricaps					6
838-10	CLAMP & COUNTERWEIGHT ASSEMBLY		3	3		
C-3-5A	Clamp		3	3		
A-304	Linkscrew		3	3		
A-285	Staking Pin, Linkscrew		3	3		
833-2	Counterweight Unit		3	3		
A-2036-30	Socket Head Cap Screws, Cwt.		6	6		
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter		6	6		
A-65	Staking Pin, Counterweight Pin Optional)		3	3		
MS15001-1	Zerk Fittings		6	6		
A-47-1	Clamp Gaskets		6	6		
A-282	Socket Screws, Clamp		6	6		
AN380-3-2	Cotter Pins, Socket Screw		6	6		
A-2017	Clamp Bolts, 12 Point		6	6		
AN960-616	Washers		6	6		
A-2043	Clamp Nuts		6	6		
No. 3	Lubricaps		6	6		
838-52	CLAMP & COUNTERWEIGHT ASSEMBLY	3				
C-3-5A	Clamp	3				
A-304	Linkscrew	3				
A-285	Staking Pin, Linkscrew	3				
833-26	Counterweight Unit	3				
A-2036-32	Socket Head Cap Screws, Cwt.	6				
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter	6				
A-65	Staking Pin, Counterweight Pin Optional)	3				
MS15001-1	Zerk Fittings	6				
A-47-1	Clamp Gaskets	6				
A-282	Socket Screws, Clamp	6				
AN380-3-2	Cotter Pins, Socket Screw	6				
A-2017	Clamp Bolts, 12 Point	6				
AN960-616	Washers	6				
A-2043	Clamp Nuts	6				
No. 3	Lubricaps	6				
	CLAMP ASSOCIATED PARTS					
A-48	Balance Weights			As Needed		
AN501A10-(6)	Screws, Balance Weight			As Needed		
A-29	Weight Slugs, Counterweight		9	9		
AN501A10-10	Screws, Weight Slug		6	6		
A-890-9	Weight Slug, Counterweight					3
AN4H5A	Hex Head Bolts, Weight Slug					6
A-881	Stop Plates	3	3	3		3
A-2016	Hex Head Bolts, Stop Plate	6	6	6		6
A-944	Sleeves, Linkscrew	3	3	3	3	3
AN380-3-3	Cotter Pins, Sleeve	3	3	3	3	3

Part No.	Nomenclature	No. Required				
		HC -2	EHC -2B	HC & PHC -2B	PHC -2C	HC PI -2L
830-4	AUTO HIGH PITCH STOP UNITS	3	3	3		3
B-882-4	Bracket	3	3	3	3	3
A-883	Pin	3	3	3		3
A-884	Spring	3	3	3		3
AN936A10	Washer	3	3	3		3
AN380-3-3	Cotter Pin	3	3	3		3
	AUTO STOP MOUNTING PARTS					
AN74-5	Hex Head Bolts	6	6	6	6	6
834-1	GUIDE COLLAR UNIT	1	1	1	1	1
B-1402	Guide Collar	1	1	1	1	1
A-116D-1	Plastic Bushings	3	3	3	3	3
A-114-C	Staking Pin, Bushing	1	1	1	1	1
A-2038-12	Nylock Socket Head Cap Screw	1	1	1	1	1
831-4	SPRING ASSEMBLY	1	1	1	1	1
B-855A	Pilot Tube	1	1	1	1	1
A-856	Mushroom	1	1	1	1	1
A-860-3	Spacer Tube	1	1	1	1	1
B-953	Spring, Inner	1	1	1	1	1
B-853	Spring, Outer	1	1	1	1	1
A-857	Spring Retainer, Rear	1	1	1	1	1
A-858	Split Retainer, Rear	1	1	1	1	1
832-17	PISTON ASSEMBLY	1	1	1	1	1
C-1401-2	Piston Unit	1	1	1	1	1
C-1401-2 Det. #1	Piston	1	1	1	1	1
A-862	Plastic Bushing	1	1	1	1	1
A-817-2	Guide Rods	3	3	3	3	3
A-114-B	Staking Pins, Guide Rod	3	3	3	3	3
A-946	Bronze Bushings	6	6	6	6	6
A-2037	Socket Head Cap Screws, Rod	3	3	3	3	3
AN316-5R	Check Nuts, Guide Rod	3	3	3	3	3
A-1444	Washers, Guide Rod	3	3	3	3	3
A-1464	Link Pin Units	3	3	3	3	3
AN501A10-6	Safety Screws, Link Pin Unit	3	3	3	3	3
A-861-3	Link Arms	3	3	3	3	3
	HYDRAULIC ASSOCIATED PARTS					
PRP-909-13	"O" Ring, Cylinder Mounting	1	1	1	1	1
B-854	Cylinder	1	1	1	1	1
A-1536	Spacer, Spring Assembly				1	
A-859	Split Retainer, Front	1	1	1	1	1
A-899-()	Stop Plates, Feathering Adj.	2	2	2	2	2
AN501A10-6	Screws, Stop Plate	4	4	4	4	4
A-863	Dust Seal, Piston	1	1	1	1	1
PRP-902-46	"O" Ring, Piston	1	1	1	1	1
PRP-914-12	"O" Ring, Pilot Tube	1	1	1	1	1
A-880-2	Flexlock Nut, Piston	1	1	1	1	1
	SPINNER MOUNTING PARTS					
AN4-16A	Hex Head Bolts	6	6	6	6	6
AN960-416L	Washers (1/32")	12	12	12	12	12
A-1864	Washers (1/16")	6	6	6	6	6
H10-4	Kaylock Nuts	6	6	6	6	6
835-29	SPINNER ASSEMBLY				1	1
C-1904	Dome, Spinner				1	
AN526C1032R7	Screws, Dome Mounting				15	15
C-807-8	Bulkhead Unit				1	1

Part No.	Nomenclature	No. Required				
		HC -2	EHC -2B	HC & PHC -2B	PHC -2C	HC & PHC -2D
835-31	ANTI-ICING SPINNER ASSEMBLY					1
C-1904	Dome, Spinner					1
AN526C1032R7	Screws, Dome Mounting					15
C-807-13A	Bulkhead Assembly					1
C-807-8A	Bulkhead Unit					1
C-2357	Slinger Ring Unit					1
AN960-616	Washers, Ring Mounting					3
A-2352-1	Flexible Tube Units					3
B-2358	Travel Tube Units					3
AN501A10-6	Screws, Travel Tube Mounting					6
836-18P	SPINNER ASSEMBLY	1				
D-1367-6	Dome, Spinner	1				
AN526C1032R8	Screws, Dome Mounting	24				
D-1415-4	Bulkhead Unit	1				
836-19P	ANTI-ICING SPINNER ASSEMBLY	1				
D-1367-7P	Dome, Spinner	1				
AN526C1032R7	Screws, Dome Mounting	12				
AN526C832R8	Screws, Travel Tube Mounting	3				
D-1415-6	Bulkhead Assembly	1				
D-1415-5	Bulkhead Unit	1				
D-1433	Slinger Ring Unit	1				
836-25	SPINNER ASSEMBLY	1	1			
C-1888	Dome, Spinner	1	1			
AN526C1032R8	Screws, Dome Mounting	24	24			
D-1976-4R	Bulkhead Assembly	1	1			
D-1976-3R	Bulkhead Unit	1	1			
	Nut, Bolt, and Washer Kit	1	1			
836-26	ANTI-ICING SPINNER ASSEMBLY	1	1			
C-1888	Dome, Spinner	1	1			
AN526C1032R8	Screws, Dome Mounting	24	24			
D-1976-2R	Bulkhead Assembly	1	1			
D-1976-1R	Bulkhead Unit	1	1			
A-2588	Anti-Icing Kit	1	1			
	Nut, Bolt, and Washer Kit	1	1			
836-36P	ANTI-ICING SPINNER ASSEMBLY					1
C-1872-4	Dome, Spinner					1
AN526C1032R8	Screws, Dome Mounting					18
D-1976-6R	Bulkhead Assembly					1
D-1976-5R	Bulkhead Unit					1
A-2588	Anti-Icing Kit					1
	Nut, Bolt, and Washer Kit					1
836-37P	SPINNER ASSEMBLY					1
C-1872-4	Dome, Spinner					1
AN526C1032R8	Screws, Dome Mounting					18
D-1976-8R	Bulkhead Assembly					1
D-1976-7R	Bulkhead Unit					1
	Nut, Bolt, and Washer Kit					1
836-45	SPINNER ASSEMBLY (For HC-2D Only)					1
C-3090-1	Dome					1
AN526C1032R8	Screws, Dome Mounting					24
D-1976-4R	Bulkhead Assembly					1

PARTS LIST
Models HC-A3V20-2, -2L

Part No.	Nomenclature	No. Required	
		-2	-2L
840-85	HUB SPIDER UNIT	1	1
C-1482	Hub Spider	1	1
A-1496	Pilot Tubes	3	3
A-155	Bushing	1	1
	HUB ASSOCIATED PARTS		
A-971	Blade Bearing, Split	3	3
A-2027	Bearing Retention Ring	3	3
A-311	Ball Spacer	3	3
A-972	Guide Ring	3	3
A-974	Wire Retention Ring	3	3
PRP-909-8	Blade "O" Ring	3	3
A-50-3	Rear Cone	1	1
PRP-909-7	"O" Ring, Shaft	1	1
A63-B	Hub Nut	1	1
A-870	Puller Ring (Not req'd with B-2063)	1	1
A-847		Safety Pin, Hub Nut	1
838-6	CLAMP ASSEMBLY (V8433, V8833-2 Blades)	3	
C-3-5A	Clamp	3	
833-4	Counterweight Unit	3	
838-23	CLAMP ASSEMBLY (V9333C, V9333C-3 Blades)	3	
C-3-5A	Clamp	3	
833-4R	Counterweight Unit	3	
A-890	Weight Slugs	3	
AN4H7A	Hex Head Bolts	6	
838-18	CLAMP ASSEMBLY (VL8433, VL8433H Blades)		3
C-3-5AL	Clamp		3
833-4	Counterweight Unit		3
838-23L	CLAMP ASSEMBLY (VL9333CH, -3, -5 Blades)		3
C-3-5AL	Clamp		3
833-4L	Counterweight Unit		3
A-890-5	Weight Slugs		3
AN4H10A	Hex Head Bolts		6
838-52	CLAMP ASSEMBLY (9333C-3 Blades)	3	
C-3-5A	Clamp	3	
833-26	Counterweight Unit	3	
	COMMON CLAMP PARTS		
A-304	Linkscrew	3	3
A-285	Staking Pin, Linkscrew	3	3
MS15001-1	Zerk Fittings	6	6
A-65	Counterweight Staking Pin	3	3
A-2036-30 (-32 for	Socket Head Cap Screws, Ctw.	6	6
A-285	Staking Pins, Sk. Hd. Cap Sc. (AN380-3-2 Cotter	6	6
A-47-1	Clamp Gaskets	6	6
A-282	Socket Screws, Clamp	6	6
AN380-3-2	Cotter Pins, Sk. Sc.	6	6
A-2017	Clamp Bolts	6	6
AN960-616	Washers	6	6
A-2043	Clamp Nuts	6	6
No. 3	Lubricaps	6	6
	CLAMP ASSOCIATED PARTS		
A-48	Balance Weights	As Needed	
AN501A10-6	Weight Screws	6	6
A-944	Sleeve, Linkscrew	3	3
AN380-3-3	Cotter Pin, Sleeve	3	3
A-881	Stop Plate	3	3
A-2016	Hex Head Bolts, Stop Plate	6	6

