

FAA Approved
Manual No. 105-A
Revision 2
August 2009

HARTZELL

HANDBOOK

OVERHAUL INSTRUCTIONS

HARTZELL PROPELLER MODELS

**HC-92WK-2B
HC-92Z(F,K)-2A
HC-92Z(F,K)-2B**

CONSTANT SPEED AND FEATHERING

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REVISION HIGHLIGHTS

REVISION 2 HIGHLIGHTS

NOTE: Revision 2 is not written to ATA 100 format.

- Revised the [Cover](#), [Revision Highlights](#), and [Record of Revisions](#) to match the manual revision
- [Added pages for List of Temporary Revisions](#)
- [Added pages for List of Effective Pages](#)
- [Changed the torque requirements for the outer clamp screws, item 23](#)
- [Clarified that aviation grade reciprocating engine oil is used to lubricate the dust seal](#)
- [Clarified the radial play requirements](#)
- [Updated the parts listings](#)
- Made other minor changes to the manual

REVISION HIGHLIGHTS

1. Introduction

A. General

- (1) This is a list of current revisions that have been issued against this manual. Please compare to RECORD OF REVISIONS page to ensure that all revisions have been added to the manual.

B. Components

- (1) Revision No. indicates the revisions incorporated in this manual.
- (2) Issue Date is the date of revision.
- (3) Comments indicates the level of the revision.
 - (a) New Issue is a new manual distribution. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.
 - (b) Reissue is a revision to an existing manual that includes major content and/or major format changes. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.
 - (c) Major Revision is a revision to an existing manual that includes major content or minor format changes over a large portion of the manual. The manual is distributed in its entirety. All the page revision dates are the same, but change bars are used to indicate the changes incorporated in the latest revision of the manual.
 - (d) Minor Revision is a revision to an existing manual that includes minor content changes to the manual. Only the revised pages of the manual are distributed. Each page retains the date and the change bars associated with the last revision to that page.

<u>Revision No.</u>	<u>Issue Date</u>	<u>Comments</u>
Original	May/67	
1	Aug/07	Minor Revision
2	Aug/09	Minor Revision

RECORD OF REVISIONS

This is a permanent historical record of revisions inserted into this manual.

Revision Number	Issue Date	Date Inserted	Inserted By
Original	May/67	May/67	HPI
Rev. 1	Aug/07	Aug/07	HPI
Rev. 2	Aug/09	Aug/09	HPI

Revision Number	Issue Date	Date Inserted	Inserted By

RECORD OF REVISIONS

This is a permanent historical record of revisions inserted into this manual.

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RECORD OF TEMPORARY REVISIONS

Update this page to show all temporary revisions inserted into this manual.

Temporary Revision No.	Section/ Page	Issue Date	Date Inserted	Inserted By	Date Removed	Removed By

RECORD OF TEMPORARY REVISIONS

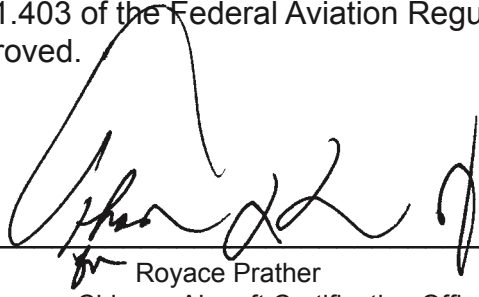
Update this page to show all temporary revisions inserted into this manual.

Temporary Revision No.	Section/ Page	Issue Date	Date Inserted	Inserted By	Date Removed	Removed By

AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations section is FAA approved and specifies maintenance required under 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

FAA APPROVED

by:  date: 8/8/07

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Manager, Chicago Aircraft Certification Office,
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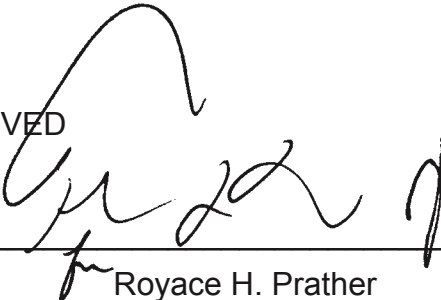
Log of Revisions to Airworthiness Limitations

Rev. No.	Description of Revision	Rev. No.	Description of Revision

AIRWORTHINESS LIMITATIONS

1. The FAA establishes specific life limits for certain component parts as well as the entire propeller. Such limits require replacement of the identified parts after a specified number of hours of use.
2. The following data summarizes all current information concerning Hartzell life limited parts as related to propeller models affected by this manual. These parts are not life limited on other installations: however, time accumulated toward life limit accrues when first operated on aircraft/engine/propeller combinations listed and continues regardless of subsequent installations (that may or may not be life limited).
 - A. Propeller models affected by this manual currently do not have any life limited parts.

FAA APPROVED

by:  date: 8/8/07

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LIST OF EFFECTIVE PAGES

Chapter	Page	Rev. Level	Date
Cover/Inside Cover	Cover/Inside Cover	Rev. 2	Aug/09
Revision Highlights	1 and 2	Rev. 2	Aug/09
Record of Revisions	1 and 2	Rev. 1	Aug/07
Record of Temporary Revisions	1 and 2	Rev. 2	Aug/09
Airworthiness Limitations	1 and 2	Rev. 1	Aug/07
List of Effective Pages	1 and 2	Rev. 2	Aug/09
Table of Contents	1 and 2	Rev. 1	Aug/07
Overhaul Instructions	1 thru 4	Rev. 1	Aug/07
Overhaul Instructions	5 and 6	Rev. 2	Aug/09
Parts Lists	7 and 8	Rev. 1	Aug/07
Parts Lists	9 thru 16	Rev. 2	Aug/09

LIST OF EFFECTIVE PAGES

Chapter	Page	Rev. Level	Date
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TABLE OF CONTENTS

PART I OVERHAUL INSTRUCTIONS

Section I Introduction.....	1
General.....	1
Description.....	1
Section II Overhaul Instructions	1
A. Removal of Propeller from Engine - HC-92WK-2B and HC-92Z(F,K)-2(A,B).....	2
B. Disassembly of Propeller - HC-92WK-2B and HC-92Z(F,K)-2(A,B).....	2
C. Cleaning	3
D. Inspection.....	3
E. Repair or Replacement	3
F. Assembly of Propeller - HC-92WK-2B and HC-92Z(F,K)-2(A,B).....	4
Section III Static Balance	5
Section IV Wear Tolerances	6
Section V - Propeller Lubrication.....	6
Section VI Service Troubles and Remedies	6

PART II PARTS LIST

1. Introduction.....	7
A. General	7
B. Using the Illustrated Parts List	7
C. Propeller Assemblies configured with an Ice Protection System	7
2. The Illustrated Parts List.....	7
A. Detailed Parts List.....	7
B. Revisions.....	8
C. Vendors	9
Parts List - HC-92WK-2B	11
Parts List - HC-92ZK-2(A,B)	13
Parts List - HC-92ZF-2(A,B)	15

LIST OF FIGURES

HC-92(Z,W)(F,K)-2() Propeller.....	Figure 1.....	1
Model HC-92(W,Z)(F,K)-2(A,B) Propeller, Exploded View	Figure 2.....	10

LIST OF TABLES

Special Overhaul Tools	Table I	1
Tolerances of Wearing Surfaces, HC-92(W,Z)(F,K)-2().....	Table II	6

PART I - OVERHAUL

SECTION I INTRODUCTION

GENERAL

This handbook contains overhaul instructions for the models HC-92WK-2B and HC-92Z(F,K)-2(A,B). The "Z" shanks incorporate bronze sleeves while the "W" shanks use a needle bearing at the outer end. The "F" flange has six 1/2 inch bolts on a 4 inch bolt circle, while the "K" flange has six 1/2 inch bolts on a 4 3/4 bolt circle. All four models are constant speed and feathering.

