



Report No. E 296

Instruction manual for installation and operation of  
Constant Speed propeller model

HO-V92

The complete manual contains two sections:

Section 1: This Report No. E 296

Section 2: McCauley owner's manual no. 580501



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Section 2: Manual 580501

Edition No. 1, May 1985



## I. Introduction

1-2 This manual describes the differences only which are to be observed when Hoffmann Composite blades are installed into McCauley hubs. Accordingly the applicable sections of McCauley Owner's Manual No. 580501 are to be considered for complete information about function, installation and maintaining hubs.

|                  |              |                        |
|------------------|--------------|------------------------|
| Cross references | see McCauley | Hub Model used to      |
| Hoffmann Prop.   | Manual No.   | manufacture HO-V92 pr. |
| HO-V92F(-V)      | 580501       | 2A36C23                |
| HO-V92K(-V)      |              | 2D36C14B               |

### a) Propeller hub

All instructions of the manufacturer McCauley, Dayton, are applicable as far as the hub assembly is concerned (manual 580501).

### b) Propeller blade

Instructions of Report No. E 259 are to be observed. If the complete propeller is approved by an airworthiness authority, the Type Certificate Number is marked in the nameplate. Not approved installations are marked "EXPERIMENTAL".

## 1-4 Designation

The complete designation of a propeller is a combination of the hub designation and blade designation. The Serial Number of the propeller hub is considered as the Serial Number of the complete propeller assembly.

If the propeller is approved by the LBA (German Airworthiness Authority), the propeller will have a complete Hoffmann designation and a Type Certificate Number. Both numbers are marked on the nameplate.



## Examples:

## a) Hub designation:

HO-V 9 2 K-V ( )

1 2 3 4 5 6 7

1 Hoffmann GmbH & Co KG

2 variable pitch propeller

3 number of basic model

4 number of blades

5 flange type

empty = ARP 502 Type 1 flange

K = AS 127D (SAE 6 Mod., same dimensions as SAE2 Mod.)

3/4" drive bushings, 1/2" -20UNF bolts

L = AS 127D (SAE 5 Mod., same dimensions as SAE2 Mod.)

3/4" drive bushings, 7/16" -20UNF bolts

6 pitch change system

V = oil pressure to decrease pitch, flyweights to  
increase pitch

L = lefthand rotation

7 small modifications

The hub model designation is stamped on the outer  
side of the hub.

## b) Blade designation:

V 195 BW- ( )+( )

8 9 10 11 12 13

8 sense of rotation

none = righthand, tractor

D = righthand, pusher

L = lefthand, tractor

LD = lefthand, pusher

V = changed position of the blade actuating pin  
for oil pressure to decrease pitch

9 basic diameter in cm



- 10 key numbers for blade drawing number  
 11 B = electrical deicing  
 12 material of blade  
     none = compreg scarfed with lighter wood  
     P = compreg  
 13 decrease (-) or increase (+) of basic diameter  
     in cm

#### Example

On the nameplate of each blade the following is marked:

|             |                 |               |
|-------------|-----------------|---------------|
| Hersteller: | <b>HOFFMANN</b> |               |
| Nabe:       | HO-V92          | W.Nr.: XXX    |
| Blatt:      | V195C           | W.Nr.: 1:XXXX |
| Geräte Nr.: | 32.130/15       | Prüfung: XXX  |
|             | VP20-XXX-XX     | Datum: XXX    |

Geräte Nr. means Type Certificate Number.

Propellers not certified will have the word "EXPERIMENTAL" written in the nameplate instead of the TC Number.

A part number VP 20-( )-( ) may be added which, when used, identifies the propeller for a specific aircraft installation.

#### 1-5 Description, Blade construction

The Hoffmann-Composite-blade is a compound construction. It consists of totally compressed veneers (compreg) in the root part, and a lighter wood in the rest of the blade. Blades may be constructed totally from compreg. Special lag screws provide connection between compreg and a metal ferrule. The leading edge is protected by a metal sheet.

The fibre reinforced covering is sprayed with several layers of polyurethane lacquer.



## 1-10 Propeller specifications

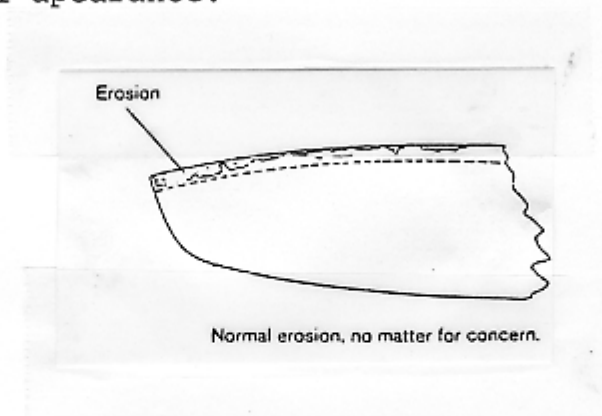
|                                |   |
|--------------------------------|---|
|                                | HO-V92  |
| Number of blades               | 2   |
| Mounting flange                | see hub designation   |
| Diameter range approx.         | 74.8" to 78.7"  |
| Power approx.                  | 320 hp  |
| max. RPM (depends on diameter) | 2700 RPM  |
| Weight                         | 23 kg   |
| Pitch setting                  | nominal for each installation to absorb rated engine power at rated static RPM or at full power red line airspeed |
| Blade construction             | see 1-5   |

## 1-16 Inspection of blades

This propeller must be completely overhauled according Hoffmann Service Bulletin No. 1.

Inspection periods should be established by the operator. They may vary due to approval status of the propeller, flight mission or service conditions.