Part No.	Nomenclature	No. Required	
		-2	-2L
832-14	PISTON ASSEMBLY	1	
C-1401-3	Piston Unit	1	
C-1401-3 Det. #1	Piston	1	
A-862	Plastic Bushing	1	
A-817-2	Guide Rods	3	
A-114-B	Rod Staking Pins	3	
A-946	Bronze Bushings	6	
A-2037	Socket Head Cap Screws	3	
A-1444	Washers	3	
AN316-5R	Jam Nuts	3	
A-861-3	Link Arms	3	
A-1464	Link Pin Units	3	
AN501A10-6	Safety Screws	3	
832-14L	PISTON ASSEMBLY		1
C-1401-3L	Piston Unit		1
C-1401-3L Det. #1	Piston		1
A-862	Plastic Bushing		1
A-817-2	Guide Rods		3
A-114-B	Rod Staking Pins		3
A-946	Bronze Bushings		6
A-2037	Socket Head Cap Screws		3
A-1444	Washers		3
AN316-5R	Jam Nuts		3
A-861-3L	Link Arms		3
A-1464	Link Pin Units		3
AN501A10-6	Safety Screws		3
834-1	GUIDE COLLAR UNIT	1	
B-1402	Guide Collar	1	
A-116-D1	Plastic Bushing	3	
A-114-C	Staking Pin	1	
A-2038-12	Socket Head Cap Screw	1	
834-1L	GUIDE COLLAR UNIT		1
B-1402L	Guide Collar		1
A-116-D1	Plastic Bushing		3
A-114-C	Staking Pin		1
A-2038-12	Socket Head Cap Screw		1
831-11	FEATHERING SPRING ASSEMBLY	1	1
B-868A	Pilot Tube	1	1
A-871	Mushroom	1	1
B-1363-1	Spring	1	1
A-866	Spring Retainer, Rear	1	1
A-867	Split Retainer, Rear	1	1
	HYDRAULIC ASSOCIATED PARTS		
B-854	Cylinder	1	1
PRP-909-13	Cylinder "O" Ring	1	1
A-859	Split Retainer, Front	1	1
A-899-()	Feathering Stops	2	2
AN501A10-6	Screws, Feathering Stop	4	4
PRP-914-8	"O" Ring, Pilot Tube	1	1
PRP-902-46	Piston "O" Ring	1	1
A-863	Dust Seal	1	1
A-880-1	Flexlock Nut	1	1

Part No.	Nomenclature	No. Required	
		-2	-2L
835-10S	SPINNER ASSEMBLY (With Stops)	1	
C-888-6	Dome	1	
AN526C1032R7	Dome Mounting Screw	15	
C-807-7S	Bulkhead (With 830-5 Stops)	1	
C-807-10	Bulkhead (Without Stops)	1	
830-5	Auto High Pitch Stop Units	3	
B-882-5	Bracket	3	
A-883	Pin	3	
A-884	Spring	3	
AN936A10	Washer (Internal Lock)	3	
AN380-3-3	Cotter Pin	3	
AN4-15A	Hex Head Bolts	6	
AN960-416	Washers	6	
H10-4	Kaylock Nuts	6	
835-11S	SPINNER ASSEMBLY (With Stops)		1
C-888-6	Dome		1
AN526C1032R7	Dome Mounting Screw		15
C-807-7LS	Bulkhead (With 830-5L Stops)		1
C-807-10	Bulkhead (Without Stops)		1
830-5L	Auto High Pitch Stop Units		3
B-882-5L	Bracket		3
A-883	Pin		3
A-884	Spring		3
AN936A10	Washer (Internal Lock)		3
AN380-3-3	Cotter Pin		3
AN4-15A	Hex Head Bolts		6
AN960-416	Washers		6
H10-4	Kaylock Nuts		6
836-6SP	SPINNER ASSEMBLY (Polished, With Stops)	1	
D-1367-6P	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screws	24	
D-1414-6	Bulkhead (With 830-5 Stops)	1	
836-7SP	SPINNER ASSEMBLY (Anti-Icing, Polished, With Stops)	1	
D-1367-7P	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screw	24	
D-1414-7	Anti-Icing Bulkhead (With 830-5 Stops)	1	
836-7ASP	SPINNER ASSEMBLY (Anti-Icing, Polished, With Stops)	1	
D-1367-7AP	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screw	24	
D-1414-7	Anti-Icing Bulkhead (With 830-5 Stops)	1	
836-22SPR	SPINNER ASSEMBLY (Anti-Icing, Polished, With Stops)	1	
C-1888P	Dome (Polished)	1	
AN526C1032R8	Dome Mounting Screw	24	
D-1871-7R	Anti-Icing Bulkhead (With 830-18 Stops)	1	
836-20SP	SPINNER ASSEMBLY (With Stops)	1	
C-1888	Dome	1	
AN526C1032R8	Dome Mounting Screw	12	
D-1871-6R	Bulkhead (With 830-18 Stops)	1	
AN526C1032R7	Dome Mounting Screw	12	

PARTS LIST

Model BHC-92ZF-1D1

Assembly Drawing D-1340

Part No.	Nomenclature	No. Required
840-48	HUB SPIDER UNIT	1
C-1304-6	Hub Spider	1
A-1308	Pilot Tubes	2
834-9	Guide Collar Unit	1
B-1326-1	Guide Collar	1
A-116A-1	Plastic Bushings	2
A-2038-10	Nylock Socket Head Cap Screws	2
A-957-1	Staking Pins, Guide Collar	2
	HUB ASSOCIATED PARTS	
A-1303A	Blade Bearings	2
A-1889	Ball Spacers	2
A-1331	Split Rings	2
PRP-909-7	"O" Rings, Blade	2
2-45	Parker "O" Rings, Blade	2
PRP-909-6	"O" Ring, Shaft	1
.5002 x 1"	Danley Dowel Pins	2
B-1344	Plates, Spinner Mtg. (Pair)	1 Pair
A-1328-2	Hex Head Bolts	6
838-48	CLAMP & COUNTERWEIGHT ASSEMBLY	2
C-1301-1	Clamp	2
A-295	Linkscrew	2
A-285	Staking Pin, Linkscrew	2
B-1354-4	Counterweight Unit	2
A-2036-32	Socket Head Cap Screws, Cwt.	4
A-285	Staking Pins, Sk. Hd. Cap Scs. (AN380-3-2 Cotter	4
A-65	Staking Pin, Counterweight Pin Optional)	2
MS15001-1	Zerk Fittings	4
A-1306	Clamp Gaskets	4
A-282	Socket Screws, Clamp	4
AN380-3-2	Cotter Pins, Socket Screws	4
A-1372	Clamp Bolts, 12 Point	4
A-1373	Clamp Nuts	4
No. 3	Lubricaps	4
	CLAMP ASSOCIATED PARTS	
A-1305	Balance Weights	As Needed
AN501A10-()	Weight Screws	4
B-828-9	PISTON ASSEMBLY	1
B-966-11	Piston Unit	1
B-966	Piston	1
A-862	Plastic Bushing	1
A-826-11	Push Rods	2
A-114-G	Staking Pins, Rod	2
A-921-1	Forks	2
A-2039	Socket Set Screws, Fork	2
A-827-1	Rod Sleeves	2
A-965	Washers	2
A-848	Flexlock Nuts	2
	HYDRAULIC ASSOCIATED PARTS	
B-806	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
PRP-902-46	"O" Ring, Piston	1
A-863	Dust Seal	1
A-95-A	Blocks, Pitch Change	2

Part No.	Nomenclature	No. Required
837-3	SPINNER ASSEMBLY	1
C-1337	Dome, Spinner	1
AN526C1032R8	Screws, Dome Mounting	10
C-1336	Bulkhead Unit	1
B-1345	Ring, Spinner Mounting	1
AN5-13A	Hex Head Bolts	4
AN960-516L	Washers	4
H10-5	Kaylock Nuts	4
837-4	SPINNER ASSEMBLY (POLISHED)	1
C-1337-1	Dome, Spinner (Polished)	1
AN526C1032R8	Screws, Dome Mounting	10
C-1336	Bulkhead Unit	1
B-1345	Ring, Spinner Mounting	1
AN5-13A	Hex Head Bolts	4
AN960-516L	Washers	4
H10-5	Kaylock Nuts	4
B-(X)-(X)	GOVERNOR, HARTZELL	1
F-6-(X)	GOVERNOR, HARTZELL	1
X, 210, XXX SERIES	GOVERNOR, WOODWARD	1
1A4, 1M12, 1P12, 1Q12	GOVERNORS, HAMILTON-STANDARD	1