DESCRIPTION

The HC-92WK-2B and HC-92Z(F,K)-2(A,B) propellers are two-bladed feathering types designed for engines in the 180 to 300 horsepower range.

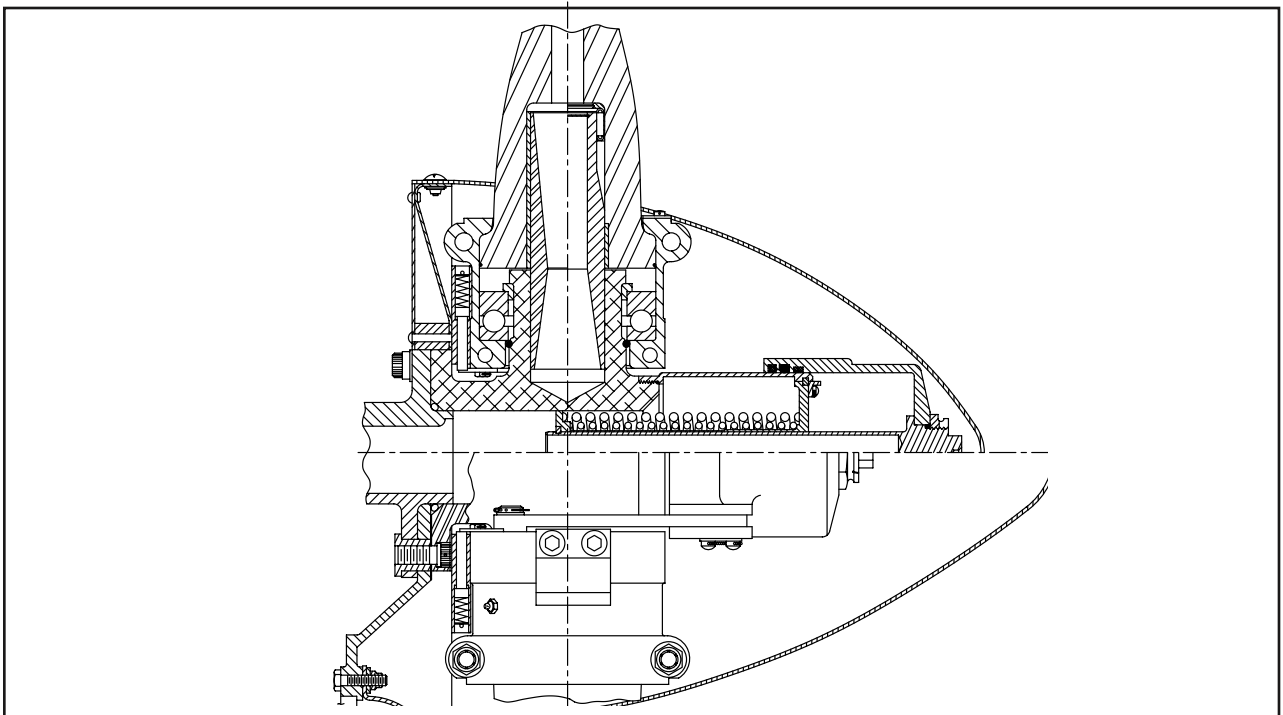
They are designed to be controlled by a governor mounted on the engine and supplying engine oil through the propeller shaft. Governor oil pressure (0-275 p.s.i. range) decreases the pitch, while counterweights attached to the blade clamps increase pitch. A spring assists the counterweights during the feathering operation. Feathering the pitch is accomplished by opening a valve in the governor which allows the feathering spring to force the oil out of the propeller and back in to the engine, thereby increasing the blade to the feathered position.

Centrifugal stops prevent feathering of the propeller due to the action of the spring when the engine is stopped. At speeds of over 500 rpm the stops are removed by centrifugal force, allowing the propeller to be feathered at any time.

SECTION II OVERHAUL INSTRUCTIONS

Table I - SPECIAL OVERHAUL TOOLS

AST-2917	Wrench for A-1315 Flange Mounting Screw
BST-2911-1	Wrench for A-880-2 Flexlock Nut on Spring Assembly
CST-2914	Fixture for Assembly of Feathering Spring
CST-2901-()	Propeller Table
CST-2919	Balancing Arbor



HC-92(Z,W)(F,K)-2() Propeller
Figure 1

**A. REMOVAL OF PROPELLER FROM
ENGINE - HC-92WK-2B and HC-92Z(F,K)-2(A,B).**

- a. Remove spinner dome (70) by taking out screws (71).
- b. Feather propeller. Use blade paddles on each blade to decrease pitch. Use two screw drivers to hold the high pitch stop pins (36) out so blades can be feathered.
- c. Remove both automatic stop assemblies (34) by taking out screws (39).
- d. Remove the six flange mounting bolts (2) and (3).
- e. Remove propeller from engine, also "O" ring (11) and mounting shim (14).

NOTE: At his point the propeller may be taken to the overhaul facility or shipped to the factory.

**B. DISASSEMBLY OF PROPELLER HC-92WK-2B
and HC-92Z(F,K)-2(A,B).**

Mount the propeller on a propeller table with the flange secured face down.

REMOVAL OF PISTON ASSEMBLY (52).

Propeller must be feathered before piston is removed.

- a. Unscrew nut (64) using wrench BST-2911-1. To keep pitch change rod (49) from turning, use a socket wrench to apply torque in opposite direction.
- b. Slide piston (56) off pitch change rod (49).
- c. Remove cotter pin (32) and link screw sleeve (33) both sides.
- d. Rotate piston assembly (52), uncoupling link arms (55) from link screw (19).
- e. Remove piston assembly (52) from cylinder (60).

PISTON (52)

- a. Take out screws (54), removing link pin unit (53).
- b. Remove "O" ring (63) and felt seal (61).

NOTE: Do not attempt to remove plastic bushing (58).

FEATHERING SPRING ASSEMBLY (43).

- a. Remove screws (66) and feathering stops (65). Remove front split rings (67) by first sliding entire spring assembly further into the cylinder (60) by about 1/4 inch. Remove spring assembly from cylinder (60).



Do not attempt to disassemble the feathering spring sub-assembly unless Special Tool No. C-845, the fixture for assembly of feathering springs, is available; or some equally safe device is used. If this feathering spring is defective and no fixture is available, a new one should be installed. Return old one to factory for repair or replacement.

- b. Place the assembly in the fixture and compress the feathering springs (47) and (48). When the springs are compressed, slide the rear spring retainer (45) back on pilot tube (49) and remove the rear spring split retainer (46). This allows the rear spring retainer (45), the springs (47) and (48), the spacer tube (50), and the spring retainer (44) to be removed from the pilot tube (49). Remove "O" ring (51).

