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August 2003

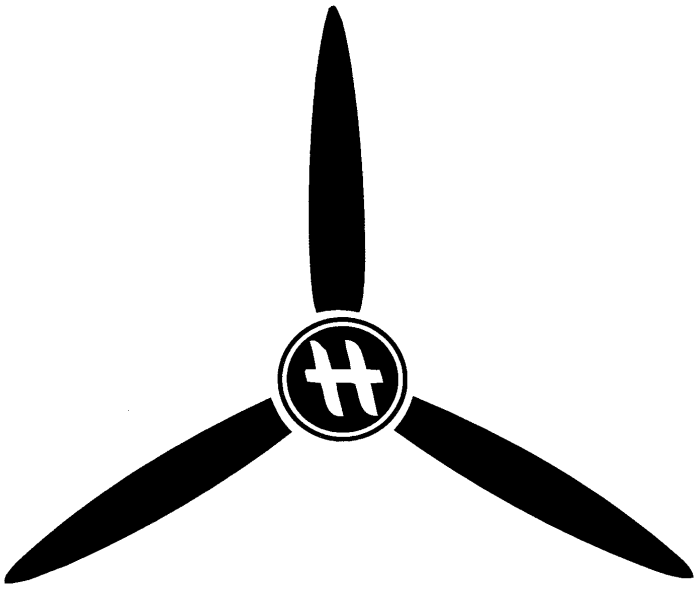
OPERATION AND MAINTENANCE MANUAL

HO-V 62

Mechanical Two-Position Propeller
(Take Off and Feathering)

HO-V 62 R - ()

Mechanical Three-Position Propeller
(Take Off, Cruise and Feathering)



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Record of Revisions to this Manual

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Content

List of Illustrations

1- General

The propeller HO-V 62 () is a two bladed lightweight propeller with mechanical pitch change device. It is equipped with a “Take Off Position” and a “Feathering Position”. It was mainly designed and developed for the use with early generation of powered gliders.

The propeller HO-V 62 R () is a two bladed lightweight propeller with mechanical pitch change device. It is equipped with a “Take Off”-, a “Cruise”- and a “Feathering Position”. It was mainly designed and developed for the use with the second generation of powered gliders. The additional cruise position improves the flight cruise performance of the powered glider considerable

The pitch change from the take off- to the cruising position can only be done with the engine running. The change back from the cruising- to the take off position can be done either with the engine running or the engine stopped.

The pitch change to the feathering position on both propellers has to be done with the engine stopped or wind milling.

The tendency of the propeller blades of both propellers is always to return to the take off position regardless whether the engine is running or stopped.

The propeller blades always return to the take off position if the feathering position will fail.

In order to get the best propeller efficiency the correct blade angle adjustment is very important, especially if the propeller blades L160BT are installed. Therefore the instructions given by the aircraft manufacturer regarding the static RPM setting have to be followed carefully. A higher static RPM will not automatically give better take off and climb performance.

2- Designation

2-1. Designation of the Hub

HO-	**V**	**6**	**2**	**()**	**()**	**R**	**()**	**/ Blade Model**
1	2	3	4	5	6	7	8	

1. Hoffmann GmbH & Co. KG
2. Variable pitch propeller
3. Number of basic model
4. Number of blades
5. Flange type: Blank = basic model
6. Number of hub extension from blade axis to flange, if required blank: 104 mm (4.09 inch)
7. Propeller pitch

   Blank: Mechanical two position propeller

   R: Additional mechanical cruise position

   A: Automatic pitch change system

   H: Hydro mechanical pitch change mechanism

   HS: Hydro mechanical pitch change mechanism with feathering position
8. Minor change not affecting airworthiness / interchangeability

2-2. Designation of the Blade

()	**()**	**160**	**BT**	**-()**	**()**	**()**	**±()**
9	10	11	12	13	14	15	16

9. Sense of rotation:

   blank: right hand, tractor

   D: right-hand, pusher

   L: left-hand, tractor

   LD: left-hand, pusher

10. blank: Type “A” or “ B “ erosion shield

    C: Type “ C “ erosion shield

11. Basic diameter in cm

12. Designation of blade design

13. Designation of blade twist

14. B: electrical de-icing

15. Material of blade

    Blank: compreg scarfed with lighter wood

    P: compreg

16. Decrease (-) or increase (+) of basic diameter in cm

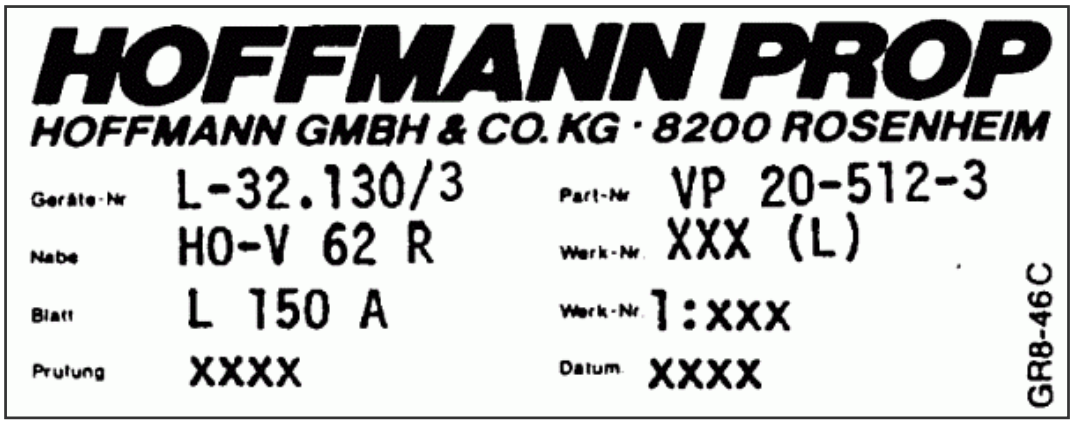
Blade Model (example only)

The model designation, the serial-No. and the date and number of the inspection are written on a decal on each blade shank. The serial-No. of the blade is also stamped into the blade butt face (not visible from outside) and the retaining ring.

The complete designation of a variable pitch propeller is a combination of the designation of the hub assembly and the blade assembly. Both designations are separated by a slash mark.

Example: HO-V 62 R / L 160 BT

The serial-No. of the hub is also the serial-No. of the propeller assembly



Translation

Geräte- Nr.:	TCDS-No.:	Part- Nr.:	Part-No.:
Nabe:	Hub:	Werk- Nr.:	Serial-No.:
Blatt:	Blade:	Werk- Nr.:	Serial-No.
Prüfung:	Inspection:	Datum:	Date:

3- Design data

Following data are only standard values and for information only. For installation purposes only the data given in the applicable **Type Certificate Data Sheet** (TCDS) No. 32.130 / 13 (latest edition) of the German Luftfahrt-Bundesamt (LBA) are valid.

P_{max}	75 kW (dependent on propeller diameter and rpm)
n_{max}	3600 1/min (dependent on diameter and power)
Number of blades:	2
Diameter max:	170 cm
Pitch change range:	about 75 deg
Weight: HO-V62 (Ø 170 cm)	about 9.0 kg (20 lbs)
HO-V62R (Ø 170 cm)	about 10.0 kg (22.0 lbs)
Weight of the spinner:	about 1.0 kg (2.2 lbs)
Polar moment of inertia:	about 0.5 kgm^2
Mounting flange:	80 mm diameter bolt circle, 6 studs 7/16 - 20 UNF, center bore 47 mm diameter

4- Construction

The HOFFMANN mechanical variable pitch propeller consists of 4 sub assemblies:

- Hub assembly
- Blade assembly
- Spinner assembly
- Counterweight assembly if applicable

4-1. Hub Assembly

The hub is made of aluminium alloy, shot peened and anodised. It contains the inner and the outer pitch change mechanism. At the mounting flange of the propeller there are six (6) 7/16”- 20 UNF studs installed. The propeller is mounted to the engine flange using washers and self-locking nuts.