PARTS LIST

Model HC-B3WF-2

Assembly Drawing D-1995

Part No.	Nomenclature	No. Required
840-115	HUB SPIDER UNIT	1
C-1967	Hub Spider	1
A-1884	Pilot Tubes	3
	HUB ASSOCIATED PARTS	
A-1889	Ball Spacer	3
A-1851	Split Bearing, Blade	3
A-1877	Bearing Retention Ring	3
A-1852	Guide Ring	3
A-1854	Wire Retention Ring	3
PRP-909-7	"O" Ring, Blade	3
PRP-909-6	"O" Ring, Hub Mounting	1
.5002x1	Danley Dowel Pins	2
A-1328-1	12 Point Bolts	6
A-1381	Washer	6
838-81	CLAMP & COUNTERWEIGHT ASSEMBLY	3
C-1301	Clamp	3
A-304	Linkscrew	3
A-285	Staking Pin, Linkscrew	3
MS-15001-1	Zerk Fitting	3
833-11	Counterweight Unit	3
A-2036-30	Socket Head Cap Screws, Cwt.	6
A-285	Staking Pins, Cwt. Sk. Hd. Cap Sc. (AN380-3-2 Cotter	6
A-65	Counterweight Staking Pin	3
A-1306	Gaskets, Clamp	6
A-282	Socket Screws, Clamp	6
AN380-3-2	Cotter Pins, Socket Screw	6
A-1379	Clamp Bolts	6
A-1373	Clamp Nuts	6
	CLAMP ASSOCIATED PARTS	
A-944	Sleeve, Linkscrew	3
AN380-3-3	Cotter Pin, Sleeve	3
A-881-4	Stop Plate	3
A-2016	Hex Head Bolts, Plate	6
A-1305	Balance Weights	As Needed
AN501A10-6	Weight Screws	6

Part No.	Nomenclature	No. Required
831-4	FEATHERING SPRING ASSEMBLY	1
B-855A	Pilot Tube	1
A-856	Mushroom	1
A-860-3	Spacer Tube	1
B-953	Spring, Inner	1
B-853	Spring, Outer	1
A-857	Spring Retainer	1
A-858	Split Retainer	1
832-17	PISTON ASSEMBLY	1
C-1401-2	Piston Unit	1
C-1401-2 Det. 1	Piston	1
A-862	Bushing, Plastic	1
A-946	Bushings, Bronze	6
A-817-2	Guide Rods	3
A-114-B	Staking Pins, Rod	3
A-1444	Washers	3
AN316-5R	Jam Nuts	3
A-2037	Socket Head Cap Screws	3
A-1464	Link Pin Units	3
AN501A10-6	Safety Screws	3
A-861-3	Link Arms	3
834-1	GUIDE COLLAR UNIT	1
B-1402	Guide Collar	1
A-2038-12	Socket Head Cap Screw	1
A-116D-1	Plastic Bushings	3
A-114-C	Staking Pin	1
	HYDRAULIC ASSOCIATED PARTS	
B-854	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
A-859	Split Retainer	1
A-899	Stops, Feathering	2
AN501A10-6	Screws, Feathering Stop	4
A-863	Dust Seal	1
PRP-902-46	"O" Ring, Piston	1
PRP-914-12	"O" Ring, Pilot Tube	1
A-880-2	Nut	1
830-31	AUTO HIGH PITCH STOP ASSEMBLY	3
B-882-4D	Bracket, High Pitch Stop	3
A-883	Pin, High Pitch Stop	3
A-884	Spring, High Pitch Stop	3
AN936A10	Washer	3
AN380-3-3	Cotter Pin	3
	AUTO STOP MOUNTING PARTS	
AN4H5A	Hex Head Bolts	6
AN4-15A	Hex Head Bolts	6
AN960-416	Washers	6
H10-4	Kaylock Nuts	6
A-1864	Washer	6
836-29	SPINNER ASSEMBLY	1
C-1904	Spinner Dome	1
C-807-8	Bulkhead Assembly	1
AN526C1032R7	Screws, Dome Mounting	24

PARTS LIST
Model HC-B3WF-4

Assembly Drawing D-3315

Part No.	Nomenclature	No. Required
840-115	HUB SPIDER UNIT	1
C-1967	Hub Spider	1
A-1884	Pilot Tubes	3
	HUB ASSOCIATED PARTS	
A-1851	Split Bearing, Blade	3
A-1877	Wire Retention Ring, Bearing	3
A-1889	Ball Spacer	3
A-1852	Guide Ring	3
A-1854	Wire Retention Ring	3
PRP-909-10	"O" Ring, Blade	3
PRP-909-6	"O" Ring, Shaft	1
A-1328-2	12 Point Bolts	6
.5002 x 1"	Danley Dowel Pins	2
838-79	CLAMP ASSEMBLY	3
C-1301-8	Clamp	3
B-3309-1	Counterweight Unit	3
A-2036-16	Socket Head Cap Sc., Ctw. .	6
MS15001-1	Zerk Fittings	3
A-1306	Gaskets, Clamp	6
A-282	Socket Screws, Clamp	6
AN380-3-2	Cotter Pins, Socket Screw	6
A-1372	Clamp Bolts	6
A-1373	Clamp Nuts	6
No. 3	Lubricaps	3
	CLAMP ASSOCIATED PARTS	
A-1305	Balance Weights	As Needed
AN501A10-6	Weight Screws	6
A-944	Sleeve	3
AN380-3-3	Cotter Pin, Sleeve	3
832-36	PISTON ASSEMBLY	1
C-1881-2	Piston Unit	1
C-1881-2 Det. 1	Piston	1
A-862-2	Plastic Bushing	1
A-946	Bronze Bushings	6
A-817-4	Guide Rods	3
A-114-B	Staking Pins, Rod	3
A-2037	Socket Head Cap Screw	3
AN316-5R	Check Nuts	3
A-1444	Washers	3
A-1464	Link Pin Units	3
AN501A10-6	Safety Screws	3
A-861-3L	Link Arms	3
	HYDRAULIC ASSOCIATED PARTS	
B-1882-2	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
PRP-902-50	"O" Ring, Piston	1
B-1843	Dust Seal	1
834-7B	Guide Collar Unit	1
837-15	SPINNER ASSEMBLY	1
C-226-4	Dome	1
C-1399-2	Bulkhead Unit	1
AN526C1032R8	Dome Mounting Screws	12

PARTS LIST

Model HC-B3W20-4

Assembly Drawing D-3320

Part No.	Nomenclature	No. Required
840-84	HUB SPIDER UNIT	1
C-1968	Hub Spider	1
A-1884	Pilot Tubes	3
A-155	Bushing, Shaft	1
	HUB ASSOCIATED PARTS	
A-1851	Split Bearing, Blade	3
A-1877	Wire Retention Ring, Bearing	3
A-1889	Ball Spacer	3
A-1852	Guide Ring	3
A-1854	Wire Retention Ring	3
PRP-909-10	"O" Ring, Blade	3
PRP-909-7	"O" Ring, Shaft	1
A-50-5	Rear Cone	1
A-63B	Shaft Nut	1
A-847	Safety Pin, Nut	1
PRP-902-22	"O" Ring	1
A-870	Ring, Puller	1
838-79	CLAMP ASSEMBLY	3
C-1301-8	Clamp	3
B-3309-1	Counterweight Unit	3
A-2036-16	Socket Head Cap Sc., Cwt.	6
MS15001-1	Zerk Fittings	3
A-1306	Gaskets, Clamp	6
A-282	Socket Screws, Clamp	6
AN380-3-2	Cotter Pins, Socket Screw	6
A-1372	Clamp Bolts	6
A-1373	Clamp Nuts	6
No. 3	Lubricaps	3
	CLAMP ASSOCIATED PARTS	
A-1305	Balance Weights	As Needed
AN501A10-6	Weight Screws	6
A-944	Sleeve	3
AN380-3-3	Cotter Pin, Sleeve	3
832-33	PISTON ASSEMBLY	1
C-1881-1	Piston Unit	1
C-1881-1 Det. 1	Piston	1
A-862-2	Plastic Bushing	1
A-946	Bronze Bushings	6
A-817-4	Guide Rods	3
A-114-B	Staking Pins, Rod	3
A-2037	Socket Head Cap Screw	3
AN316-5R	Check Nuts	3
A-1444	Washers	3
A-1464	Link Pin Units	3
AN501A10-6	Safety Screws	3
A-861-3L	Link Arms	3
	HYDRAULIC ASSOCIATED PARTS	
B-1882-1	Cylinder	1
PRP-909-13	"O" Ring, Cylinder	1
PRP-902-50	"O" Ring, Piston	1
B-1843	Dust Seal	1
834-7B	Guide Collar Unit	1

TEMPORARY REVISION NO. 001

This Temporary Revision is now considered a part of Hartzell Propeller Inc. Constant Speed and Feathering Two- and Three-Blade Propeller Maintenance Manual 114B.

Insert this Temporary Revision in the PARTS LIST chapter with this transmittal page facing page 77.

Reason for issue: To add the Illustrated Parts List for the HC-B3W20-1 Propeller.

NOTE: See page 2 of this Temporary Revision.