CYLINDER (60).

- a. Unscrew cylinder (60) using square bar inserted in slots provided.
- b. Remove "O" ring (62).

BLADE CLAMPS.

- a. Record blade serial numbers with clamp number for each side of propeller.
- b. Remove the screws (16) and (26) from the clamp, and remove clamp halves (16). Remove gaskets (27). Remove the blades (1).
- c. From the clamps (16) remove the lubrication fittings (21), balance weights (28), and automatic high pitch stops (29) by removing screws (30).
- d. Remove the cotter pin (22). Remove and discard counterweight mounting screws (25).
- e. Refer to the Blade Clamp Overhaul chapter of Hartzell Standard Practices Manual 202A (61-01-02) for blade clamp overhaul instructions.

BLADE BEARINGS.

- a. Roll "O" ring (7) out of groove in the hub, and back onto the hub.

NOTE: Use small "C" clamps or other means to hold bearing races together, as this operation will permit races to part, allowing balls to roll out.

- b. Slide the bearing (5) back onto the hub toward the "O" ring (7).
- c. Remove the split ring (6). This will allow the bearing (5) and "O" ring (7) to be removed from the hub.

**AUTOMATIC HIGH PITCH STOP
ASSEMBLY (34).**

- a. Disassemble each high pitch stop assembly by removing the cotter pin (38). This allows spring (37), and pin (36) to be removed from the bracket (35).

HUB ASSEMBLY (2).

- a. Refer to the Steel Hub Overhaul chapter of Hartzell Standard Practices Manual 202A (61-01-02) for hub overhaul and assembly procedures.

C. CLEANING.

- a. General Procedures for Cleaning Parts

Refer to the Cleaning chapter of Hartzell Standard Practices Manual 202A (61-01-02).

- b. Cleaning Steel Parts for Magnetic Particle Inspection.

Refer to the Magnetic Particle Inspection chapter of Hartzell Standard Practices Manual 202A (61-01-02).

- c. Cleaning Steel Parts for Cadmium Re-Plating Procedures

Refer to the Cadmium Plating chapter of Hartzell Standard Practices Manual 202A (61-01-02).

- d. Cleaning Aluminum Parts for Dye Penetrant Inspection

Refer to the Dye Penetrant Inspection chapter of Hartzell Standard Practices Manual 202A (61-01-02).

D. INSPECTION.

- a. Inspect all wearing parts according to tolerances specified in TABLE II. Replace parts not coming within specified limits.
- b. Inspect the blades in accordance with Hartzell Aluminum Blade Overhaul Manual 133C (61-13-33).
- 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 in accordance with the Magnetic Particle Inspection chapter of Hartzell Standard Practices Manual 202A (61-01-02).
- e. Inspect the bearings for excessive wear or chafing. A certain amount of marking of the bearing races is to be expected and is not necessarily a reason for replacement. Only when the bearings show pit marks which are .005 inch deep and definitely feel rough, are the bearing races to be replaced. Bearing life ordinarily is greater than 1000 hours.
- f. Refer to the Steel Hub Overhaul chapter of Hartzell Standard Practices Manual 202A (61-01-02) for pilot tube inspection procedures.

E. REPAIR OR REPLACEMENT

- a. Repair or replace the hub in accordance with the Steel Hub Overhaul chapter of Hartzell Standard Practices Manual 202A (61-01-02).
- b. Replace the counterweight mounting screws (24) using only the specified parts, as they are heat treated to a high strength.
- c. Replace parts at overhaul as indicated by a "Y" code in the Parts List of this manual.
- d. Nicks or deep scratches in cylinder (60) 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 required if the original plating has been worn off or if damaged by nicks or scratches. Refer to the Cadmium Replating chapter of Hartzell Standard Practices Manual 202A (61-01-02).
- f. Overhaul and repair blades in accordance with Hartzell Aluminum Blade Overhaul Manual 133C (61-13-33).

F. ASSEMBLY OF PROPELLER - HC-92WK-2B and HC-92Z(FK)-2(A,B)

(Refer to Figure 2)

Reassembly is accomplished by reversing the operations noted for disassembly, as follows:

AUTOMATIC HIGH PITCH STOP ASSEMBLY (34).

a. Reassemble the automatic high pitch stop assemblies by inserting into each bracket (35) a pin (36) and spring (37). Use a cotter pin to hold the parts. The spring end should be bent around the cotter pin to preclude any possibility of it being unscrewed from the assembly.

FEATHERING SPRING SUB-ASSEMBLY (43).



When assembling or disassembling the feathering spring sub-assembly (43), it is imperative that a safe means of compressing the springs (47) and (48) be used. This is afforded by the use of Special Tool No. CST-2914.

a. Assemble onto the pitch change rod the (49) outer spring retainer (44), spacer tube (50), inner spring (48), outer spring (47), and rear spring retainer (45). Insert the above assembled parts in the spring compressing fixture and compress the springs until the rear spring split retainer (46) can be assembled in the groove near the end of the pilot tube (49). Release spring tension.

b. Install "O" ring (51) into groove at threaded end of pilot tube (49).

BLADE BEARINGS

a. Place a blade mounting "O" ring (7) on each leg of the hub assembly (2). Roll the "O" ring back towards the center of the hub.

b. Install the blade bearing (5) over the hub.



Be sure the thin race is installed first.

c. Install like-numbered blade mounting split ring (6) into the space between the bearing and the hub arm.

d. Pull the bearing (5) and split ring (6) outward against the shoulder of the hub. Roll the "O" ring (7) into its groove behind the bearing (5).

CLAMPS AND BLADES

Note: In order to assemble the propeller and set the pitch accurately, it is highly advantageous to use a special propeller table having a shaft which can be mated with the hub flange. Air or oil pressure (125 p.s.i.) should be available in the shaft to actuate the piston.

a. Mount the hub on the propeller table shaft, sealing the flange with "O" ring (11). Fasten with bolts or clamps.

b. Fill the blade pilot tube hole with grease CM12.



Be sure no air is trapped below the grease as this will affect the balance.

c. Install blade (1) on the same pilot tube (4) from which it was originally removed. Place a gasket compound CM46 around the blade shank in the shoulder radius.

d. Install the correct MATCHING clamp and counterweight sub-assembly (15), with new clamp gaskets (27). Fasten the parts together with socket head screws (26) and the clamp screws (23) with nuts (24). Tighten the socket head screws (26) and clamp screws (23) in order to check for friction.

Note: The pitch will be set after the propeller is assembled after which the clamp bolts will be finally tightened and safetied.

e. Install the lubrication fittings (21) and high pitch stop plates (29), using screws (30).

CYLINDER (60)

a. Clean the thread of the cylinder (60) and the hub. Insert "O" ring (62) in the cylinder groove behind the threads. Apply gasket compound CM134 to the "O" ring groove. Screw the cylinder (60) onto the hub. Use a one inch square bar about 3 feet long as a wrench, applied to the slot in the cylinder. Tighten the cylinder hard against the hub (about 125 to 150 ft. lb. torque).

b. Inspect inside the cylinder to be sure "O" ring 962) has not been forced out of place.

c. Inspect around the drive slot to be sure bar has not raised any edges which might cut the "O" ring in the piston. Peen edges if necessary.

INSTALLING FEATHERING SPRING

Sub-Assembly (43).