With the Sportavia Limbach engine SL 1700() equipped with an engine flange for fixed pitch propellers the conversion flange VP20 - 483 has to be used.

4-2. Pitch Change Mechanism

NOTE

Parts of the pitch change mechanism located outside the hub will be called “outside change mechanism” and the parts inside “inside change mechanism”.

The advantage of the mechanical pitch change mechanism of the propeller HO-V62 () is there are no bearings running permanently with the propeller rpm, but only during the short period of pitch change

4-2.1. HO – V62R

NOTE

Item reference is to Figure 4-1() unless otherwise noted

In order to change the propeller pitch, the aircraft has to be equipped with an aircraft installed pitch change actuating system. This system is installed on the engine of the aircraft and connected to the actuating lever or a handle in the cockpit.

CAUTION

To perform the next step the engine has to run.
Propeller RPM has to be 1800 to max. 1900 RPM

During the propeller pitch change the two ball bearings (4-1), mounted to the lever (4-2), which is an aircraft part, contacts the thrust plate (4-3) of the propeller. The force of the lever has to act against the force of the four springs (4-4) and the natural centrifugal twisting moment of the propeller blades. The yoke (4-6) including the stop (4-11) will be pushed away from the front side of the hub (4-7).

The pitch change rod (4-8) is connected to the pitch change fork (4-9) of the internal pitch change mechanism. The pitch change pins of the propeller blades engage the pitch change blocks (4-10) in the fork (4-9), which changes the pitch of the propeller blades.

The four installed springs (4-4), together with the natural centrifugal twisting moment of the propeller blades, always tend to return the propeller blades to the “Take Off“ (fine pitch) position.

Figure 4 shows the three possible propeller blade angle position:

(Fig.4-1) The propeller blade is in the “Take Off “ position (at the finest bade angle). The stop is locked within the “Stop Plate” (4-12) and held in this position by the four springs (4-4)

(Fig.4-2)The propeller blade is in the “Cruising” position. The stop (4-11) is resting against the front stop plate (4-12). The stop is now further forward. A movement of about 1.5mm equals about a 5° pitch change and a drop of the propeller rpm (full power) of about 500 rpm.

The change from take off pitch (fine pitch) to cruise pitch (coarse pitch) has to be performed only at a propeller rpm between 1800 rpm and max. 1900 rpm. The stop plate (4-12) is held in the down position by a spring (4-13). This rpm is necessary to get enough centrifugal force of the stop plate (4-12) to overcome the force of the return spring (4-13).

If the actuating lever or handle in the cockpit will be pulled between 1800- and max. 1900 propeller rpm, the yoke (4-6) is lifted from the hub (4-7). The centrifugal force of the stop plate (4-12) compresses the return spring (4-13) and allows the stop plate (4-12) to move outward till the inside of the hole touches the pitch change rod (4-8). This is the stop for the cruising position (high pitch). The yoke (4-6) movement, during the pitch change, is about 2 mm only.

To change back from the cruise position to the take off position, with the engine running, the propeller rpm has to be reduced to 1500 rpm or less. Now the force of the return spring (4-13) is higher than the centrifugal force of the stop plate (4-12). A slight pull on the actuating lever or handle in the cockpit releases the stop plate (4-12) and allows the propeller blades to move to the take off (fine pitch) position.

(Fig.4-3)The propeller blades are in the “Feathered” position. The correct feathering blade angle is determined by the length of the connecting cable from the engine-mounted lever (4-2) to the actuating lever or handle in the cockpit. To feather the propeller blades the engine has to be stopped or wind milling. The actuating lever or handle in the cockpit has to be locked in order to hold the propeller blades in the feathered position against the force of the springs (4-4). The thrust plate (4-3) acts as a safety stop outside the hub. It prevents the propeller blades from reaching a position from which the force of the springs (4-4) will not be able to return the propeller blades to the take off (fine pitch) position.