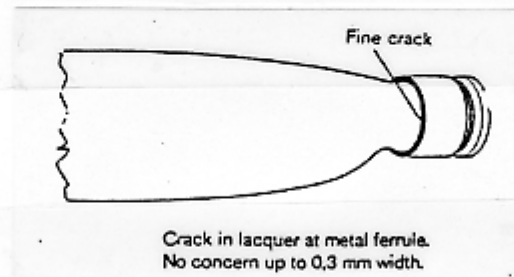
- Metal is visible on the blade tip area. This is a usual appearance.



- A fine crack in the lacquer on the joint between metal ferrule and blade is not dangerous because this is a natural indication of expansion due to normal load. If the crack however exceeds 0.1 mm, the propeller should be removed from service and sent to the factory for further inspection.

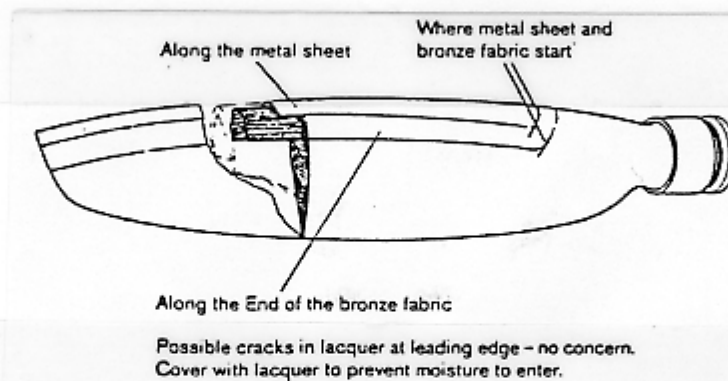


At propellers which are sealed with Silicone rubber over the joint between blade and ferrule, the rubber material will loosen from the metal ferrule edge. If this is observed, the propeller should be shipped to the factory for inspection.



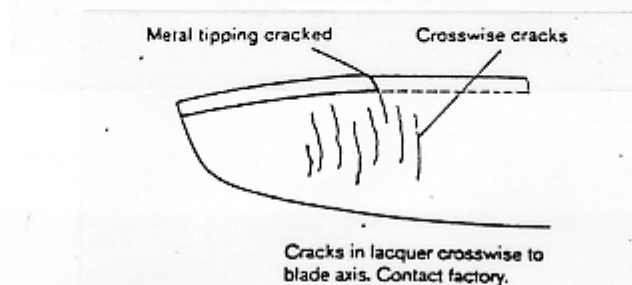
- A fine crack along the blade tipping or along the end of the bronze fabric is not dangerous. A fine crack at the beginning of the bronze fabric or blade tipping is also not dangerous. Sometimes such cracks occur, they are a normal indication of the different expansion of the different materials (wood, brass, bronze fabric).

During the maintenance period a lacquer should be used to cover such cracks and protect the blades against penetration of moisture.





- Fine cracks in the lacquer surface or in the metal tipping across the blade axis are indications of bending vibrations. The factory should be consulted regarding airworthiness. Send a photograph for easier determination.



- Damaged fibreglass cover

Normal stone nicks are unimportant as long as the plastic protection of the wood core is not cut thru. Scratches and nicks should be protected during routine maintenance with a coating of water resistant lacquer.

If cracks are in the metal sheet of the blade tipping, the blade tipping must be replaced. Nicks and bulges are important only if they are sharp, since cracks may arise from. Deep nicks and bulges can be filled with epoxy. In any case, the wood core should be protected against moisture.

- Overhaul

Overhaul periods will be established by the manufacturer or the operator and published in Service Bulletin E1 ( ).

- Special Inspection

Overspeed:

If the propeller is involved in an overspeed up to 15 % over the take-off RPM of the installed engine, only normal periodic inspection is required.





At overspeeds between 15 % and 25 % the propeller has to be inspected completely by the manufacturer or an authorized company. In this case the exact noted RPM should be indicated. No ferry flight should be made if the overspeed was more than 25 %.

### 3-20 Repair

The resistance of the polyurethane lacquer of our Hoffmann-Composite blades against nearly all solvents is excellent. The propeller should be periodically cleaned with car-wash or equivalent and polished with car wax. In every case the surface protection (lacquer and epoxy fibreglass) should be kept completely sealed so that no moisture can enter into the wood core.

Small scratches and nicks can be easily repaired by using epoxy resin and polyurethane lacquer. Before repairing, check to see that the fibreglass covering is still well bonded to the wood.

Materials needed for repairs can be obtained from the factory. At this minor repair proceed as follows:

Clean the damaged area with usual solvents to remove oil and grease. Sand with Emery cloth # 220.

If necessary, use filler of epoxy or other kind.

Let dry and sand again to a smooth surface.

Paint repaired area. It is recommended to use original paint because resistance and bonding of other lacquers cannot be guaranteed. Watch drying times if several coats are painted.

Repairs of Hoffmann-Composite-blades are possible at the factory or appointed distributors. Blade tips may be rebuilt if 90 % of the blade is remaining free of cracks. Trailing edges may be repaired and the fibre reinforced epoxy covering and metal erosion sheeting may be replaced.



### 3-21 Shipping and Storage

#### Shipping

Careful packing is the best protection against damage during shipment. The propeller should be fastened to the packing at the blades near the hub or by the hub mounting bolts. The blade tips and trailing edges should be sufficiently protected.

#### Storage

No propeller should be stored by standing on the tips. If storage is required, the best way is the use of the original packing.

Special preservation is not necessary with Hoffmann Composite propellers because the surface protection of the blades is sufficient. Even preservation of the hub parts is not mandatory if the propeller is stored in a dry room.

The propeller should not be exposed to heavy temperature changes as may happen during winter time.