- a. Slide the feathering spring sub-assembly (43) into the cylinder (60) and bore of the hub (3) until the grooves in the end of the cylinder are exposed.
- b. Install the front split rings (67) into the groove in the cylinder. Pull the feathering spring sub-assembly forward to lock the rings in the groove.
- c. Secure the feathering spring sub-assembly and the split rings in place by means of the feathering stop (65) and screws 966). Safety screws with wire.

PISTON

- a. Install a new "O" ring (63) and felt seal (61) into their respective grooves in piston (56). Soak the felt seal with aviation grade reciprocating engine oil after assembly in the piston.
- b. Prepare the piston for installation by careful inspection for sharp edges. Lubricate the "O" ring (63) and cylinder (60), and also pilot tube "O" ring (51).
- c. Slide the piston (56) onto the cylinder (60).
- d. Rotate the clamp to install the free end of the link arm in the slot provided in the piston.
- e. Install the link pins through the holes in the piston and link arm.
- f. Install the screws (54).
- g. Move piston into full feathered position (back against hub assembly) so that the threaded end of pilot tube (49) protrudes through the end of the piston (56). Screw the nut (64) onto pitch change rod (49). Torque the nut (64) to 75 to 120 ft. lbs. Restrain the pitch change rod (49) from turning by applying a socket wrench to the hex located at the end.

Note: The pitch change rod (49) can be forced through the end of the piston by pressing down on the counterweights.

SETTING BLADE PITCH

- a. Apply 125 p.s.i. air or oil pressure through bore of the table spindle, to force the piston against the low pitch stop. Hold this position.
- b. Loosen the outer clamp screw (23) only. Set each blade with a protractor located at the 30 inch radius. Refer to Hartzell Application Guide Manual 159 (61-02-59) for low blade pitch setting. Tighten the blade clamps. Torque the outer clamp screws (23) to 60-65 ft. lb. wet (using anti-seize compound CM118) torque and the inner screws (26) to 40 ft. lb. torque. Safety the latter with cotter key through hole drilled in head.

c. Check the blade against turning in the clamp by torquing the blade to 175 ft. lb. Use a blade bar and a weight. If blade moves in the clamp, the clamp must be modified in accordance with the Clamp Overhaul chapter of Hartzell Standard Practices Manual 202A (61-01-02).

d. Check the blade angle again at the low pitch setting, as the torquing of the blade may have resulted in slight movement.

e. Check the feathering angle by allowing the feathering spring to feather the propeller. Refer to the Hartzell Propeller Application Guide, Manual 159 (61-02-59) for the correct feathering angle. In case the feathering angle is not within prescribed limits, the piston assembly (52) must be removed and the feathering stops (65) adjusted. If the feathering angle is other than specified, install another pitch stop of the appropriate height.

f. After the correct feather angle is set, safety wire the screws (59) and (54).

CHECK FOR GENERAL OPERATION, FRICTION AND LEAKAGE.

- a. Cycle the propeller with 125 p.s.i. air and note general operation for possible friction, etc.
- b. Hold full pressure on piston and check for leakage past piston "O" ring (63), cylinder "O" ring (62), and guide rod "O" ring (51). CM22 applied at these points will bubble if air is leaking out.

INSTALLATION OF HIGH PITCH STOP ASSEMBLY (34) WITH SCREWS (39).

- a. Apply 125 p.s.i. air pressure to force the piston against the low pitch stop.
- b. Remove the link pins, disengage the link arms, and rotate the clamp by hand until the high pitch stop plate engages the high pitch stop pin.
- c. Check the high pitch angle.
- d. Adjust the high pitch by filing the high pitch stop plate. Remove all marks from the reworked surface with emery cloth.
- e. Install the link arm and link pin.
- f. Safety wire the link pin screws.
- g. When the correct high pitch is set, cycle the propeller until the high pitch stops can be removed.

h. Feather the propeller.

i. Balance the propeller assembly in accordance with the Static and Dynamic Balance chapter of Hartzell Standard Practices Manual 202A (61-01-02).

j. Install the propeller in accordance with Hartzell Owner's Manual 169 (61-00-69).

SECTION III - STATIC BALANCE

a. Perform static balance of the propeller in accordance with the Static and Dynamic Balance chapter of Hartzell Standard Practices Manual 202A (61-01-02).

SECTION IV - WEAR TOLERANCES

Table II - Tolerances of Wearing Surfaces, HC-92(W,Z)(F,K)-2().

Item No.	Part or Description of Measurement	Replace if dimension is above or below	
		Max.	Min.
4	A-1308, D-7469, and 100320 Pilot Tube O.D., Inner 1 1/4 inch	—	1.7165
4	A-1308, D-7469, and 100320 Pilot Tube O.D., Outer 1 inch	—	1.7187
4	A-1308, D-7469, and 100320 Pilot Tube, length extending beyond hub	3.75 + 1/16	3.75 - 1/16
4	A-1884 and A-1884-A Pilot Tube O.D., Inner 1 1/8 inch	—	1.7165
4	A-1884 and A-1884-A Pilot Tube OD., Outer 1 1/4 inch	—	1.3740
4	A-1884 and A-1884-A Pilot Tube, length extending beyond hub	3.75 + 1/16	3.75 - 1/16
56	C-852-6 Piston, A-862 Bushing I.D.	3.784	—
56	C-852-6 Piston, Link Pin hole I.D.	0.377	—
60	B-854 Cylinder Large O.D.	—	3.773
49	B-855-A Pitch Change Rod Diameter O.D.	—	0.9810
44	A-856 Spring Retainer bore	0.991	—
45	A-857 Spring Retainer O.D.	—	2.227
55	A-861-3 Link Arms I.D. Small End	0.3785	—
55	A-861-3 Link Arms I.D. Large End	0.5665	—
RF	Blade Tracking Tolerance	+/- 0.06 inch (1.5 mm) or 0.12 inch (3.0 mm) total	
RF	Blade End Play	+/- 0.06 inch (1.5 mm)	
RF	Fore and Aft Movement of Blade Tip	+/- 0.06 inch (1.5 mm)	
RF	In and Out	0.032 inch (0.813 mm)	
RF	Radial Play (pitch change)	0.5 degree (1 degree total)	

SECTION V - PROPELLER LUBRICATION

- a. Lubricate the propeller in accordance with the Propeller Lubrication chapter of Hartzell Standard Practices Manual 202A (61-01-02).

SECTION VI - SERVICE TROUBLES AND REMEDIES

- a. For troubleshooting information, refer to the Troubleshooting chapter of Hartzell Propeller Owner's Manual 169 (61-00-69).

PART II - PARTS LIST

1. Introduction

A. General

- (1) This Illustrated Parts List contains all of the current configurations for the specified propellers manufactured by Hartzell Propeller Inc. and supersedes any prints that may have previously been supplied for part and assembly information. The parts lists contained within the Illustrated Parts List are to be used for verifying the configuration of propeller models and ordering parts.

CAUTION: ILLUSTRATIONS IN THE ILLUSTRATED PARTS LIST ARE TO BE USED FOR IDENTIFYING PARTS ONLY.

- (2) Figures are for reference only. The figures provide general views of parts. For ease of illustration, typical views of some parts were created and shown in multiple figures. For this reason, illustrated parts may not exactly reflect parts contained in some propeller assemblies.