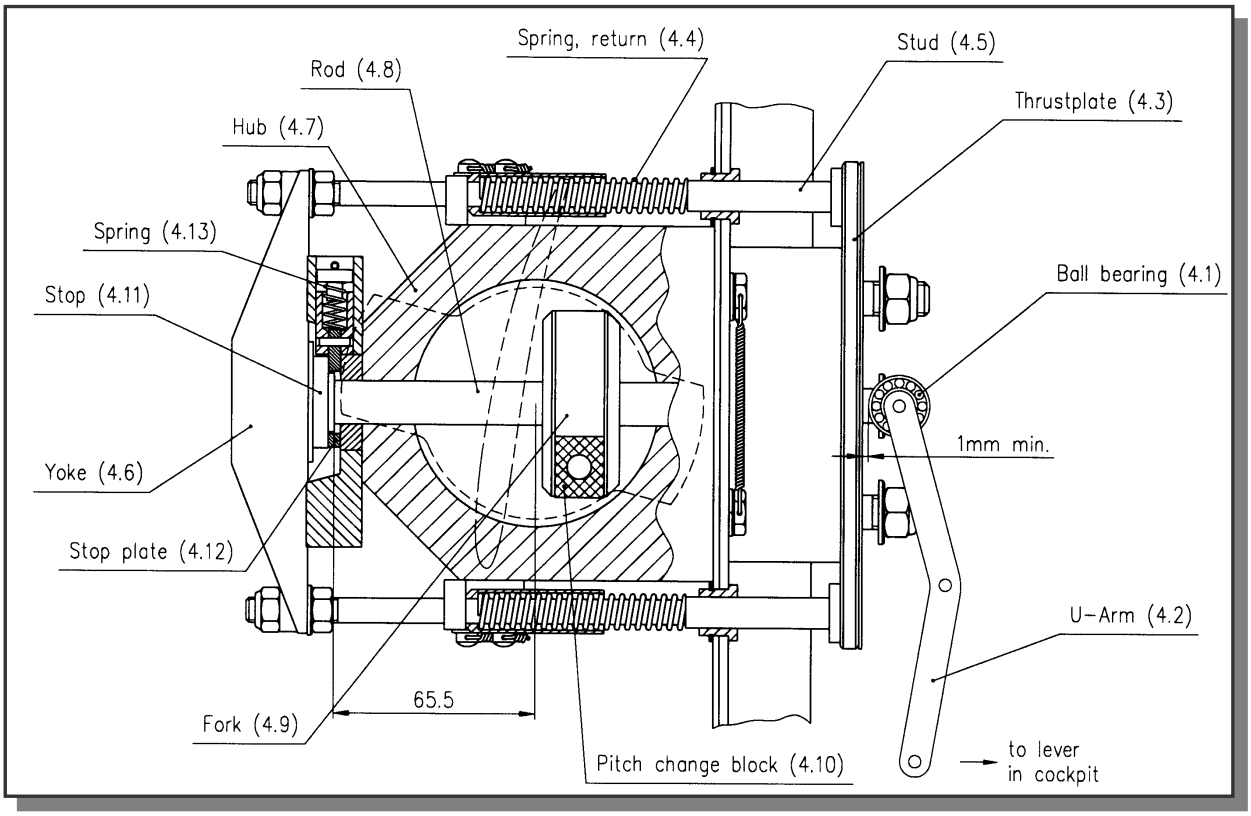


Fig. 4-1 Blade in "Take Off" Position

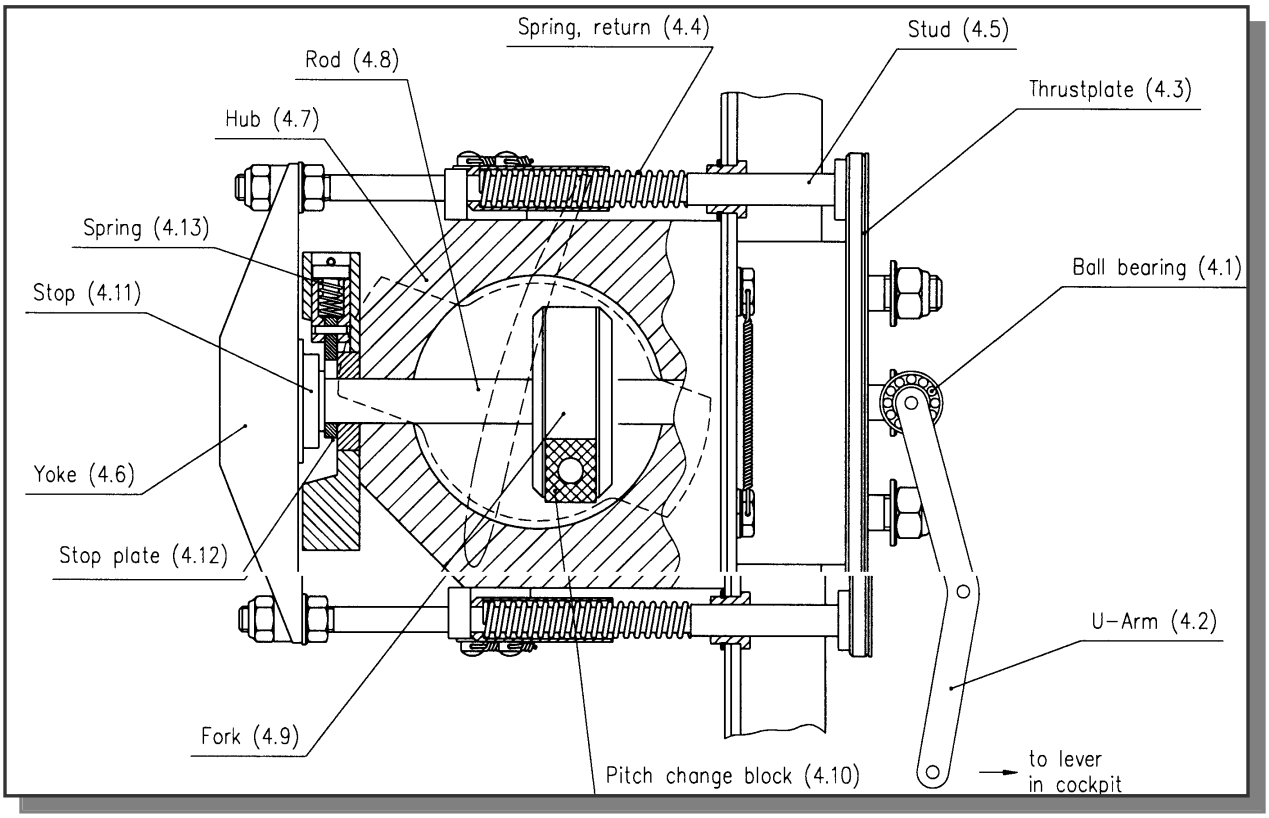


Fig. 4-2 Blade in "Cruise" Position

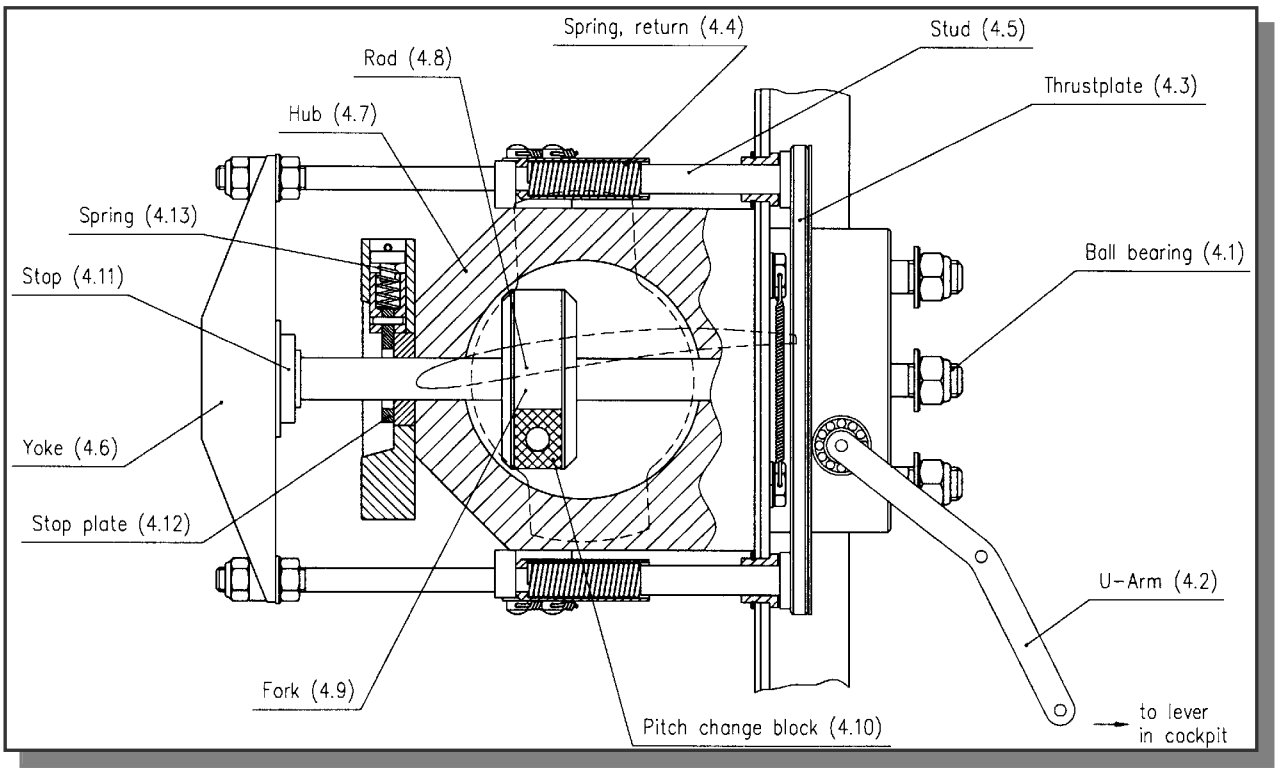


Fig. 4-3 Blade in "Feathered" Position

4-2.2. HO – V62

CAUTION

To perform the next step the engine has to be stopped or wind milling.

The internal and external pitch change mechanism is the same as with the propeller HO-V62R. Since the propeller HO-V62 is equipped with a take off (fine pitch) and a feathering position only, the stop plate (4-12) and the return spring (4-13) are deleted. The stop (4-11) of the yoke (4-6) rests directly against the front part of the hub (4-7). To change to the feathered position or back to the take off position is the same as with the propeller HO-V62R. It can be done only with the engine stopped or wind milling.

4-3. Blade Assembly

The HOFFMANN composite blade is a joint construction. The blade root is made of highly compressed hardwood (compreg) and the blade part is made of light wood (spruce). Blades may also be manufactured of compressed wood only. Special lag screws connect the compressed wood of the blade to a metal ferrule.
For erosion protection of the blade leading edge two different types of Hoffmann proved leading edge protections could be used.

Type A is a brass metal strip soft soldered to a bronze fabric and glued to the blade FRP cover.

Type B is a special aluminium strip glued directly to the wooden core of the blade. This tipping is mainly used on ITP- propeller blades.