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H	PCP
D-1980		PROPELLER PARTS - HC-B3W20-1				
	840-84	• PCP: HUB UNIT, HC-B3_20-		1		PCP
	A-1884-()A	•• PILOT TUBE		3		
	B-3897-1	•• PLUG, EXPANSION		3	Y	
	A-155	•• HUB BUSHING, SHAFT		1		
	A-1854	• RETAINER, RING, WIRE		3	Y	
	A-1851	• BEARING, RETENTION, BLADE		3		
	A-1851-A	•• RACE, HUB SIDE		3		
	A-1851-B	•• RACE, BLADE SIDE		3		
	A-1877	•• RETAINER, BEARING, WIRE		3	Y	
	B-6144-2	•• BALL, BEARING, 9/16 INCH DIA		57	Y	
	B-6144-2-450	•• BALL, BEARING, 9/16 INCH DIA. 450 PCS.		RF		
	A-1852	• RING, RETAINING, BEARING		3	Y	
	C-3317-232	• O-RING, BLADE		3	Y	
	C-3317-231	• O-RING, BLADE, ALTERNATE FOR C-3317-232		3	Y	
	C-3317-230	• O-RING, BLADE, ALTERNATE FOR C-3317-232		3	Y	
	C-3317-229	• O-RING, SHAFT		1	Y	
	A-50-5	• REAR CONE		1		
	A-63-B	• PCP: NUT, SHAFT, 20 SPLINE (USE WITH A-870)		1	Y	
	A-870	• RING, PULLER, HUB (USE WITH A-63-B)		1		
	B-2063	• PCP: NUT, SHAFT, 20 SPLINE, ALTERNATE FOR A-63-B		1		PCP
	A-847	• SAFETY, PIN, SHAFT NUT		1		
	A-1889	• BALL SPACER (OPTIONAL), REPLACED BY B-3742		3		
	B-3742	• BALL SPACER (OPTIONAL), REPLACES A-1889		3		
	838-42	• PCP: CLAMP ASSEMBLY		3		PCP
	D-7838-42	• PCP: CLAMP UNIT		3		PCP
	C-1301-9S	•• PCP: CLAMP, BLADE, T,W,Z SHANK		3		PCP
	A-295	•• LINKSCREW, 1/2-20		3	Y	
	A-285	•• SPRING PIN, 3/32 INCH, CRES		3	Y	
	B-3838-3-2	•• COTTER PIN, ALTERNATE FOR A-285		6	Y	
	B-6588-1	•• FITTING, LUBRICATION		6	Y	
	833-16R	•• PCP: COUNTERWEIGHT UNIT		3		PCP
	B-1354	••• COUNTERWEIGHT		3		
	A-2036-32	•• SCREW, 7/16-20, CAP, MODIFIED, SUPERSEDED BY 107995-32		6	Y	
	107995-32	•• BOLT, 7/16-20, 12 POINT, SUPERSEDES A-2036-32		6	Y	
	A-285	•• SPRING PIN, 3/32 INCH, CRES		6		
	A-1306	• GASKET, CLAMP		6	Y	
	A-282	• SCREW, SOCKET HEAD, REPLACED BY A-321		6		
	A-321	• SCREW, 3/8-24 DOUBLE 60° HEAD, REPLACES A-282		6		
EFFECTIVITY		MODEL	EFFECTIVITY		MODEL	

- ITEM NOT ILLUSTRATED

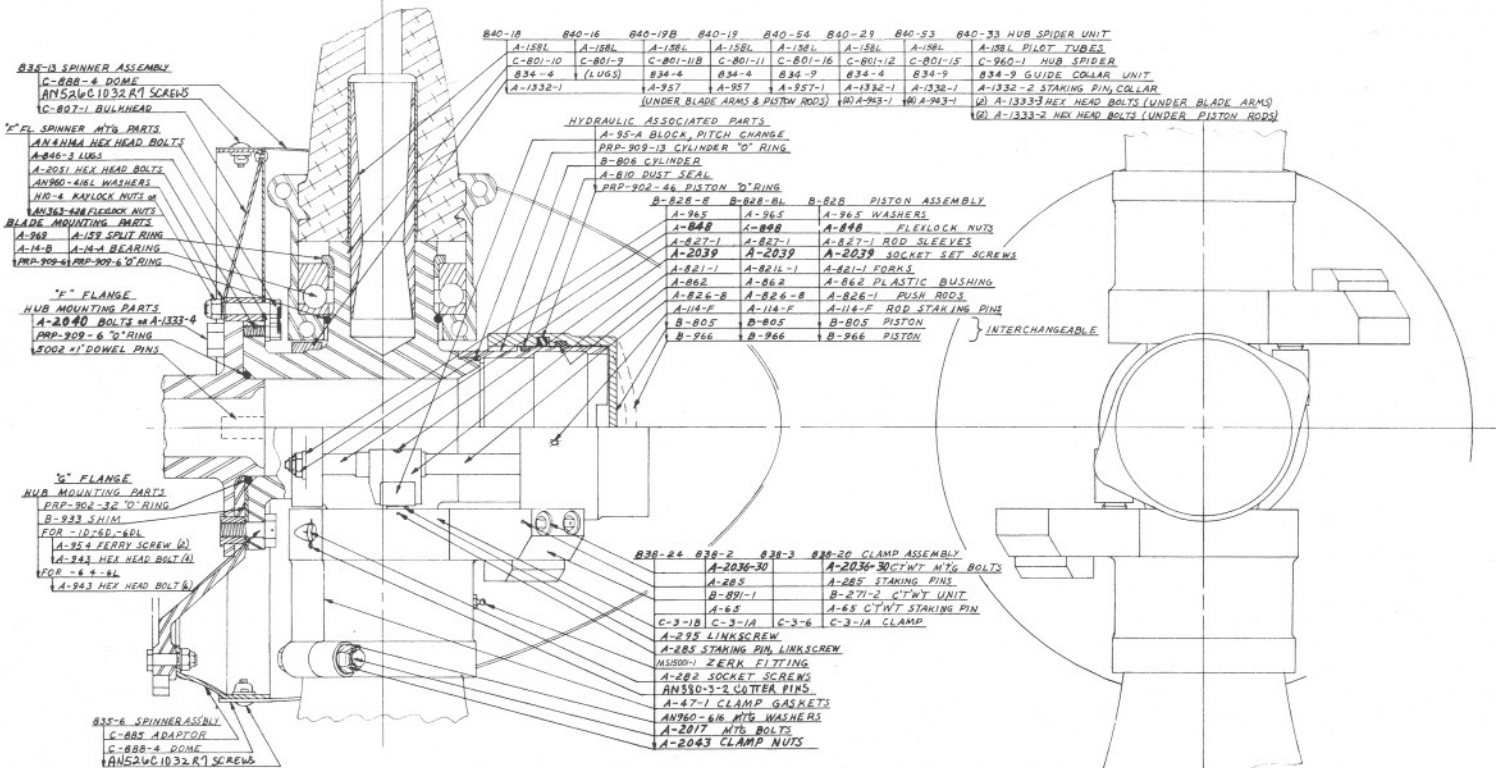
HC-B3W20-1

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H	PCP
D-1980		PROPELLER PARTS - HC-B3W20-1				
	B-3838-3-2	• COTTER PIN		6	Y	
	A-1372	• BOLT, 7/16-20, 12 POINT		6	Y	
	A-1373	• NUT, 7/16-20, HEX, SELF-LOCKING		6	Y	
	B-6544	• CAP, FITTING, LUBRICATION		6	Y	
	A-1305	• BALANCE WEIGHT		6		
	B-3840-()	• SCREW, 10-32, FILLISTER HEAD		6	Y	
	B-1378	• PISTON ASSEMBLY		1		
	B-1421-5	•• PISTON UNIT		1		
	A-862	••• PLASTIC BUSHING				
	A-114-6	••• DOWEL PIN		3		
	A-826-5	••• ROD, GUIDE, PITCH CHANGE		3		
	A-821-1	•• FORK, SUPERSEDED BY A-921-1		3		
	A-921-1	•• FORK, SUPERSEDES A-821-1		3		
	A-2039	•• SCREW, SET, 10-32		3	Y	
	A-827-3	•• SLEEVE, ROD, GUIDE		3		
	A-970-()	•• SPACER, STOP, PITCH		3		
	A-965	•• WASHER, 7/16, CRES		3	Y	
	A-848-2	•• NUT, 7/16-20, HEX, SELF-LOCKING		3	Y	
	B-806-1	• CYLINDER		1		
	C-3317-235	• O-RING, CYLINDER		1	Y	
	A-863	• DUST SEAL, REPLACED BY B-1843		1	Y	
	B-1843	• SEAL, DUST, PISTON, REPLACES B-1843		1	Y	
	C-3317-343-1	• O-RING, PISTON		1	Y	
	A-95-A	• BLOCK, PITCH CHANGE		1	Y	
		COUNTERWEIGHT SLUGS/MOUNTING HARDWARE				
-9050		• COUNTERWEIGHT SLUGS AND SLUG MTG. HARDWARE APPLICATION SPECIFIC REFER TO HARTZELL PROPELLER INC. APPLICATION GUIDE MANUAL 159 (61-02-59) FOR PART NUMBER AND PROPELLER CRITICAL PART (PCP) IDENTIFICATION			Y	
		SPINNER PARTS				
		APPLICATION SPECIFIC REFER TO HARTZELL PROPELLER INC. APPLICATION GUIDE MANUAL 159 (61-02-59) AND THE APPLICABLE HARTZELL PROPELLER INC. SPINNER MAINTENANCE MANUAL: MANUAL 127 (61-16-27) - METAL SPINNER ASSEMBLIES MANUAL 148 (61-16-48) - COMPOSITE SPINNER ASSEMBLIES				
EFFECTIVITY		MODEL	EFFECTIVITY		MODEL	

- ITEM NOT ILLUSTRATED

HC-B3W20-1

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- 840-18 840-16 840-19B 840-19 840-54 840-29 840-53 840-33 HUB SPIDER UNIT
 A-158L A-158L A-158L A-158L A-158L A-158L A-158L A-158L A-158L PILOT TUBES
 C-801-10 C-801-9 C-801-11B C-801-11 C-801-16 C-801-12 C-801-15 C-960-1 HUB SPIDER
 834-4 (LUGS) 834-4 834-4 834-9 834-4 834-9 834-9 GUIDE COLLAR UNIT
 A-1332-1 A-957 A-957 A-957-1 A-1332-1 A-1332-1 A-1332-2 STAKING PIN COLLAR
 (UNDER BLADE ARMS & PISTON RODS) (A-943-1) (A-943-1) (A-1333-3 HEX HEAD BOLTS (UNDER BLADE ARMS)
 (A-1333-2 HEX HEAD BOLTS (UNDER PISTON RODS))

- HYDRAULIC ASSOCIATED PARTS
 A-95-A BLOCK, PITCH CHANGE
 PRP-909-13 CYLINDER "O" RING
 B-806 CYLINDER
 A-810 DUST SEAL
 PRP-902-66 PISTON O-RING