B. Using the Illustrated Parts List

- (1) Every effort has been made to include all of the propellers and configurations manufactured by Hartzell Propeller Inc. If an overhaul facility has questions about a propeller configuration as stated in the Illustrated Parts List, contact the Hartzell Propeller Product Support Department.
- (2) Basic Propeller Parts: Refers to all of the propeller components that may be unique to a particular propeller model.
- (3) Spinner Mounting Kits have been included in this manual. It is the responsibility of the propeller maintenance facility to ensure that the appropriate spinner and mounting parts have been installed. Refer to the Hartzell Application Guide Manual 159 (61-02-59) for spinner assembly application information.

C. Propeller Assemblies configured with an Ice Protection System

- (1) If the propeller is equipped with an ice protection system, applicable instructions and technical information can be found in Hartzell Propeller Ice Protection System Manual 180 (30-61-80) for those system components supplied by Hartzell. Propeller ice protection system components not supplied by Hartzell Propeller Inc. are controlled by the applicable TC or STC holder's Instructions for Continued Airworthiness (ICA).

2. The Illustrated Parts List

A. Detailed Parts List

The Detailed Parts List consists of the Figure/Item Number, Part Number, Description, Configuration Change Code, Effectivity Code and Units Per Assembly. Space is reserved for the Airline Stock Number. The following is an explanation of each column.

(1) Fig/Item Number

- (a) Figure Number refers to the illustration where items appear. Item Numbers are assigned in broken sequence to allow the insertion of subsequent additional parts. Items listed but not illustrated are identified by a dash to the left of the item number.
- (b) Alpha variants will be used to add additional items. There are two reasons for the use of alpha variants:

1 A part may have an alternate, or may be superseded, replaced, or obsoleted by another part. For example, the felt dust seal (A-863) that is item 61 was superseded by the felt dust seal (B-1843) that is item 61A.

2 An Illustrated Parts List may contain multiple configurations. Effectivity codes are used to distinguish different part numbers within the same list. Effectivity codes are very important in the determination of parts in a given configuration.

(2) Part Number

Use the Hartzell part number when ordering the part from Hartzell or a Hartzell approved distributor. Digits of Hartzell Part Numbers have no significance other than to identify a part.

(3) Airline Stock Number

Space is reserved for the Airline Stock Number.

(4) Nomenclature

This column identifies the item. The relationship of parts to assembly are indicated by the use of indentations. This column may also contain vendor CAGE codes, as applicable. Information regarding part alternative, supersedure, replacement, or obsolescence may also be found in this column. Refer to Revisions, below, for further information regarding alternate, superseded, replaced, or obsoleted parts.

(5) Effectivity Code (EFF CODE)

The effectivity column shows the prefix and/or suffix of the propeller model to which the parts apply. In some cases, the specific engine or aircraft manufacturer may be called out. Effectivity codes assigned apply only to the figure/listing in which they appear. Parts common to all end items show no code.

(6) Units Per Assembly (UPA)

Designates the total quantity of an item required for the next higher assembly or subassembly.

(7) Overhaul (O/H)

Designates the parts to be replaced at overhaul. A "Y" identifies the parts that are replaced at overhaul.

NOTE: An overhaul kit may not contain all the parts identified with a "Y" for a particular model propeller. An example of parts that may not be included in the overhaul kit is spinner mounting parts.

B. Revisions

(1) Alternate

Alternate parts are identified by the term "ALTERNATE" in the Description column. Alternate items are considered airworthy for continued flight and existing stock of parts may be used for maintenance and/or repair. The new or alternate part numbers may be used interchangeably when ordering/stocking new parts. Alternate parts may no longer be available.

(2) Supersedure

Part changes are identified by the terms "SUPERSEDES ITEM _____" or "SUPERSEDED BY ITEM _____" in the Description column. Superseded items are considered airworthy for continued flight and existing stock of superseded parts may be used for maintenance and/or repair. Once the superseding part has been incorporated/installed into an assembly, the original superseded part is no longer to be used in that assembly. Superseded parts may no longer be available, and the new part number must be used when ordering/stocking new parts.

(3) Replacement

Part changes identified by the terms "REPLACES ITEM _____" or "REPLACED BY ITEM _____" in the Description column are considered airworthy for continued flight, but must be replaced with a part with the new part number at overhaul. Existing stock of replaced parts may not be used for maintenance and/or repair of effected assemblies. Replaced parts may no longer be available, and the new part number must be used when ordering/stocking new parts.

(4) Obsolescence

Obsolete parts are identified by "OBS" in the Units Per Assembly (UPA) column. Obsolete items are considered unairworthy for continued flight.

(5) Service Documents and Airworthiness Directives

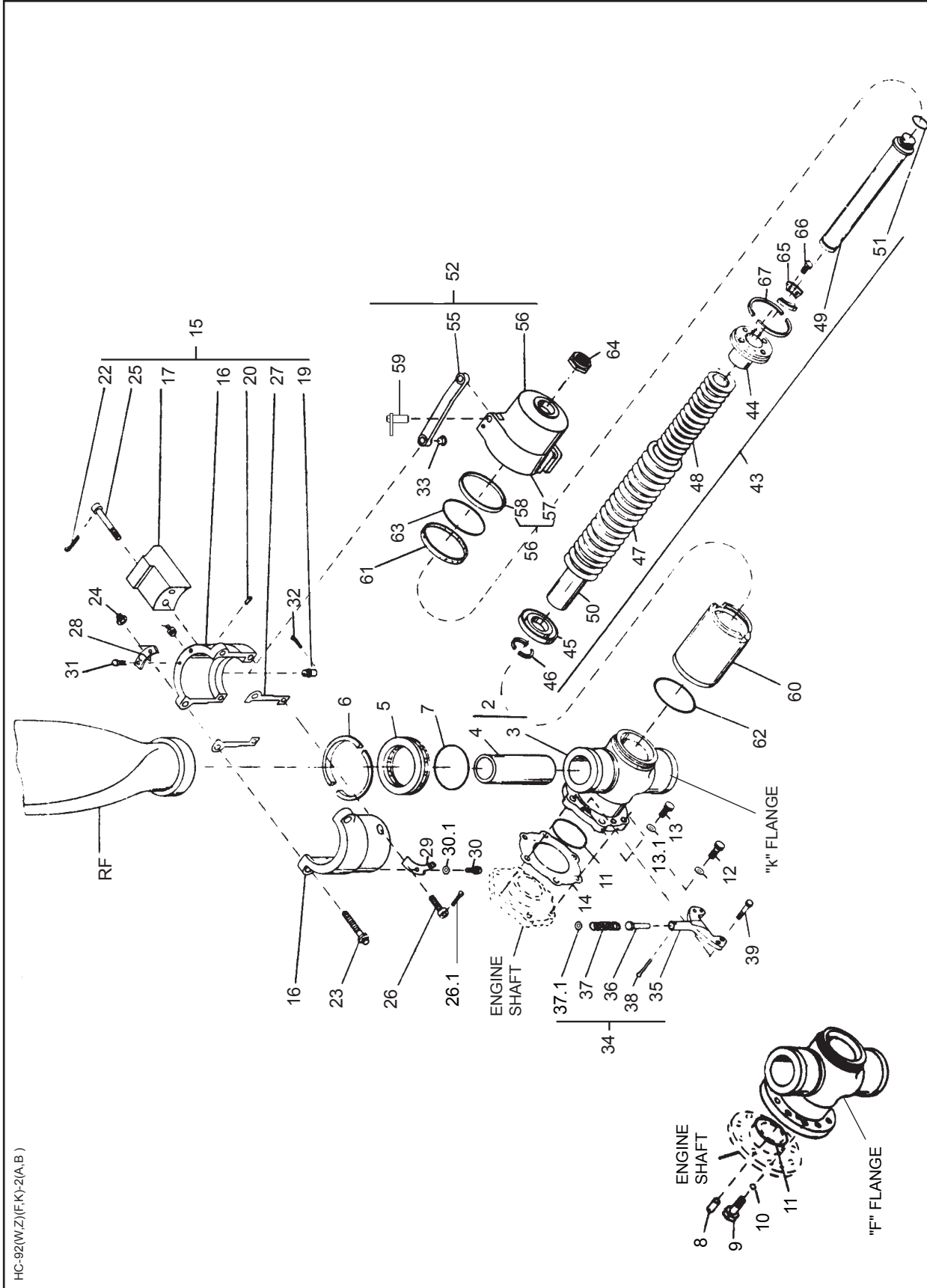
(a) In the event of modification or rework of an existing part, the supersedure, replacement, or obsolescence of a part, or the addition of parts installed by a Service Bulletin (SB) or Service Letter (SL), the SB or SL number will appear in the Description column as "SB _____", or "SL _____" after the description.