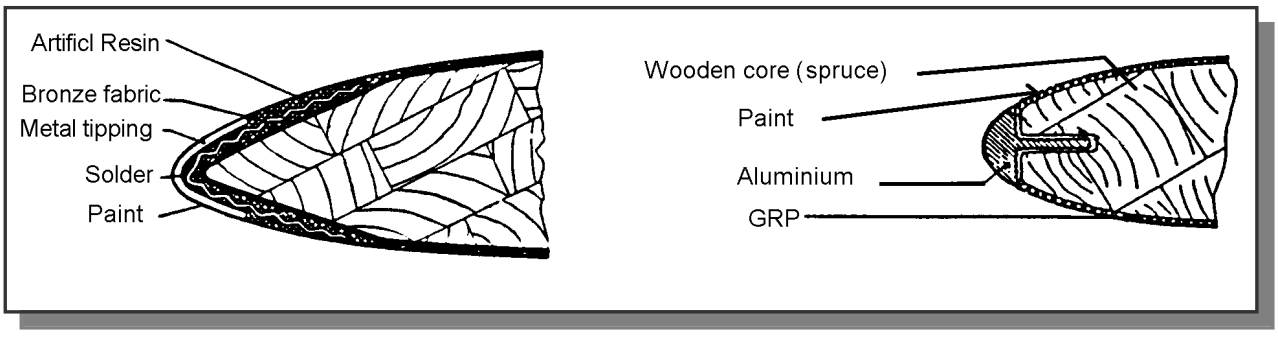


Fig. 4-4 Blade Tipping Type A + B

The propeller blade is covered with fibre-reinforced epoxy (FRP). Fatigue failures due to vibration are unlikely with such blades because the internal damping of the material is considerably higher than that of duralumin.

Several layers of special polyurethane paint (PU- paint) are sprayed onto the fibre reinforced epoxy covering and the erosion tipping, this assures a high resistance to atmospheric conditions. This polyurethane paint shows also high resistance against erosion and mechanical damage. Coloured paint is required to protect the wood against UV-rays. The thrust side is painted dull black to avoid reflection of sunlight. For safety reasons the tips are painted with a different colour to make the transparent propeller disc visible when the propeller is running.

4-4. Blade Bearing

An axial needle bearing absorbs the centrifugal force of the blade. The bearing races are made of steel. The needle cage is split into two halves to allow exchange of the cage without removing the blade ferrule.

The blade ferrules are made of aluminium alloy, which is shot-peened to prevent fatigue cracks. The blades are installed into the hub by a retention ring (blade nut), made of aluminium alloy. The torque of the retention ring adjusts the necessary pre-load of the blade bearing. The blade retention rings are sealed with silicone rubber to prevent penetration of moisture into the blade bearings. The blade shaft is sealed with a lip seal.

4-5. Spinner Assembly

The spinner dome is one piece and made of aluminium alloy. It is screwed to the spinner bulkhead with Philips screws. The spinner bulkhead is made of an aluminium sheet and mounted to the hub by 4 screws. The spinner bulkhead also holds parts of the outside pitch change mechanism.

4-6. Counterweights

The propeller models HO-V62R are equipped with counterweights. These counter-weights are required to reduce the pitch change forces while changing the pitch from take off to cruise position. The counterweights are fixed to the blade ferrule by clamp screws.

5- Operation

Propeller HO-V62 and HO-V62R

CAUTION

Follow closely the instruction given in the aircraft manual.
The instruction given in this manual is for information only.

WARNING

Make sure the distance between the ball bearings and the thrust-plate is always at least 1mm with the propeller blades in the take off position.

WARNING

Before starting the engine secure the aircraft according the aircraft flight manual.

CAUTION

Perform engine run-up on paved and clean surfaces only.

Engine and propeller manufacturers do not recommend high rpm during ground operation for a long time because the engine can be overheated and foreign objects can damage the propeller.

CAUTION

The change to feathering position has to be done only with engine stopped or wind milling

Start engine according to the flight manual and warm it up (oil temperature in the green). Perform the static run up check according to the aircraft flight manual.

5-1. Propeller Model HO – V62R

CAUTION

Before performing any adjustments to the propeller make sure the engine develops its full power and the rpm indicator is correct.
Adjustments may be performed only by certified mechanics.

1. The mechanical pitch stops (take off, cruise and feathering position) have been set at the factory to meet the aircraft / engine specifications.

2. Start engine, warm it up (oil temperature in the green), perform the static run up check according to the aircraft flight manual

3. Adjust the propeller rpm with the throttle to 1800 or max. 1900 rpm. Pull the actuating lever or handle in the cockpit for a short moment and release. The movement of the yoke (4-6) has to be 2 mm only. Do not move the throttle. The rpm drop of the propeller should be about 500 rpm.

4. To change back from cruising position (coarse pitch) to take off position (fine pitch) reduces the propeller rpm to 1500 rpm or below. Pull the actuating lever or handle in the cockpit for a short moment and release. Open the throttle full and check the static rpm. The value from the beginning (step 5.5) should be reached again.

5. Repeat this test at least three times. If there is no problems perform a test flight following the procedures given in the aircraft flight manual.

6. After the test flight re-check the torque of the stop nuts. Do not loosen the nuts; only apply the required torque-according table 6.5. Make all necessary entries in the aircraft log book.

6- Installation

Propeller HO-V62 and HO-V62R

WARNING

Before starting any work on the propeller follow the precaution given in the flight manual.

CAUTION

Propeller installation is subject to an immediate inspection by a licensed engineer

CAUTION

Follow closely the instructions given in the aircraft manual.
The instructions in this manual are for information only.

1. Clean the propeller and engine flange with solvent. Engine torque is mainly transferred by friction; therefore the surfaces have to be smooth and clean.

2. Remove the spark plug from the number one cylinder (closest to the propeller flange). Turn the engine by hand until the piston of the number one cylinder is on its upper dead center.

CAUTION

Do not install an o-ring on the engine flange.

3. Slide the propeller carefully onto the engine flange with the propeller blades vertical.

4. Slide the washers onto the bolts. Torque the stop nuts equally crosswise.

5. Torque values for **dry** threads:

HO-V62	7/16" -20 UNF	45 - 47 Nm	(390 - 410 inlbs.)
HO-V62R	7/16" -20 UNF	45 - 47 Nm	(390 – 410 inlbs.)

CAUTION

Do not grease the outer pitch change mechanism.
Use grease only to prevent corrosion.

6. Apply a very thin layer of grease to the thrust plate along the track of the ball bearings. Use Calypsol H442 or equivalent.

7. Check the track of the propeller blades on the trailing edge about 10 cm inboard from the blade tip. Maximum permissible track is 3 mm.

8. Check the propeller pitch actuating mechanism of the aircraft. It must be installed according to the instructions of the aircraft manufacturer.

9. Make sure the distance of the ball bearings to the thrust plate has to be always at least 1 mm if the propeller blades are in the take off (fine pitch) position.

10. Cycle the propeller several times from the take off to the feathering position.

11. If no problems are encountered prepare the aircraft for an engine run up according to the aircraft flight manual.

7- Inspection

WARNING

Do not use the propeller as a handle to move the aircraft.

7-1. Daily Inspection

CAUTION

Before performing any work on the propeller follow the precautions given in the flight manual

NOTE

New propellers tend to show a higher friction at the beginning, but after a few operation hours the blades will turn smooth.

1. Check blade installation. No blade shake is allowed. Blade angle play up to 1.5 degree is permitted. Check the propeller for loose screws and safety wires, the propeller blades and the propeller spinner for cracks and damage. Turn the blades by hand to the feathering position and back to check for smooth pitch change. The propeller blades have to return to the take off (fine pitch) position without sticking. Check the correct position of counterweights, if installed.

2. Check the condition of the actuating mechanism, the ball bearings and the thrust plate. There must be always a minimum distance between the ball bearings and the thrust plate of at least 1mm with the propeller blades in the take off (fine pitch) position.

7-2. 100h Inspection

To be carried out every 100 hours until TBO is reached.

1. Clean the propeller. Remove spinner dome. Perform daily inspection. Check flange bolts for correct torque by applying the required torque only (do not loosen the bolts before). Check for grease leakage. Check sealing of the blade retention nuts. If damaged, repair with silicone rubber.

CAUTION

Do not grease the outer pitch change mechanism.
Use grease only to prevent corrosion.