- B-828-B B-828-BL B-828 PISTON ASSEMBLY
 A-965 A-965 A-965 WASHERS
 A-848 A-848 A-848 FLYLOCK NUTS
 A-827-1 A-827-1 A-827-1 ROD SLEEVES
 A-2039 A-2039 A-2039 SOCKET SET SCREWS
 A-821-1 A-821-1 A-821-1 FORKS
 A-862 A-862 A-862 PLASTIC BUSHING
 A-826-B A-826-B A-826-1 PUSH RODS
 A-114-F A-114-F A-114-F ROD STAKING PIN
 B-805 B-805 B-805 PISTON
 B-946 B-946 B-946 PISTON } INTERCHANGEABLE

- 832-3 SPINNER ASSEMBLY
 C-888-4 DOME
 AN524C1032R1 SCREWS
 C-807-1 BULKHEAD
 "F" FLANGE SPINNER MTS PARTS
 ANAMA HEX HEAD BOLTS
 A-845-3 LUGS
 A-2051 HEX HEAD BOLTS
 AN960-416 WASHERS
 N10-4 KEYLOCK NUTS W/
 AN337-10N FLECKING NUTS
 BLADE MOUNTING PARTS
 A-949 A-152 SPLIT RING
 A-14-B A-M-A BEARING
 PRP-909-61 PRP-909-6 O-RING

- "F" FLANGE
 HUB MOUNTING PARTS
 A-1-20 HUB BOLTS W/4-1133-4
 PRP-909-6 O-RING
 5002-1 DOWEL PINS

- "G" FLANGE
 HUB MOUNTING PARTS
 PRP-902-32 O-RING
 B-933 SHIM
 FOR 1/16" DIA. 48L
 A-354 FERRY SCREW (2)
 A-243 HEX HEAD BOLT (1)
 FOR 6-4-48
 A-943 HEX HEAD BOLT (1)

- 835-6 SPINNER ASSEMBLY
 C-885 ADAPTOR
 C-888-4 DOME
 AN524C1032R1 SCREWS

- "K" FLANGE MOUNTING PARTS
 "L" FLANGE "K" ID FLANGE
 PRP-902-32 PRP-902-32 PRP-902-32 O-RING
 B-933-1 B-933-1 B-1322 SHIM
 (2) A-943-1 (2) A-943-1 (2) A-1333 HEX HEAD BOLTS

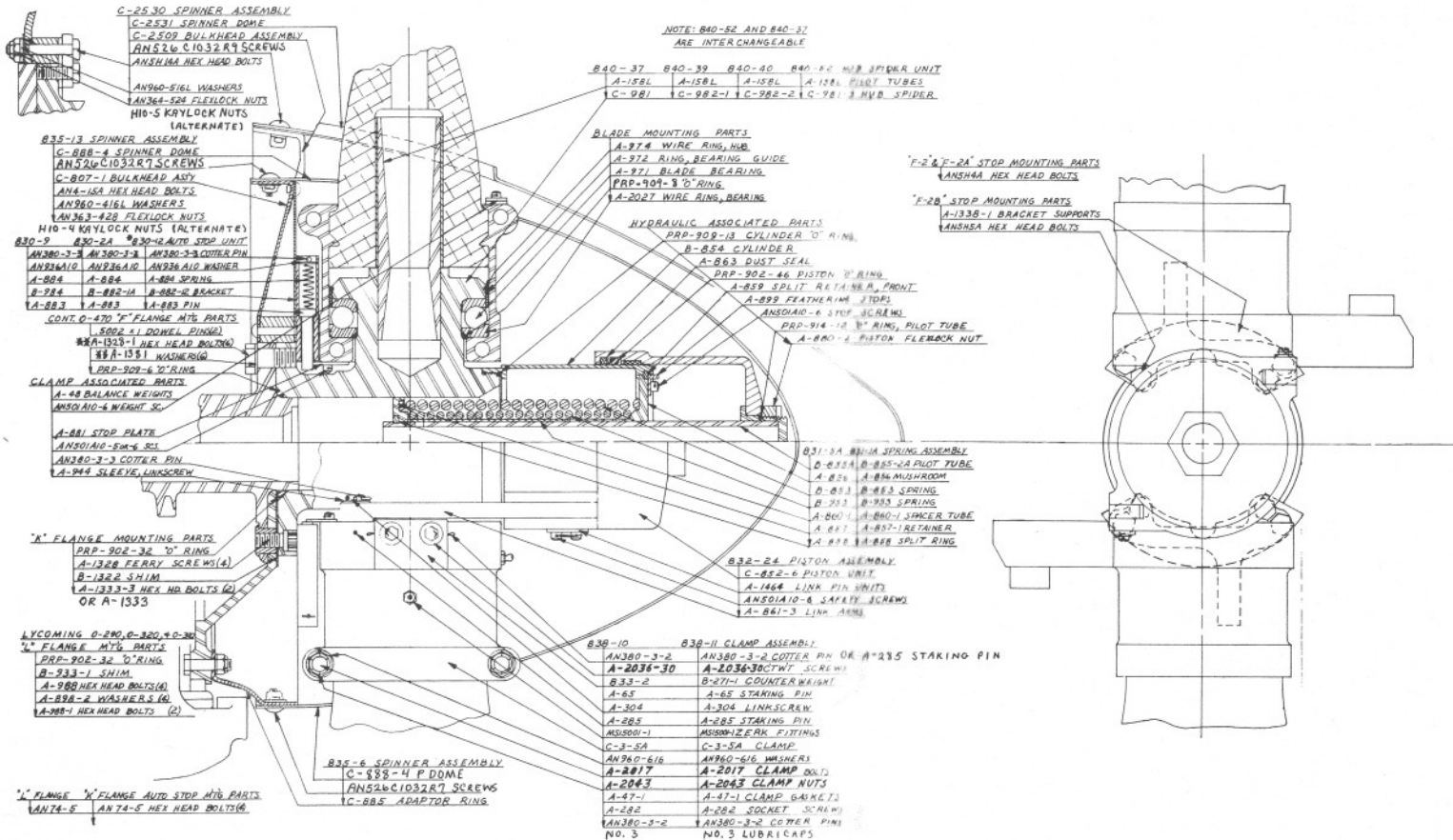
REQUIREMENTS FOR RETRO-FITTING HC-82XF-1D, 6E, 6L & HC-82XL-1D TO HC-82XL-1F, 6A, 6F-1: INCREASE THE 3/4" DIA HOLES TO 5/8" DIA. REPLACE SHIM WITH B-933-1 SHIM. REPLACE BUSHINGS WITH (3) 720633 (2) 720645 (2) 720655 (EXCOMING PARTS). REPLACE SCREWS & BOLTS WITH (2) A-943-1 HEX HEAD BOLTS. OUTSIDE DIA OF HUB NEXT TO FLANGE (AREA OF COLLAR) MUST BE MACHINED TO 3.000. REPLACE REPLACE COLLAR WITH 834-9 GUIDE COLLAR UNIT.

REQUIREMENTS FOR RETRO-FITTING HC-82XF-1DB, 8A, 8L TO HC-82XF-1F, 6A, 6F-1: MACHINE OUTSIDE DIA OF HUB NEXT TO FLANGE (AREA OF COLLAR) TO 3.000. REPLACE MOUNT SPINNER LUGS WITH (4) A-152 SPLIT RING. REPLACE COLLAR WITH 834-9 GUIDE COLLAR UNIT. AND MOUNT (1) 5" ADVANCE BLADE & REAM BUSHINGS OF COLLAR 804-526. DRILL 1/4" DIA x DEEP THRU 30" ADVANCE BLADE & AND STAKE WITH A-957-1 STAKING PIN.

NOTE: ALL HC-82XG PROPELLERS TO BE RETRO-FITTED TO HC-82XL PROPELLERS.

REQUIREMENTS FOR RETRO-FITTING HC-82XG-1D, 6E, 6L & 6D TO HC-82XL-1D, 6E, 6L & 6D-1: INCREASE THE 5/8" DIA HOLES TO 3/4" DIA. REPLACE B-933 SHIM WITH B-933-1 SHIM. REPLACE BUSHINGS IN ENGINE WITH (3) 720633 (2) 720645 (1) 720655 (EXCOMING PARTS). REPLACE (2) A-954 FERRY SCREWS WITH (2) A-943-1 HEX HEAD BOLTS. REPLACE (2) A-943 HEX HEAD BOLTS WITH (2) A-943-1 HEX HEAD BOLTS.

REQUIREMENTS FOR RETRO-FITTING HC-82XG-8A, 8L TO HC-82XG-6E, 6L: INCREASE THE 5/8" DIA HOLES TO 3/4" DIA. REPLACE B-933 SHIM WITH B-933-1 SHIM. REPLACE BUSHINGS IN ENGINE WITH (2) 720645 (1) 720655 (EXCOMING PARTS). REPLACE (2) A-943 HEX HEAD BOLTS WITH (2) A-943-1 HEX HEAD BOLTS.



* NOTE: A-1338-1 PLATE MUST BE MOUNTED BETWEEN 830-12 STOP UNIT AND HUB SPIDER FLANGE, USE REMAINING "F-2B" STOP MOUNTING PARTS.

** A-2040 OR A-1333-4 OPTIONAL FOR A-1328-1
 AN960-816 OPTIONAL FOR A-1331

Model HC-A2XF-2, 2A, 2B, HC-A2XL-2, HC-A2XK-2 - Feathering

NOTE: BALANCE PROPELLER & C-227 BULKHEAD TOGETHER USING A-48 WEIGHT SLUGS SECURED WITH AN5010-1 SCREWS, AFFIX AR-20 INDEX DECAL ON BULKHEAD AND AR-30 INDEX DECAL OPPOSITE ON PROPELLER HUB AFFIX IMP-421 DECAL ON PROPELLER HUB NEAR AR-30 DECAL.