(b) When a SB has a relationship to an Airworthiness Directive (AD), the AD will be shown in parentheses after the SB number as SB _____ (AD_____).

C. Vendors

- (1) Many O-rings, fasteners, and other vendor supplied hardware listed in Hartzell manuals have previously been specified with AN, MS, NAS or vendor part number. To provide internal controls and procurement flexibility, Hartzell has made engineering changes to provide all O-rings, fasteners, and hardware with a Hartzell part number. Parts shipments from Hartzell will specify only the Hartzell part numbers.

- (2) Some O-rings, fasteners, and hardware manufactured in accordance with established industry specifications (certain AN, MS, NAS items) are acceptable for use in Hartzell products without additional standards imposed by Hartzell; however, Hartzell does impose restrictions on certain AN, MS, and NAS vendor parts, which must be procured directly from Hartzell. For a listing of part number interchangeability, refer to the Vendor Cross Reference chapter of Hartzell Standard Practices Manual 202A (61-01-01). Where allowable, both the Hartzell part number item and AN, MS, NAS, and other specified vendor numbers items can be used interchangeably. The Hartzell part number must be used when ordering these parts from Hartzell.



Model HC-92(W,Z)(F,K)-2(A,B) Propeller, Exploded View
Figure 2

HC-92(W,Z)(F,K)-2(A,B)

FIG./ITEM NUMBER	PART NUMBER	NOMENCLATURE	EFF CODE	UPA	O/H
FIG. 2	HC-92WK-2B	PROPELLER ASSEMBLY		RF	
2	840-88	• HUB UNIT		1	
3	C-1314-4	• • HUB		1	
4	A-1884	• • PILOT TUBE - SUPERSEDED BY ITEM 4B		2	
4B	A-1884-A	• • PILOT TUBE - SUPERSEDES ITEM 4		2	
5	A-1303-A	• BEARING, RETENTION, BLADE		2	
6	A-1331	• SPLIT RING		2	Y
7	C-3317-229	• O-RING		2	Y
11	C-3317-329	• O-RING		1	Y
12	A-1328	• BOLT, MOUNTING, 1/2-20, 12 POINT		4	Y
13	A-1333	• BOLT, MOUNTING, 12/-20, HEX HEAD		2	Y
13.1	A-964	• MOUNTING WASHER		2	Y
14	B-1322	• SHIM, MOUNTING, K FLANGE		1	Y
15	838-30	• CLAMP ASSEMBLY		2	
16	C-1301	• • BLADE CLAMP- SUPERSEDED BY ITEM 16A		1	
16A	C-1301S	• • BLADE CLAMP- SUPERSEDES ITEM 16		1	
17	833-7	• • COUNTERWEIGHT UNIT		1	
19	A-304	• • LINKSCREW, 1/2-20		1	Y
20	A-285	• • SPRING PIN, 3/32, CRES.		1	Y
21	B-6588-1	• • LUBRICATION FITTING		2	Y
22	A-285	• • SPRING PIN, 3/32, CRES.		2	Y
23	A-1372	• • BOLT, 7/16-20, 12 POINT		4	Y
24	A-1373	• • NUT, 7/16-20, HEX, SELF-LOCKING		4	Y
25	A-2036-30	• • SCREW, 7/16-20, CAP, MODIFIED		2	Y
26	A-282	• • SOCKET SCREW - SUPERSEDED BY ITEM 26A		4	Y
26A	A-321	• • SCREW, 3/8-24, DOUBLE 60" HEAD -SUPERSEDES ITEM 26		4	Y
26.1	B-3838-3-2	• • COTTER PIN		2	Y
27	A-1306	• • CLAMP GASKET		2	Y
28	A-1305	• • BALANCE WEIGHT		A/R	
29	A-881	• PLATE, START LOCK		2	
30	B-3840-6	• SCREW, 10-32 FILLISTER HEAD		4	Y
30.1	B-3851-0332	• WASHER		4	Y
31	B-3840-()	• SCREW, BALANCE WEIGHT		A/R	Y
32	B-3838-3-3	• COTTER PIN -		2	Y
33	A-944	• SLEEVE, LINKSCREW		2	Y
34	830-9	• START LOCK ASSEMBLY		2	
35	B-984	• • BRACKET, START LOCK		1	
36	A-883	• • PIN, START LOCK		1	
37	A-884	• • SPRING , COMPRESSION		1	Y
37.1	B-3851-N832	• • WASHER		1	Y
38	B-3838-3-3	• • COTTER PIN		1	Y
39	B-3384-4H	• BOLT, 1/4-20, HEX HEAD		4	Y
43	831-5A	• SPRING ASSEMBLY		1	
44	A-856	• • SPRING RETAINER FLANGED		1	
45	A-857	• • SPRING RETAINER , REAR		1	
46	A-858	• • SPLIT RETAINER, REAR		1	Y
47	B-853	• • SPRING, OUTER		1	
EFFECTIVITY		MODEL	EFFECTIVITY		MODEL