2. Check the outside pitch change mechanism for wear and corrosion. The wear of the thrust plate must be not more than 0.2 mm. Clean the thrust plate and the pitch change rods and apply a very thin coat of grease as a corrosion protection only. Check all visible parts of the hub for damage and corrosion. Check all the screws and wire locks.

7-3. Inspection of the blades

1. Clean the blades. Inspection of wooden composite blades is easy and gives reliable results. Critical condition will show up early as surface cracks in the paint. Therefore correct judgement of such cracks is very important.

2. Erosion on the leading edge of the blades is normal and not critical. Metal propellers erode too. On a composite propeller the erosion sheet (Type A or B) becomes visible under the paint.

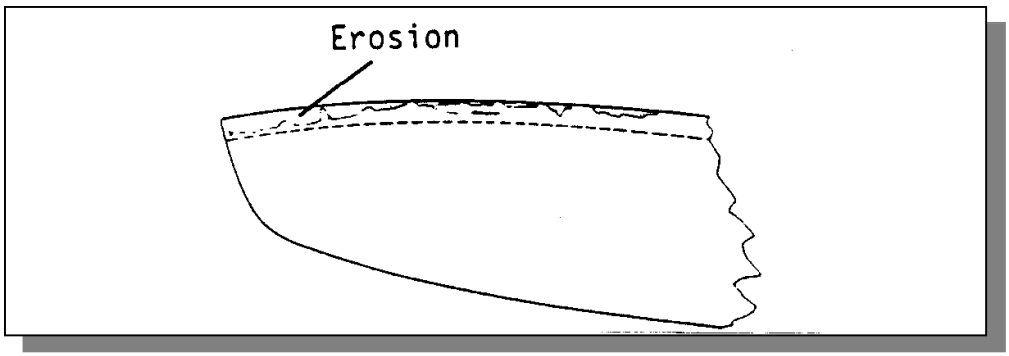


Fig. 7-1 Normal Erosion

3. The area around the blade root between blade body and metal ferrule is sealed with silicone rubber. **No** cracks in the silicone rubber and **No** separation from the metal ferrule or the blade body is permitted. A crack might indicate that the blade got loose in the ferrule.
   The propeller has to be removed from service **Immediately**

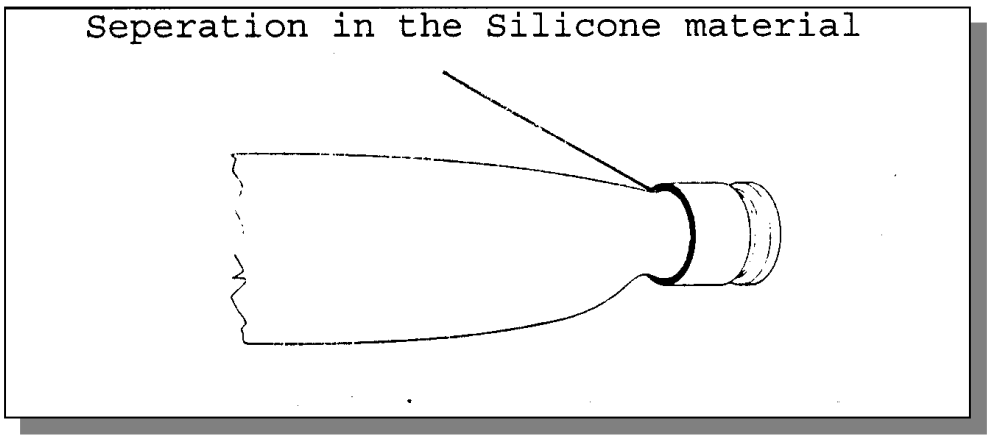


Fig. 7-2 Blade root NO cracks in the silicone

4. A fine crack along the blade tipping (Type A) or along the end of the bronze fabric is not dangerous. A fine crack at the starting point of the bronze fabric or blade tipping is not dangerous as well. Sometimes such cracks occur and are a normal indication of the different dilatation of the different materials (wood, brass, bronze fabric).

   During maintenance paint should be used to cover such cracks in order to protect the propeller blade against penetration of moisture.

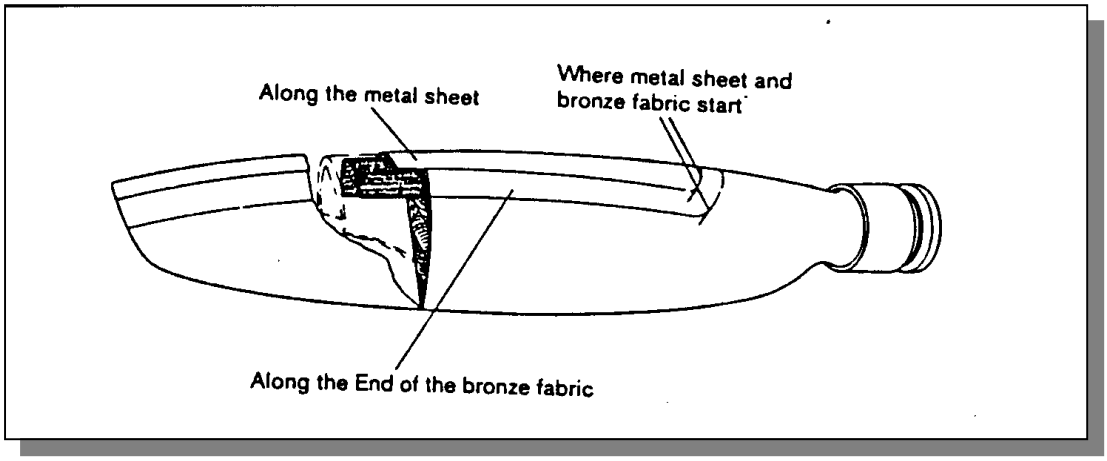


Fig. 7-3 Erosion tipping Type A

5. The erosion tipping (Type B) ends in the inner third of the blade. Fine cracks in the paint along the tipping are no reason for concern. Cracks in the tipping perpendicular to the blade axis are not dangerous as long as the tipping does not lift off from the blade body. Slide your fingernail along the leading edge from the hub to the tip. If the tipping lifts off from a crack, remove propeller for repair.

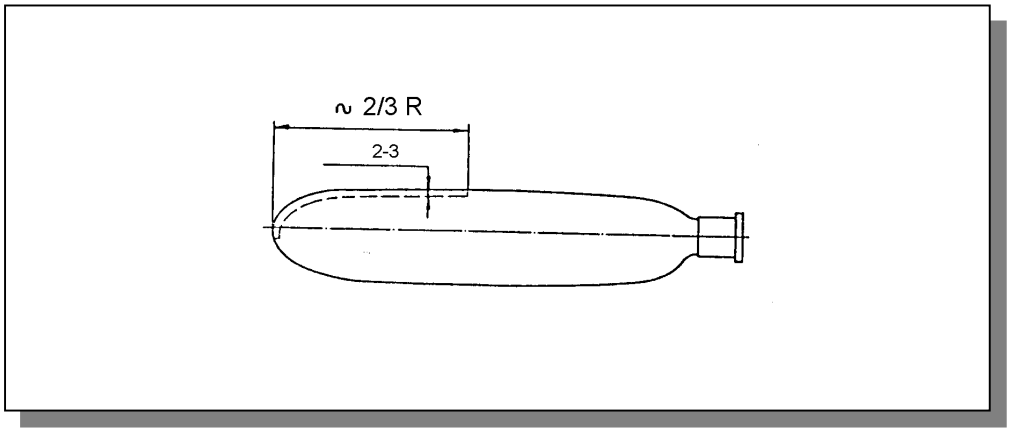


Fig. 7-4 Erosion tipping Type B

6. Fine cracks in the paint or the tipping across the blade axis, especially in the outer third of the blade, are indications of bending vibration. In an advanced stage the tipping (Type A, B) may break or come off piece by piece. Notches in the tipping support this procedure. If such cracks occur, contact the factory or a service station, which is authorised by Hoffmann.