- 837-6 MARTELL SPINNER
- AN7-11 BOLTS
- AN365-720 NUTS (A-1773, A-2498 OPTIONAL)
- C-224 GASKET
- C-227 BULKHEAD

NOTE: FOR ADDING SECOND SEAL TO SHORT B-214 CAP(S) INSTALL A-843 SEAL RING & PRESS 4-5354 NATIONAL SEAL AGAINST FIRST SEAL & BOLT TO ENGINE WITH (4) AN7542.5 HEX HD. BOLTS

NOTE: FIT A-241 RING WITH 006-7006 GAP AT ASSEMBLY

- A-224-1 OIL SEAL ASSEMBLY
- 4-5338 NATIONAL SEAL
- B-214 CAP SLIP RING
- A-177 SCREW, O/L T/R
- PRP-902-4 O/RING, SCREW
- A-192 GASKET
- AN7542.5 HEX HD BOLTS
- A-216-1 SLEEVE, SLIP RING
- A-221 RINGS
- B-261 SLIP RING
- A-222 SLINGER, OIL
- A-234 GONG, REAR
- A-242 PIN (OPTIONAL)
- A-884-3 SPRING (OPTIONAL)
- 311-3-082-1000 SPS ROLLED PIN

- BLADE MOUNTING PARTS
- 1-974 WIRE RETENTION RING
- A-972 GUIDE RING
- A-311 BALL BRACER
- A-971 BEARINGS, BLADE
- 2AC-907-R O/RING, BLADE
- 18-202.7 WIRE RING, O/RG

OIL LINE TO BOX

- 840-64 HUB SPIDER
- A-1E81 PILOT TUBES
- C-206-1 HUB SPIDER
- 18-219 BUSHING

HYDRAULIC ASSOCIATED PARTS

- A-95-A BLOCK PITCH CHANGE
- PRP-909-13 O/RING, CYLINDER
- B-806-1 CYLINDER
- A-863 DUST SEAL
- PRP-902-46 O/RING

FRONT HUB MOUNTING PARTS

- PRP-909-52 O/RING
- A-1034 SEAL SHAFT NUT
- PRP-909-3 O/RING
- A-2053 SHAFT NUT
- AN380-3-3 COTTER PIN
- A-219 PULLER RING

B-2023 SHAFT NUT

WIRE SAFETY

- B36-10 GUIDE COLLAR UNIT
- C-222-R GUIDE COLLAR
- A-11N-1 BUSHINGS
- 8AN51134 HEX HEAD BOLTS

PLUG IF ENGINE SEAL IS REMOVED DRAIN TO ENGINE SUMP IF NOT

- B-828-3 PISTON ASSEMBLY
- A-828-4 FL BELOCK NUT
- A-945 WASHERS
- A-827-2 ROD SLEEVES
- A-970-6 SPACERS II
- A-8039 SOCKET SET SCS.
- A-821-1 FORKS
- B-943-3 PISTON UNIT
- A-1016-1 STAKING PINS
- B-944 PISTON
- A-842 BUSHING

NOTE: A-970-1 SPACER THICKNESS TO SUIT PITCH REQUIREMENTS

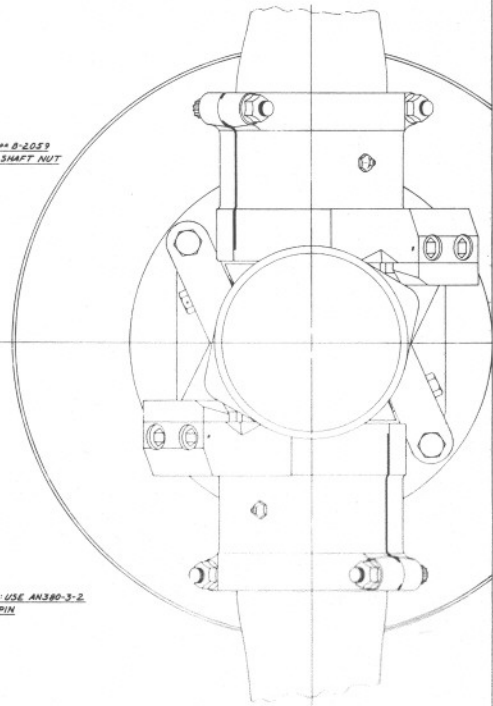
NOTE: A-921-1 SUPERCEDS A-881-1 FORKS

NOTE: ADD (2) A-419-1 PER B-891-1

- B38-2 CLAMP ASSEMBLY
- A-2031-30 SOCKET HD. CAP SCREWS
- A-285 STAKING PINS, SK HD. SCREW #
- B-891-1 COUNTERWEIGHT UNIT
- A-65 STAKING PIN, COUNTERWEIGHT
- A-295 LINKSCREW
- A-882 STAKING PIN, LINKSCREW
- MS1500-1 ZERK FITTING
- C-3-1-A CLAMP
- AN380-3-2 COTTER PINS
- A-824 SOCKET SCREWS, CLAMP
- A-671 CLAMP GASKETS
- A-2017 CLAMP BOLTS
- AN380-6-1 WASHERS
- A-2043 CLAMP NUTS
- 100-1 LUBRICANT

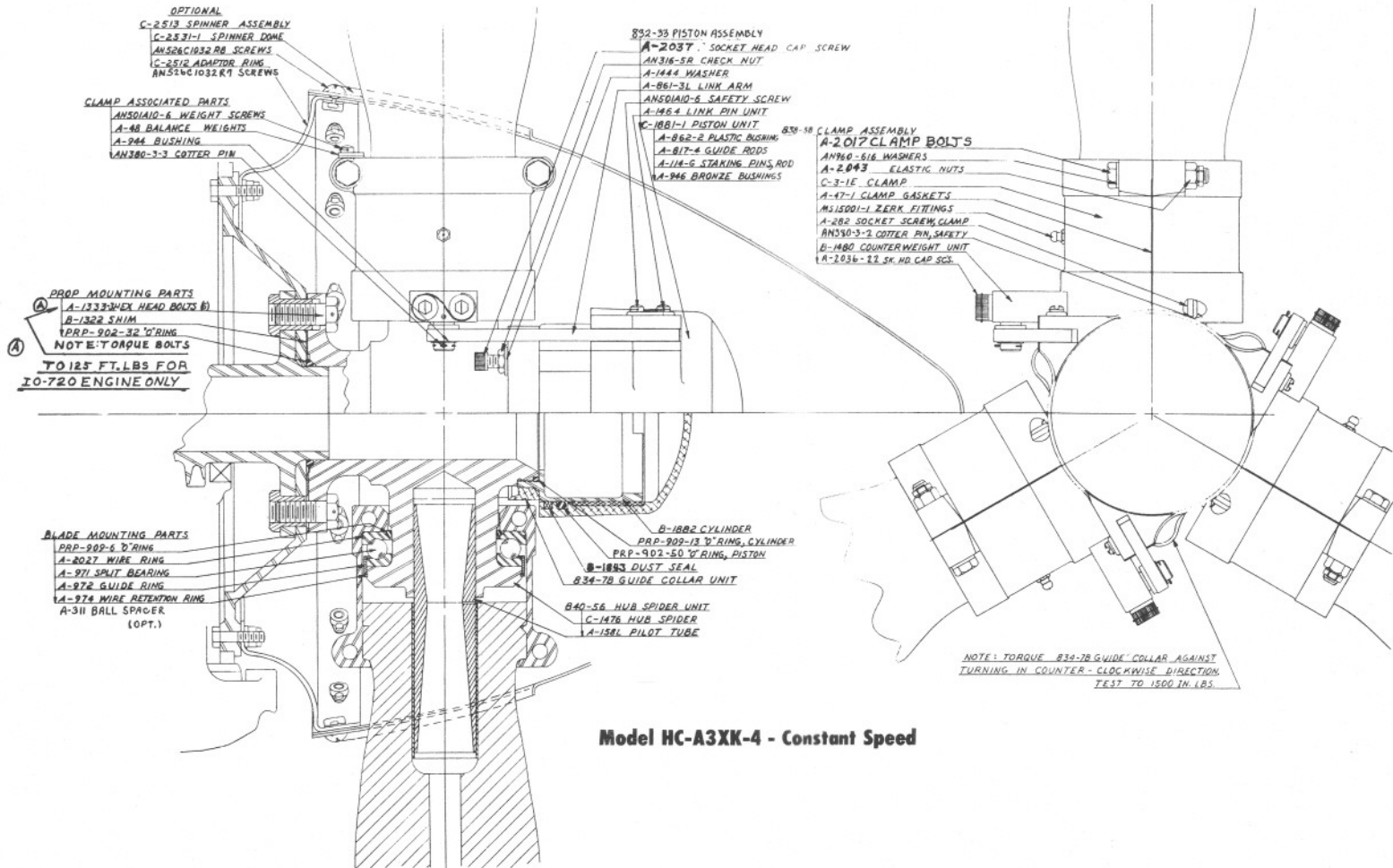
OPTIONAL USE AN380-3-2 COTTER PIN

NOTE: IF PRP-909-9 O/RING CAUSES EXCESSIVE FRICTION, REPLACE WITH PRP-927-744-8 TO REDUCE THIS FRICTION.



X	AN365-720, A-1773, OPTIONAL ADDED	H-700
W	IMPELLER NOTE DELETED	20145
V	FEEDER, NEW CONSTRUCTION, 200	10141
U	AN51134 WAS AN51134	H-67
T	A-2498 WAS AN19-17-A WAS A-881-1	H-47
S	A-417 WAS A-417-2	10141
R	REDRAWN	H-68
Q		10141
P		10141
O		10141
N		10141
M		10141
L		10141
K		10141
J		10141
I		10141
H		10141
G		10141
F		10141
E		10141
D		10141
C		10141
B		10141
A		10141

DO NOT ALLE D BY PARTS	DATE	BY	CHKD	DATE	BY
ANY CHANGES	DATE	BY	CHKD	DATE	BY
MARTELL PROPELLER INC.		PROPELLER HUB ASSEMBLY		REV. 1	
P.O. BOX 1100 EAST		MODEL HC-A2X20-4A1		D-220	



Model HC-A3XX-4 - Constant Speed

ADDENDUM NO. 1

MANUAL 114B

June, 1964

Page 9, Table IV, Torque Values

3/8 - 24 Outer Clamp Bolt alternate is 12 point head type.
(35 lb. ft. torque or 420 lb. in. torque)

SUPPLEMENT NO. 1
MANUAL NO. 114B

April 13, 1971

REVERSIBLE PROPELLER MODEL HC-A3VF-7
(See Drawing D-3650)

This model is similar to the -2 feathering models listed elsewhere in this manual. The pitch range has been increased to provide for the reverse pitch, and a Beta valve introduced along the propeller axis to control the reverse pitch range. The normal operating pitch range is controlled by a governor in the same manner as for the -2 feathering propellers.