- ITEM NOT ILLUSTRATED

HC-92WK-2B

FIG./ITEM NUMBER	PART NUMBER	NOMENCLATURE	EFF CODE	UPA	O/H
FIG. 2					
48	B-953	• • SPRING, INNER		1	
49	B-855-A	• • PITCH CHANGE ROD		1	
50	A-860-1	• • SPACER TUBE		1	
51	C-3317-024	• • O-RING		1	Y
52	832-24	• PISTON ASSEMBLY		1	
55	A-861-3	• • LINK ARM		2	
56	C-852-6	• • PISTON UNIT		1	
58	A-862	• • • BUSHING, PLASTIC		1	
59	A-1464	• • LINK PIN UNIT		2	Y
60	B-854	• • CYLINDER		1	
61	A-863	• • DUST SEAL - SUPERSEDED BY ITEM 61A		1	Y
61A	B-1843	• • DUST SEAL - SUPERSEDES ITEM 61		1	Y
62	C-3317-235	• • O-RING		1	Y
63	C-3317-343-1	• • O-RING		1	Y
64	A-880-2	• • NUT,HEX,SELF-LOCKING,THIN		1	Y
65	A-899-()	• • FEATHERING STOP PLATE		2	
66	B-3840-6	• • SCREW, 10-32, FILLISTER HEAD		4	Y
67	A-859	• • SPLIT KEEPER (FRONT)		1	
-68	C-3317-045	• O-RING		2	Y
-69	A-1889	• BALL SPACER (NOT SHOWN) - SUPERSEDED BY ITEM 69A		2	Y
-69A	B-3742	• BALL SPACER (NOT SHOWN) - SUPERSEDES ITEM 69		2	Y
-70	B-6144-2	• 9/16" DIAMETER STEEL BALL		38	Y
-70A	B-6144-2-450	• 9/16" DIAMETER STEEL BALL (450 PIECE BOX)		RF	Y
-71	NO. 3	• CAP, FITTING, LUBRICATION - SUPERSEDED BY ITEM 71A		4	Y
-71A	B-6544	• CAP, FITTING, LUBRICATION - SUPERSEDES ITEM 71		4	Y
-72	A-6119	• BUSHING, LINK ARM		2	Y
EFFECTIVITY		MODEL	EFFECTIVITY		MODEL

- ITEM NOT ILLUSTRATED

HC-92WK-2B

FIG./ITEM NUMBER	PART NUMBER	NOMENCLATURE	EFF CODE	UPA	O/H
FIG. 2	HC-92ZK-2(A,B)	PROPELLER ASSEMBLY		RF	
2	840-23	• HUB UNIT	-2A	1	
2A	840-46	• HUB UNIT	-2B	1	
3	C-1314	• • HUB - SUPERSEDED BY ITEM 3A		1	
3A	C-1314-4	• • HUB - SUPERSEDES ITEM 3		1	
4	A-1308	• • PILOT TUBE - SUPERSEDED BY ITEM 4A		2	
4A	D-100320	• • PILOT TUBE - SUPERSEDED BY ITEM 4B (PRE HC-SL-61-211)		2	
4B	100320	• • PILOT TUBE - SUPERSEDES ITEM 4A (POST HC-SL-61-211)		2	
5	A-1303-A	• BEARING, RETENTION, BLADE		2	
6	A-1331	• SPLIT RING		2	Y
7	C-3317-229	• O-RING		2	Y
11	C-3317-329	• O-RING		1	Y
12	A-1328	• BOLT, MOUNTING, 1/2-20, 12 POINT		4	Y
13	A-1333	• BOLT, MOUNTING, 12/-20, HEX HEAD		2	Y
13.1	A-964	• MOUNTING WASHER		2	Y
14	B-1322	• SHIM, MOUNTING, K FLANGE		1	Y
15	838-30	• CLAMP ASSEMBLY		2	
16	C-1301	• • BLADE CLAMP- SUPERSEDED BY ITEM 16A		1	
16A	C-1301S	• • BLADE CLAMP- SUPERSEDES ITEM 16		1	
17	833-7	• • COUNTERWEIGHT UNIT		1	
19	A-304	• • LINKSCREW, 1/2-20		1	Y
20	A-285	• • SPRING PIN, 3/32, CRES.		1	Y
21	B-6588-1	• • LUBRICATION FITTING		2	Y
22	A-285	• • SPRING PIN, 3/32, CRES.		2	Y
23	A-1372	• • BOLT, 7/16-20, 12 POINT		4	Y
24	A-1373	• • NUT, 7/16-20, HEX, SELF-LOCKING		4	Y
25	A-2036-30	• • SCREW, 7/16-20, CAP, MODIFIED		2	Y
26	A-282	• • SOCKET SCREW - SUPERSEDED BY ITEM 26A		4	Y
26A	A-321	• • SCREW, 3/8-24, DOUBLE 60° HEAD -SUPERSEDES ITEM 26		4	Y
26.1	B-3838-3-2	• • COTTER PIN		2	Y
27	A-1306	• • CLAMP GASKET		2	Y
28	A-1305	• • BALANCE WEIGHT		A/R	
29	A-881	• PLATE, START LOCK		2	
30	B-3840-6	• SCREW, 10-32 FILLISTER HEAD		4	Y
30.1	B-3851-0332	• WASHER		4	Y
31	B-3840-()	• SCREW, BALANCE WEIGHT		A/R	Y
32	B-3838-3-3	• COTTER PIN -		2	Y
33	A-944	• SLEEVE, LINKSCREW		2	Y
34	830-2	• START LOCK ASSEMBLY	-2A	2	
34A	830-9	• START LOCK ASSEMBLY	-2B	2	
35	B-882-1	• • BRACKET, START LOCK	-2A	1	
35B	B-984	• • BRACKET, START LOCK	-2B	1	
36	A-883	• • PIN, START LOCK		1	
37	A-884	• • SPRING, COMPRESSION		1	Y
37.1	B-3851-N832	• • WASHER		1	Y
38	B-3838-3-3	• • COTTER PIN		1	Y
39	B-3384-4H	• BOLT, 1/4-20, HEX HEAD		4	Y
EFFECTIVITY		MODEL	EFFECTIVITY	MODEL	
-2A		HC-92ZK-2A			
-2B		HC-92ZK-2B			

- ITEM NOT ILLUSTRATED

HC-92ZK-2(A,B)

FIG./ITEM NUMBER	PART NUMBER	NOMENCLATURE	EFF CODE	UPA	O/H
FIG. 2					
43	831-5A	• SPRING ASSEMBLY		1	
44	A-856	• • SPRING RETAINER FLANGED		1	
45	A-857	• • SPRING RETAINER , REAR		1	
46	A-858	• • SPLIT RETAINER, REAR		1	Y
47	B-853	• • SPRING, OUTER		1	
48	B-953	• • SPRING, INNER		1	
49	B-855-A	• • PITCH CHANGE ROD		1	
50	A-860-1	• • SPACER TUBE		1	
51	C-3317-024	• • O-RING		1	Y
52	832-24	• PISTON ASSEMBLY		1	
55	A-861-3	• • LINK ARM		2	
56	C-852-6	• • PISTON UNIT		1	
58	A-862	• • • BUSHING, PLASTIC		1	
59	A-1464	• • LINK PIN UNIT		2	Y
60	B-854	• • CYLINDER		1	
61	A-863	• DUST SEAL - SUPERSEDED BY ITEM 61A		1	Y
61A	B-1843	• DUST SEAL - SUPERSEDES ITEM 61		1	Y
62	C-3317-235	• • O-RING		1	Y
63	C-3317-343-1	• • O-RING		1	Y
64	A-880-2	• • NUT,HEX,SELF-LOCKING,THIN		1	Y
65	A-899-()	• • FEATHERING STOP PLATE		2	
66	B-3840-6	• • SCREW, 10-32, FILLISTER HEAD		4	Y
67	A-859	• • SPLIT KEEPER (FRONT)		1	
-68	C-3317-045	• O-RING		2	Y
-69	A-1889	• BALL SPACER (NOT SHOWN) - SUPERSEDED BY ITEM 69A		2	Y
-69A	B-3742	• BALL SPACER (NOT SHOWN) - SUPERSEDES ITEM 69		2	Y
-70	B-6144-2	• 9/16" DIAMETER STEEL BALL		38	Y
-70A	B-6144-2-450	• 9/16" DIAMETER STEEL BALL (450 PIECE BOX)		RF	Y
-71	NO. 3	• CAP, FITTING, LUBRICATION - SUPERSEDED BY ITEM 71A		4	Y
-71A	B-6544	• CAP, FITTING, LUBRICATION - SUPERSEDES ITEM 71		4	Y
-72	A-6119	• BUSHING, LINK ARM		2	Y
EFFECTIVITY		MODEL	EFFECTIVITY		MODEL