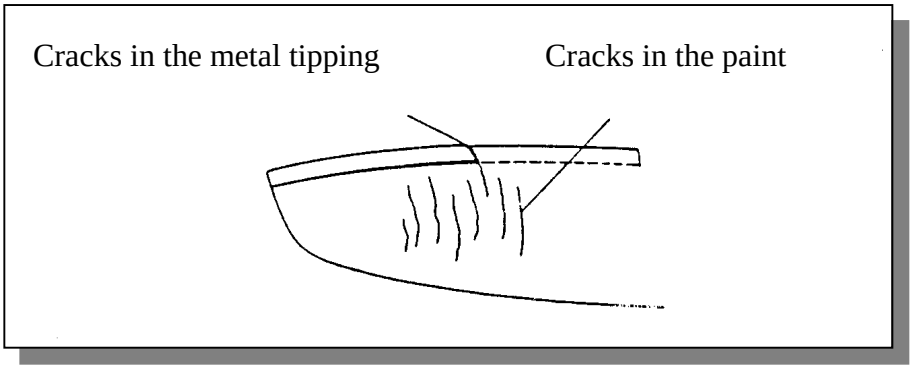


Fig. 7-5 Fine cracks in the paint or the tipping

7. Cracks in the paint or in the blade, starting from the blade tip and extending parallel to the blade axis, are indications for torsional vibration. Such cracks occur very seldom, but if they do, contact the manufacturer or a HOFFMANN approved repair shop.

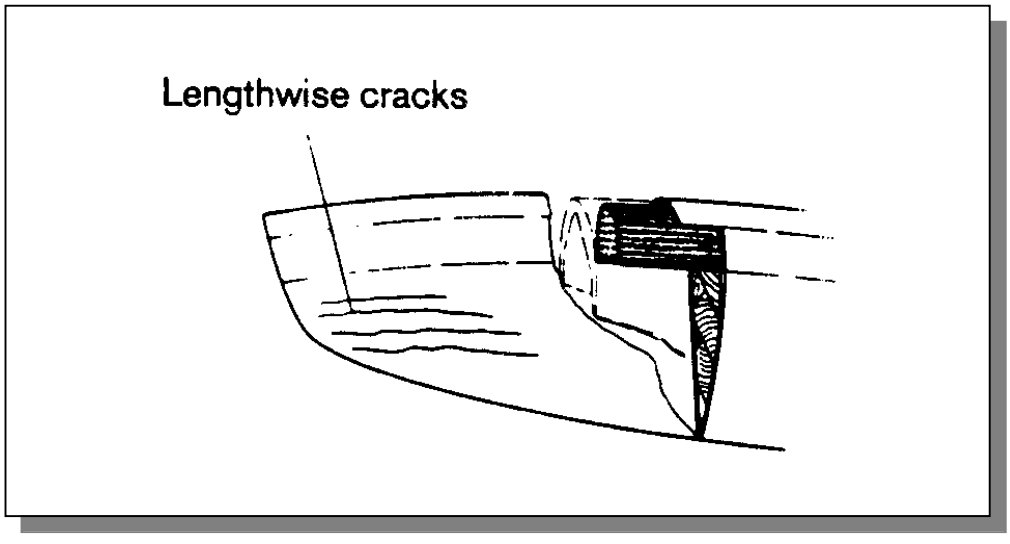


Fig. 7-6 Cracks in the paint of blade

8. Hair- cracks in the paint of the blade, starting from the blade tip and / or in the blade root area and extending in any direction are indications of vibrations or overload of the propeller blade. They are unimportant as long as they will be paint cracks only. If they start growing quickly and penetrating into the fibre cover contact the factory or a service station authorised by Hoffmann.

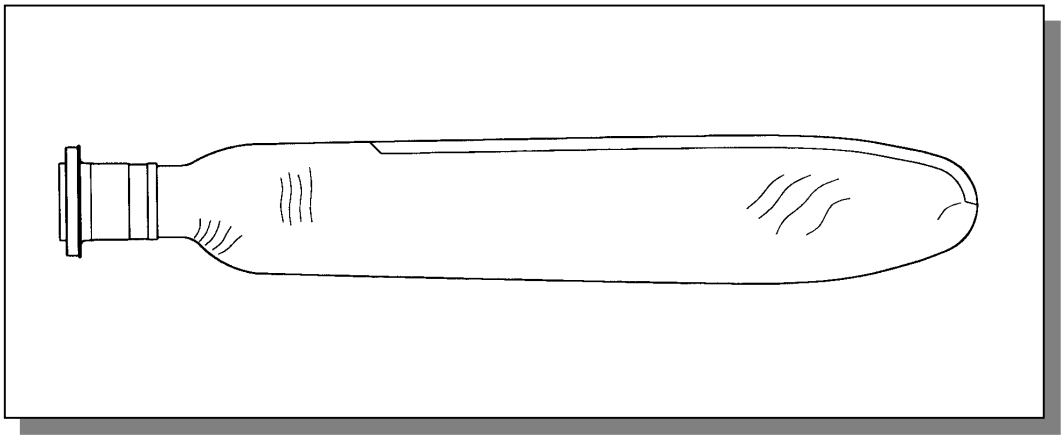


Fig. 7-7 Hair cracks in the paint

7-4. Damaged fibre glass cover

Normal stone nicks are unimportant as long as the wooden core is protected. Air bubbles with a maximum diameter of 1.5 cm (0.6 inch) are unimportant, if the size does not increase during operation.
Scratches and nicks should be protected with water resistant lacquer during routine maintenance.

7-5. Additional periodic inspections

New propeller-engine-aircraft combinations may require additional periodic inspections between overhaul, such as partial disassembling and inspection of the thrust bearings. These inspections have to be carried out by the factory or by a propeller repair station authorised by HOFFMANN.

7-6. Overhaul

The TBO (time between overhaul) is normally the same as for the engine, but should not exceed the figures of HOFFMANN Service Bulletin No. E 1(), latest edition. Overhaul must be carried out by HOFFMANN or by a propeller repair station authorised by HOFFMANN.

7-7. Special inspections

1. Special inspection is required if the max. rated propeller speed according the "TCDS" (LBA - Kennblatt) has been exceeded by more than 10%. If the over - speed was more than 20% of the max rated propeller - speed, the propeller has to be removed from service. Repair is not possible. These propellers have to be marked as scrap.

2. Special instructions may be necessary for unconventional installations. A conventional installation is a tractor installation on a single engine aircraft.

8- Propeller Adjustment

WARNING

Before performing any adjustments to the propeller make sure the engine develops its full power and rpm indicator is correct.

WARNING

Before performing any adjustments to the propeller make sure the aircraft pitch change mechanism is set according to the aircraft specification.

The take off (fine pitch), cruise (coarse pitch) and feathering position of the propeller have been set at the factory to meet the aircraft / engine specifications. Therefore a readjustment of the propeller take off pitch in the field should not be necessary.

WARNING

Propeller installation and adjustment may only be performed by a qualified mechanic and is subject to immediate inspection by a licensed engineer.

If, nevertheless, a re-adjustment of the propeller take off pitch in the field should be necessary contact the aircraft manufacturer or Hoffmann.

9- Maintenance and Repair

1. The paint of the HOFFMANN composite blades is resistant against fuel, oil and nearly all solvents. The propeller should be cleaned periodically using gentle detergent or equivalent and be protected with car polish, which does not contain silicone. The surface protection (paint and epoxy fibre glass) should be completely sealed to prevent penetration of moisture into the wooden core. In special case contact a licensed inspector to prove the safe operation of the propeller.