Overhauling the -7 propeller consists of the same general operation as other propeller listed in this manual, except for certain details given below.

- 1) Removal of the propeller from the engine involves certain precautions in order to avoid damaging the Beta valve.
 - a) Remove the B-1368-10 piston assembly by disconnecting the link pin units A-1464, A-2037 socket screws, and A-880-1 nut from the front of the piston.
 - b) Remove the 831-37 spring assembly by removing the AN501A10-screws, A-1467 plate, and A-859 split retainer.
 - c) Remove the propeller from the shaft by removing the A-1328 screws from the propeller flange.

CAUTION: When pulling the propeller off the shaft, use care not to bend the Beta valve feedback rod B-3606 which extends through the hub.

- 2) Disassemble propeller and overhaul it per instructions listed in this manual.

- 3) Remove the Beta valve assembly C-3636 from the engine shaft as follows.
 - a) Remove the A-3621-2 fitting from the rear end of the B-3633 rod. This protrudes from the rear of the engine case.
 - b) Remove the snap ring from the front of the engine drive shaft, and remove the Beta valve assembly C-3630 from the shaft.
- 4) Disassemble the C-3630 Beta valve assembly by pulling the B-3631 sleeve from the B-3632 spool. Remove the spring pin from the B-3631 sleeve, using a drift punch.
- 5) Inspect for wear, particularly the B-3631 sleeve and B-3632 spool, and also the ends of the B-3606 feedback rod and the B-3633 rod.

	New Part Dimension		Replace if Above or Below	
	Max.	Min.	Max.	Min.
Sleeve B-3631 I.D.	.6253	.6250	.627	----
Sleeve B-3631 O.D.	.750	.748	----	.746
Spool B-3632 O.D.	.6247	.6244	----	.6235

For other wear points, replace if wear exceeds .003.

- 6) Assemble C-3630 Beta valve.
 - a) Assemble A-3619-1 pin, A-3641 washer, PRP-914-2 "O" ring, and B-3606 rod into end of B-3631 sleeve. Insert new 31-S-125-0750 SPS spring pin in holes at the joint between the B-3606 rod and B-3631 sleeve. Use a conical punch and swage both ends of the spring pin to form effective rivet heads within the chamfered ends of the hole. It is essential that this pin cannot possibly work itself out.
- 7) Replace all "O" rings and reassemble Beta valve in reverse order of disassembly. Reinstall in the engine shaft.
- 8) Replace propeller in reverse order as when it was removed. Also see Owner's Manual 106() for installation instructions.

ASSEMBLY
Drawing D-3650 (S)

HARTZELL PROPELLER INC.
PIQUA, OHIO
PARTS LIST
HC-A3VF-7, -7A, -7B

Approved: Aug. 9, 1990

By: R.L. Edinger
R.L. Edinger

Number Required

Change Letter	Part Number	Nomenclature	-7	-7B
D	840-82	HUB SPIDER UNIT	1	
W	C-1477	Hub Spider	1	
AB	A-1496	Pilot Tubes	3	
HUB ASSOCIATED PARTS				
Q	A-971	Split Bearing, Blade	3	
B	A-2027	Wire Ring, Bearing Retention	3	
K	A-311	Ball Spacer	3	
F	A-972	Guide Ring	3	
B	A-974	Wire Ring, Guide Retention	3	
	PRP-909-8	"O" Ring, Blade	3	
	PRP-909-6	"O" Ring, Shaft	1	
	.5002 x 1	Danley Dowel Pins	2	
N	A-1328-1	12 Point Bolts	6	
C	A-1381	Washers	6	
CLAMP ASSEMBLY				
AU	838-80	CLAMP ASSEMBLY	3	
AU	838-113	CLAMP ASSEMBLY		3
BZ	C-3-1A	Clamp	3	3
S	A-304	Linkscrew	3	3
D	A-285	Staking Pin, Linkscrew	3	3
	MS15001-1	Lube Fittings	6	6
B	833-29RL	Counterweight Unit	3	
B	C-3669	Counterweight Unit		3
U	A-2036-24	Socket Head Cap Screw, Ctw.	6	
U	A-2036-22	Socket Head Cap Screw, Ctw.		6
D	*A-285	Staking Pins, Ctw., Sk. Hd. Screws	6	6
G	A-65	Staking Pin, Counterweight	3	3
K	A-47-1	Clamp Gaskets	6	6
M(C)	A-282 or A-321	Socket Screws, Clamp	6	6
	AN380-3-2	Cotter Pins, Socket Screw	6	6
H	A-2017	Clamp Bolts	6	6
A	A-2031	Washers	6	6
K	A-2043-1	Clamp Nuts	6	6
	"B"	Lube Fitting Caps	6	6
CLAMP ASSOCIATED PARTS				
C	A-48	Balance Weights	A S N E E D E D	
	AN501A10-()	Weight Screws	6	6
D	A-944	Sleeve, Linkscrew	3	3
	AN380-3-3	Cotter Pin, Sleeve	3	3
U	A-890-12	Weight Slugs	6	
R	B-3663-3	Weight Slugs		3
D	B-3384-10H	Hex Head Bolts	12	
B	B-3386-14H	Hex Head Bolts		6

ASSEMBLY
Drawing D-3650 (S)

HARTZELL PROPELLER INC.
PIQUA, OHIO
PARTS LIST
HC-A3VF-7, -7A, -7B

Approved: Aug. 9, 1990

By: R.L. Edinger
R.L. Edinger

Number Required

Change Letter	Part Number	Nomenclature	-7	-7B
C	831-37	FEATHERING SPRING ASSEMBLY	1	
K	B-3421-1	Pilot Tube Unit	1	
F	A-3613	Cup, Spring Retainer	1	
D	B-1461	Spacer Tube	1	
F	B-1454	Spring, Inner	1	
F	B-1453	Spring, Outer	1	
C	A-1460	Spring, Retainer	1	
N	A-867	Split Retainer	1	
-	B-3720	Hex Head Bolts	4	
X	B-1368-10	PISTON ASSEMBLY	1	
AT	C-1451-2	Piston Unit	1	
AT	C-1451-2 Det.1	Piston	1	
X	A-862	Plastic Bushing	1	
G	A-946	Bronze Bushing	6	
X	A-817-1	Guide Rods	3	
R	A-114-B	Rod Staking Pins	3	
F	A-1464	Link Pin Units	3	
	AN501A10-6	Safety Screws	3	
E	A-1444	Washers	3	
A	B-3368	Jam Nuts	3	
I	A-2037	Socket Head Cap Screws	3	
X	B-1901	Link Arms	3	
A(P)	834-1B(834-1A Alt.)	GUIDE COLLAR UNIT	1	
Q	B-1402A	Guide Collar	1	
J	A-116D-1	Plastic Bushings	3	
R	A-114-C	Staking Pin	1	
J	A-2038-12	Socket Head Cap Screw	1	
		HYDRAULIC ASSOCIATED PARTS		
AD	B-854-1	Cylinder	1	
	PRP-909-13	"O" Ring, Cylinder	1	
	PRP-914-8	"O" Ring, Pilot Tube	1	
C	A-863	Dust Seal	1	
	PRP-902-46-2	"O" Ring, Piston	1	
E	A-859	Split Retainer	1	
E	A-1467	Plate, Ring Retention	1	
	AN501A10-8	Screws, Plate	4	
R	A-880-1	Flexlock Nut, Piston	1	
A	A-1869	Spacer (use on A3VF-7A only)	1	

NOTE: Optional, Use AN380-2-2 Cotter Pin.

ASSEMBLY
Drawing D-3650 (S)

HARTZELL PROPELLER INC.
PIQUA, OHIO
PARTS LIST
HC-A3VF-7, -7A, -7B

Approved: Aug. 9, 1990

By: R.L. Edinger
R.L. Edinger

Number Required

Change Letter	Part Number	Nomenclature	-7	-7B
X	C-3630-1	BETA VALVE ASSEMBLY NO. 3	1	
F	A-3622	Cap, Rod End	1	
	PRP-902-1	"O" Ring, Cap	1	
A	A-3621-2	Fitting, Rod End	1	
B	A-3634	Bushing	1	
-	B-3397	Check Nut	1	
	PRP-902-9	"O" Ring, Cover	1	
B	B-2692	Cover, Engine	1	
	PRP-914-41	"O" Ring, Cover	1	
H	B-3633	Push Pull Rod	1	
F	B-3645	Retainer, Spring	1	
A	A-3607	Spring, Outer	1	
B	A-3608	Spring, Inner	1	
	PRP-914-2	"O" Ring, Sleeve	1	
	31-S-125-0750.	SPS Spring Pin	1	
C	**B-3602	Shaft Adaptor	1	
M	B-3632	Spool, Beta Valve	1	
K	A-3619-1	Pin, Indicator	1	
I	B-3631-1	Sleeve, Beta Valve	1	
	**PRP-912-2	"O" Ring, Shaft	1	
	**PRP-914-16	"O" Ring, Shaft	1	
	PRP-902-14	"O" Ring, Sleeve	2	
	PRP-902-7	"O" Ring, Rod	1	
N	A-2246-1	Spacer	1	
B	A-2678	Nut, Self Locking(or(2)B-3368)	1	
H	B-3606	Rod, Feed Back	1	
C	A-3641	Washer	1	
	21-S-.062-.0125	SPS Spring Pin	1	
SPINNER MOUNTING PARTS				
H	B-3490	Bracket	3	
D	B-3384-4H	Hex Head Bolts	6	
D	B-3384-18	Hex Head Bolts	6	
	AN960-416L	Washers	18	
	H10-4	Keylock Nuts	6	
-	835-39	SPINNER ASSEMBLY	1	
B	C-3624	Dome, Spinner	1	
V	C-807-8	Bulkhead Unit	1	
	AN526C1032R8	Screws, Dome Mounting	15	
C	A-1020	Fibre Washers	15	

C-3630-2 (Alternate) Beta Valve Assembly same as C-3630-1 except use A-3619-2 Pin Indicator and B-3652 Push Rod Spool in place of B-3633 Push Rod, B-3632 Spool Beta Valve, 2-S-.062-.0125 Spring Pin.