- ITEM NOT ILLUSTRATED

HC-92ZK-2(A,B)

FIG./ITEM NUMBER	PART NUMBER	NOMENCLATURE	EFF CODE	UPA	O/H
FIG. 2	HC-92ZF-2(A,B)	PROPELLER ASSEMBLY		RF	
2	840-21	• HUB UNIT		1	
3	C-1304-5	• • HUB - SUPERSEDED BY ITEM 3A		1	
4	A-1308	• • PILOT TUBE - SUPERSEDED BY ITEM 4A		2	
4A	D-100320	• • PILOT TUBE - SUPERSEDED BY ITEM 4B (PRE HC-SL-61-211)		2	
4B	100320	• • PILOT TUBE - SUPERSEDES ITEM 4A (POST HC-SL-61-211)		2	
5	A-1303-A	• BEARING, RETENTION, BLADE		2	
6	A-1331	• SPLIT RING		2	Y
7	C-3317-229	• O-RING		2	Y
8	B-6138-8-8	• DOWEL PIN		2	Y
9	A-1333-4	• BOLT, MOUNTING, 1/2-20, HEX HEAD		6	Y
10	B-3851-0863	• WASHER		6	Y
11	C-3317-228	• O-RING		1	Y
11.1	B-3851-0863	• WASHER		6	Y
12	A-1333-4	• BOLT, MOUNTING, 12/20, HEX HEAD		6	Y
15	838-30	• CLAMP ASSEMBLY		2	
16	C-1301	• • BLADE CLAMP- SUPERSEDED BY ITEM 16A		1	
16A	C-1301S	• • BLADE CLAMP- SUPERSEDES ITEM 16		1	
17	833-7	• • COUNTERWEIGHT UNIT		1	
19	A-304	• • LINKSCREW, 1/2-20		1	Y
20	A-285	• • SPRING PIN, 3/32, CRES.		1	Y
21	B-6588-1	• • LUBRICATION FITTING		2	Y
22	A-285	• • SPRING PIN, 3/32, CRES.		2	Y
23	A-1372	• • BOLT, 7/16-20, 12 POINT		4	Y
24	A-1373	• • NUT, 7/16-20, HEX, SELF-LOCKING		4	Y
25	A-2036-30	• • SCREW, 7/16-20, CAP, MODIFIED		2	Y
26	A-282	• • SOCKET SCREW - SUPERSEDED BY ITEM 26A		4	Y
26A	A-321	• • SCREW, 3/8-24, DOUBLE 60° HEAD -SUPERSEDES ITEM 26		4	Y
26.1	B-3838-3-2	• • COTTER PIN		2	Y
27	A-1306	• • CLAMP GASKET		4	Y
28	A-1305	• • BALANCE WEIGHT		A/R	
29	A-881-1	• PLATE, START LOCK		2	
30	B-3840-6	• SCREW, 10-32 FILLISTER HEAD		4	Y
31	B-3840-()	• SCREW, BALANCE WEIGHT		A/R	Y
32	B-3838-3-3	• COTTER PIN -		2	Y
33	A-944	• SLEEVE, LINKSCREW		2	Y
34	830-4	• START LOCK ASSEMBLY	-2A	2	
34A	830-12	• START LOCK ASSEMBLY	-2B	2	
35	B-882-4	• • BRACKET, START LOCK	-2A	1	
35B	B-882-12	• • BRACKET, START LOCK	-2B	1	
36	A-883	• • PIN, START LOCK		1	
37	A-884	• • SPRING , COMPRESSION		1	Y
37.1	B-3851-N832	• • WASHER		1	Y
38	B-3838-3-3	• • COTTER PIN		1	Y
39	B-3384-4H	• BOLT, 1/4-20, HEX HEAD		4	Y
43	831-5A	• SPRING ASSEMBLY		1	
44	A-856	• • SPRING RETAINER FLANGED		1	
45	A-857	• • SPRING RETAINER , REAR		1	
EFFECTIVITY		MODEL	EFFECTIVITY	MODEL	
-2A		HC-92ZF-2A			
-2B		HC-92ZF-2B			

- ITEM NOT ILLUSTRATED

HC-92ZF-2(A,B)

FIG./ITEM NUMBER	PART NUMBER	NOMENCLATURE	EFF CODE	UPA	O/H
FIG. 2					
46	A-858	• • SPLIT RETAINER, REAR		1	Y
47	B-853	• • SPRING, OUTER		1	
48	B-953	• • SPRING, INNER		1	
49	B-855-A	• • PITCH CHANGE ROD		1	
50	A-860-1	• • SPACER TUBE		1	
51	C-3317-024	• • O-RING		1	Y
52	832-24	• PISTON ASSEMBLY		1	
55	A-861-3	• • LINK ARM		2	
56	C-852-6	• • PISTON UNIT		1	
58	A-862	• • • BUSHING, PLASTIC		1	
59	A-1464	• • LINK PIN UNIT		2	Y
60	B-854	• • CYLINDER		1	
61	A-863	• • DUST SEAL - SUPERSEDED BY ITEM 61A		1	Y
61A	B-1843	• • DUST SEAL - SUPERSEDES ITEM 61		1	Y
62	C-3317-235	• • O-RING		1	Y
63	C-3317-343-1	• • O-RING		1	Y
64	A-880-2	• • NUT,HEX,SELF-LOCKING,THIN		1	Y
65	A-899-()	• • FEATHERING STOP PLATE		2	
66	B-3840-6	• • SCREW, 10-32, FILLISTER HEAD		4	Y
67	A-859	• • SPLIT KEEPER (FRONT)		1	
-68	C-3317-045	• O-RING		2	Y
-69	A-1889	• BALL SPACER (NOT SHOWN) - SUPERSEDED BY ITEM 69A		2	Y
-69A	B-3742	• BALL SPACER (NOT SHOWN) - SUPERSEDES ITEM 69		2	Y
-70	B-6144-2	• 9/16" DIAMETER STEEL BALL		38	Y
-70A	B-6144-2-450	• 9/16" DIAMETER STEEL BALL (450 PIECE BOX)		RF	Y
-71	NO. 3	• CAP, FITTING, LUBRICATION - SUPERSEDED BY ITEM 71A		4	Y
-71A	B-6544	• CAP, FITTING, LUBRICATION - SUPERSEDES ITEM 71		4	Y
-72	A-6119	• BUSHING, LINK ARM		2	Y
EFFECTIVITY		MODEL	EFFECTIVITY		MODEL

- ITEM NOT ILLUSTRATED

HC-92ZF-2(A,B)