2. Minor damage (small scratches, etc.) can be repaired easily. Prior to repair check that the fibreglass covering and the wooden core are not damaged. The materials required for repair can be obtained from HOFFMANN. Proceed as follows:

3. Clean damaged area using solvent and smooth it out using emery cloth # 220.

4. If required, apply epoxy resin filler to fill the bulges. Do not apply too much filler.

5. Allow filler to dry. Trim the surface using emery cloth # 220 again.

6. Apply paint (white, grey, black or yellow). It is recommended to use original lacquer, because resistance and bonding of other paints cannot be guaranteed. Observe drying times if several coats are painted.

7. Presently the repair of HOFFMANN composite blades can be carried out only at HOFFMANN works or at Hoffmann authorised repair facilities. Blade tips can be repaired if 90% of the blade remains free of cracks. Trailing edges can be repaired; the fibre reinforced epoxy covering and the erosion leading edge protection (type A or B) can be replaced.

8. If the leading edge Type B shows sharp nicks or becomes jagged then it should be blended using a fine file or sand paper. Should the leading edge become eroded close to the wooden core or it starts cracking and small pieces come off the propeller should be returned for repair.

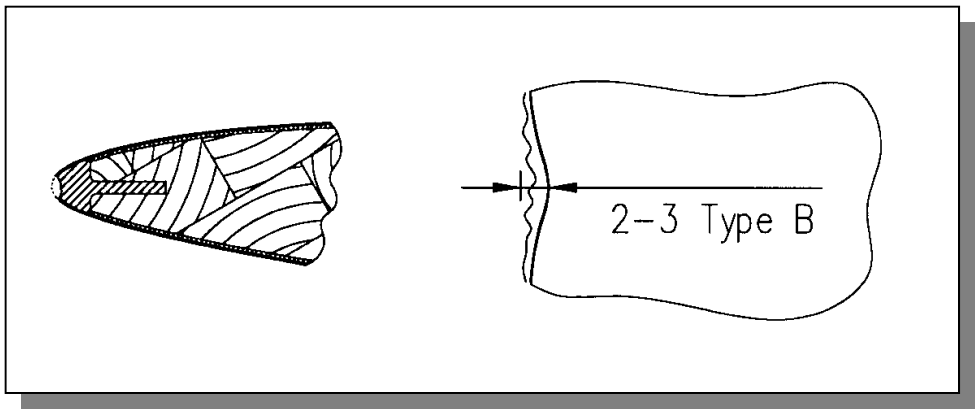


Fig. 9-1 Rework Leading Edge Type B

9. Any damage in the paint in the area behind the metal- or PU- blade tipping has to be repainted immediately after occurrence. There must not be a joint between metal- or PU- leading edge and the blade body.

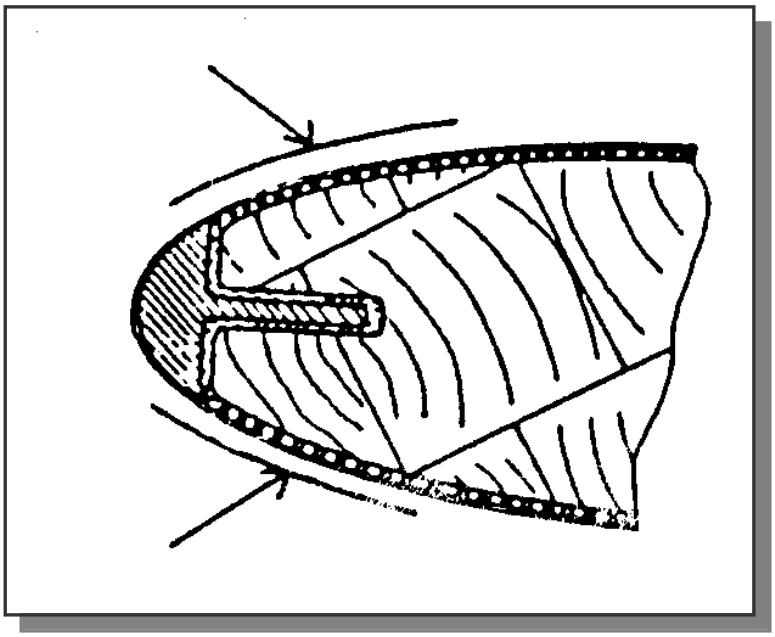


Fig. 9-2 Paint damage behind Blade Tipping B

10- Shipping and Storage

10-1. Shipping

Careful packing is the best protection to avoid damage during shipping. Therefore HOFFMANN provides special wooden or cardboard boxes, which are re-useable if they will be treated carefully. The blade tips, leading and trailing edges have to be protected sufficiently.

10-2. Storage

No propeller should be stored standing on the blade tips. The best is to store the propeller in the original packing.
Special preservation of HOFFMANN composite blades is not necessary; the existing surface protection is sufficient. Also the hub does not need preservation if the propeller is stored in a dry room. The propeller should not be stored near heating systems or in rooms with extreme temperature changes.