**NOTE: PARTS FURNISHED WITH ENGINE.

SUPPLEMENT NO. 2

MANUAL NO. 114B

May 27, 1971

ADDITION OF HC-B3R20-4

1. Model HC-B3R20-4 is a non-counterweighted propeller with constant speed capabilities only. The basic hub is a 20 spline version. The hydraulic unit is the -4 version used on other propellers.
2. Overhaul procedures are the same as listed for the HC-B3() series.
3. The parts list is attached herewith.

HARTZELL PROPELLER, INC.

PIQUA, OHIO

PARTS LIST

HC-B3W20-4, HC-B3R20-4,

& HG-B3P20-4

Approved August 31, 1979

By R. V. Grimes

R. V. Grimes
President

Assembly
Drawing

D-3320

G

Change Letter	Part Number	Nomenclature	Number Required				
			"W"	ALL	"R"	"P"	
C	840-84	HUB SPIDER UNIT	1		1		
T	C-1968	Hub Spider	1		1		
P	A-1884	Pilot Tubes	3		3		
G	A-155	Bushing, Shaft	1		1		
C	840-55	HUB SPIDER UNIT				1	
G	A-155	Bushing				1	
T	C-1968	Hub Spider				1	
Q	A-1308	Pilot Tubes				3	
T	A-1851	HUB ASSOCIATED PARTS					
B	A-1877	Split Bearing, Blade		3			
P	A-1889	Wire Retention Ring, Bearing		3			
B	A-1852	Ball Spacer		3			
A	A-1854	Guide Ring		3			
	PRP-909-10	Wire Retention Ring		3			
	PRP-909-7	"O" Ring, Blade		3			
U	A-50-5*	"O" Ring, Shaft		1			
	A-63B	Rear Cone		1			
	A-847	Shaft Nut		1			
	A-870	Safety Pin, Nut		1			
		Ring, Puller		1			
AP	838-79	CLAMP ASSEMBLY	3				
BG	C-1301-8	Clamp	3				
K	B-3309-1	Counterweight Unit	3				
L	A-2036-16	Socket Head Cap Sc., Ctwt.	6				
	MS15001-1	Zerk Fittings	6				
K	A-1306	Gaskets, Clamp	6				
L	A-282	Socket Screws, Clamp	6				
	AN380-3-2	Cotter Pins, Socket Screw	6				
F	A-1372	Clamp Bolts	6				
E	A-1373	Clamp Nuts	6				
	No. 3	Lubricaps	6				
H	838-84	CLAMP ASSEMBLY			3	3	
S	C-1977	Clamp			3	3	
K	B-3309-1	Counterweight Unit			3	3	
L	A-2036-16	Socket Head Cap Sc., Ctwt.			6	6	
	MS15001-1	Zerk Fittings			6	6	
K	A-1306	Gaskets, Clamp			6	6	
L	A-282	Socket Screws, Clamp			6	6	
	AN380-3-2	Cotter Pins, Socket Screw			6	6	
	A-1372	Clamp Bolts			6	6	
	A-1373	Clamp Nuts			6	6	
	No. 3	Lubricaps			6	6	
NOTE:	Use A-50-1 Rear Cone when spinner not installed.						

HARTZELL PROPELLER, INC.

PIQUA, OHIO
PARTS LIST

HC-B3W20-4, HC-B3R20-4,
& HC-B3P20-4

Approved August 31, 1979

By R. V. Grimes

R. V. Grimes
President

Assembly
Drawing

7-3320

G

Change Letter	Part Number	Nomenclature	Number Required			
			"W"	ALL	"R"	"P"
B D	A-1305 AN501A10-6 A-944 AN380-3-3	CLAMP ASSOCIATED PARTS Balance Weights Weight Screws Sleeve Cotter Pin, Sleeve		As Needed 6 3 3		
C P P V F S N G D E	832-33 C-1881-1 C-1881-1 Det. A-862-2 A-946 A-817-4 A-114-B A-2037 AN316-5R A-1444 A-1464 AN501A10-6 A-861-3L	PISTON ASSEMBLY Piston Unit Piston Plastic Bushing Bronze Bushings Guide Rods Staking Pins, Rod Socket Head Cap Screw Check Nuts Washers Link Pin Units Safety Screws Link Arms		1 1 1 1 6 3 3 3 3 3 3 3 3		
I C S	B-1882 PRP-909-13 PRP-902-50 B-1843 834-7B	HYDRAULIC ASSOCIATED PARTS Cylinder "O" Ring, Cylinder "O" Ring, Piston Dust Seal Guide Collar Unit		1 1 1 1 1		
C F B V	836-20 C-1888 AN526C1032R8 A-1020 D-1871-5R	SPINNER ASSEMBLY Dome Screws Fibre Washers Bulkhead Unit		1 1 24 24 1		

SUPPLEMENT NO. 3
MANUAL NO. 114B

March 28, 1972

ADDITION OF ()HC-92WF-8E

This model is similar to Model ()HC-92ZF-8D except for the parts listed below.

	()HC-92ZF-8D	()HC-92WF-8E
(1) Hub Spider Assembly	840-68	840-117
(2) Pilot Tubes	A-1308	A-1884
(4) Brackets	A-846-4	A-1338

SUPPLEMENT NO. 4
MANUAL NO. 114B

May 15, 1972

ADDITION OF HC-B3W30-4

- 1) Model HC-B3W30-4 is a non-counterweighted propeller with constant speed capabilities only. It is identical to the HC-B3Z30-4 except it has a needle bearing installed in the end of the pilot tube which extends up inside of the butt of the blade.
- 2) Overhaul procedures are the same as all the HC-B3W() series.
- 3) The parts list is attached herewith.

HARTZELL PROPELLER, INC.
 PIQUA, OHIO
 PARTS LIST
 HC-B3W30-4
 HC-B3Z30-4

Approved May 15, 1972

Assembly
 Drawing
 D-1895

By David Biermann
 David Biermann
 President

Change Letter	Part Number	Nomenclature	Number Required		
			"W"	BOTH	"Z"
D AA N G	840-34 C-1853 A-1308 A-1817	HUB SPIDER UNIT Hub Spider Pilot Tubes Bushing			1 1 3 1
D AA N G	840-74 C-1853 A-1884 A-1817	HUB SPIDER UNIT Hub Spider Pilot Tubes Bushing	1 1 3 1		
B N M B A B E B G	A-1877 A-1851 A-1889 A-1852 A-1854 PRP-909-10 A-1855 A-1856 PRP-909-9 PRP-914-41 B-1894 A-1848 A-1834 or A-1834-1 PRP-902-15	HUB ASSOCIATED PARTS Bearing Retention Ring Split Bearing, Blade Ball Spacer, Bearing Guide Ring, Bearing Wire Retention Ring "O" Ring, Blade Spacer Rear Cone "O" Ring, Shaft "O" Ring, Shaft Shaft Nut Safety Pin Shaft Plug "O" Ring, Shaft Plug		3 3 3 3 3 3 As Needed 1 1 1 1 1 1	
AO BF I I K L D E	838-66 C-1301-8 B-3309 A-2036-22 MS15001-1 No. 3 A-1306 A-282 AN380-3-2 A-1372 A-1373	CLAMP & COUNTERWEIGHT ASSEMBLY Clamp Counterweight Unit Socket Head Cap Screw Zerk Fitting Lubricaps Gaskets, Clamp Socket Screws, Clamp Cotter Pins, Socket Screw Clamp Bolts Clamp Nuts			3 3 3 6 6 6 6 6 6 6 6
B C	A-1305 AN501A10-6 A-944 AN380-3-3	CLAMP ASSOCIATED PARTS Balance Weights Weight Screws Sleeve Cotter Pin, Sleeve		As Needed 6 3 3	

HARTZELL PROPELLER, INC.
 PIQUA, OHIO
 PARTS LIST
 HC-B3W30-4
 HC-B3Z30-4

Approved May 15, 1972

Assembly
 Drawing
 D-1895

By David Biermann
 David Biermann
 President

Change Letter	Part Number	Nomenclature	Number Required		
			"W"	BOTH	"Z"
B	832-33	PISTON ASSEMBLY		1	
N	C-1881-1	Piston Unit		1	
N	C-1881-1 Det.1	Piston		1	
U	A-862-2	Plastic Bushing		1	
F	A-946	Bronze Bushing		6	
R	A-817-4	Guide Rods		3	
N	A-114-B	Staking Pins, Rod		3	
G	A-2037	Socket Head Cap Screws		3	
	AN316-5R	Check Nuts		3	
B	A-1444	Washers		3	
E	A-1464	Link Pin Units		3	
	AN501A10-6	Safety Screws		3	
AB	A-861-3L	Link Arms		3	
G	B-1882-1	HYDRAULIC ASSOCIATED PARTS Cylinder		1	
	PRP-909-13	"O" Ring, Cylinder		1	
	PRP-902-50	"O" Ring, Piston		1	
B	B-1843	Dust Seal		1	
O	834-7C	Guide Collar Unit		1	

September 14, 1976

Propeller Model HC-83V()-() is similar to Model HC-83X()-() described in the manual.

The HC-83V()-() propeller uses the same parts and construction procedures as Model HC-83X()-() except for the hub unit. The following list shows the applicable hub unit for each propeller configuration.

<u>Propeller</u>	<u>Hub Unit</u>
HC-83VF-2()	840-138
HC-83VF-3()	840-129
HC-83V20-1()	840-128
HC-83V20-2()	840-86

Applicable blades for the HC-83V()-() type propellers must be preceded with a "V" designation such as V8433.

February 26, 1980

MANUAL NO. 114 B

SUPPLEMENT NO. 6

Ground Adjustable Propeller Model HA-A2V20-1B

This propeller is essentially the same as the HC-A2V20-1 constant speed version except the hydraulic unit is replaced by an adjustable unit. Pitch adjustment is accomplished by the screw protruding from the front of the piston.

Overhaul procedures are identical to those given for model HC-A2V20-1.

A parts list is available upon request.

Supplement added to manual 04/15/