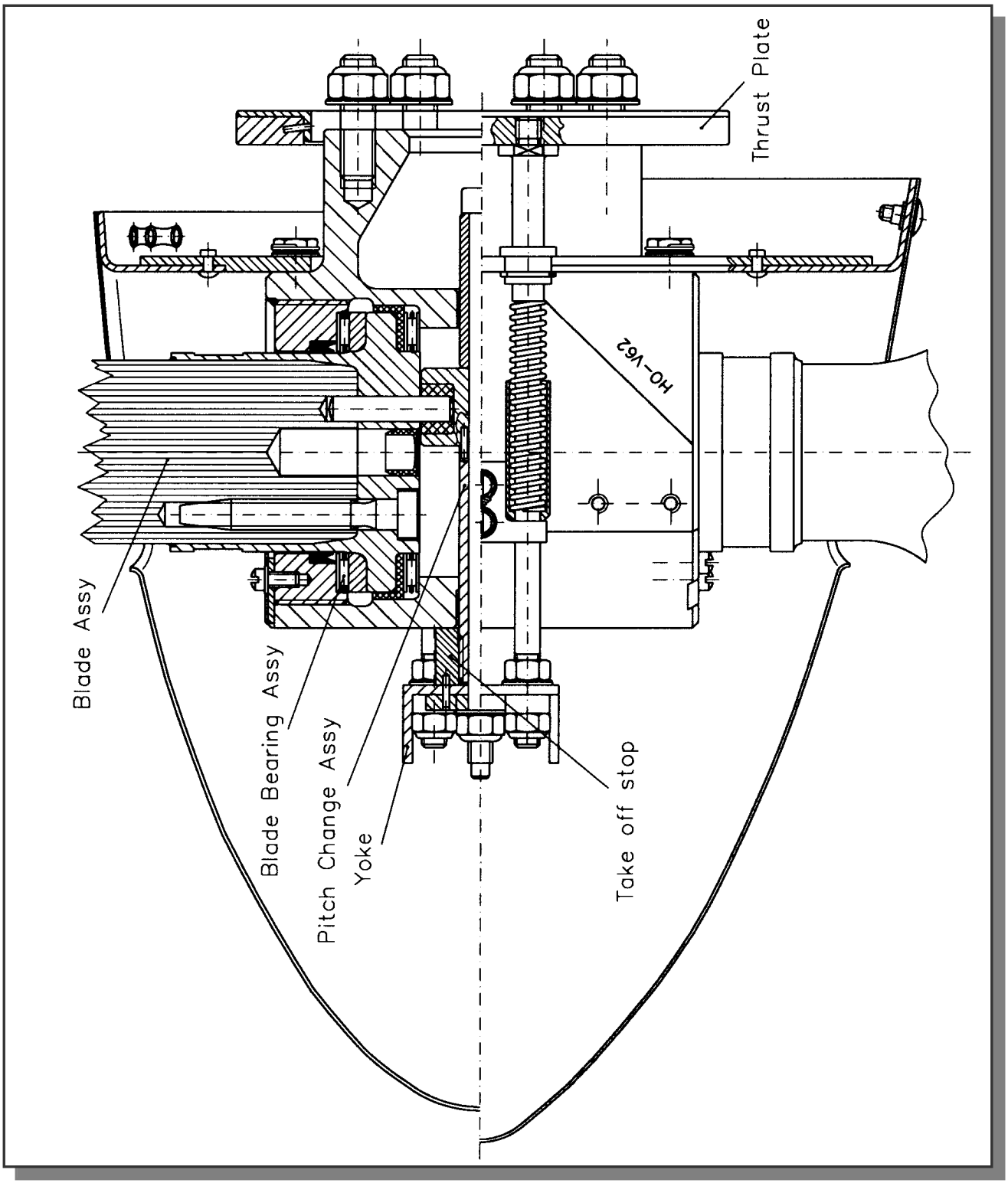


Fig. 10-1 Propeller HO - V62

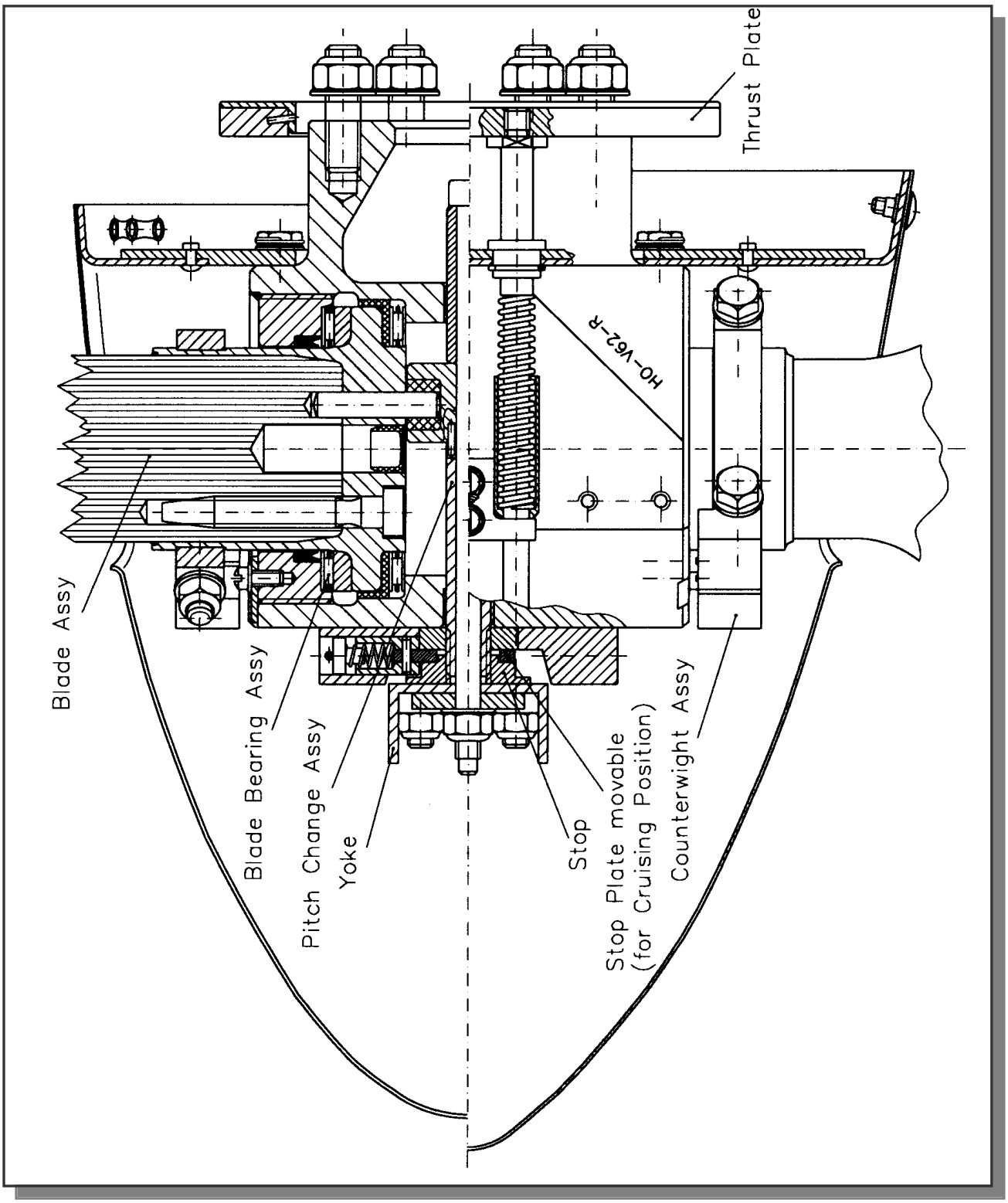


Fig. 10-2 Propeller HO - V62R

PRELIMINARY INSTRUCTION TO CMM E157 A

FOR

MODIFICATION “P” ON HO-V62 HUBS
(REINFORCED PITCH CHANGE STUDS/RODS)

NOTE

There are a few old hubs with tolerance in its outer shape which cannot be changed into Mod.”P”.

A. Check if Modification “P” is practicable on the present hub.

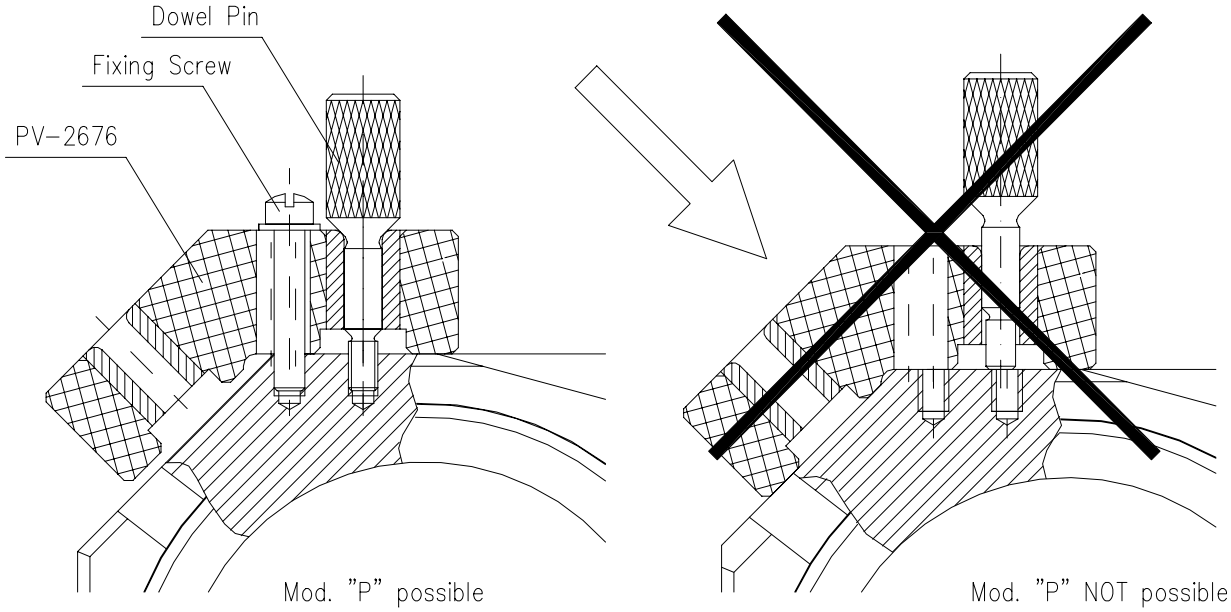


Fig.1

NOTE

If the drilling device PV-2676 can not be fixed with Dowel Pin and Fixing Screw as shown in Fig. 1 on the left side, the hub modification for Modification “P” is not practicable.

B. Hub modification with drilling device PV-2676 and drilling fixture PV-2675.

NOTE

The following description refers only to one side of the hub. Treat the other side in the same way.

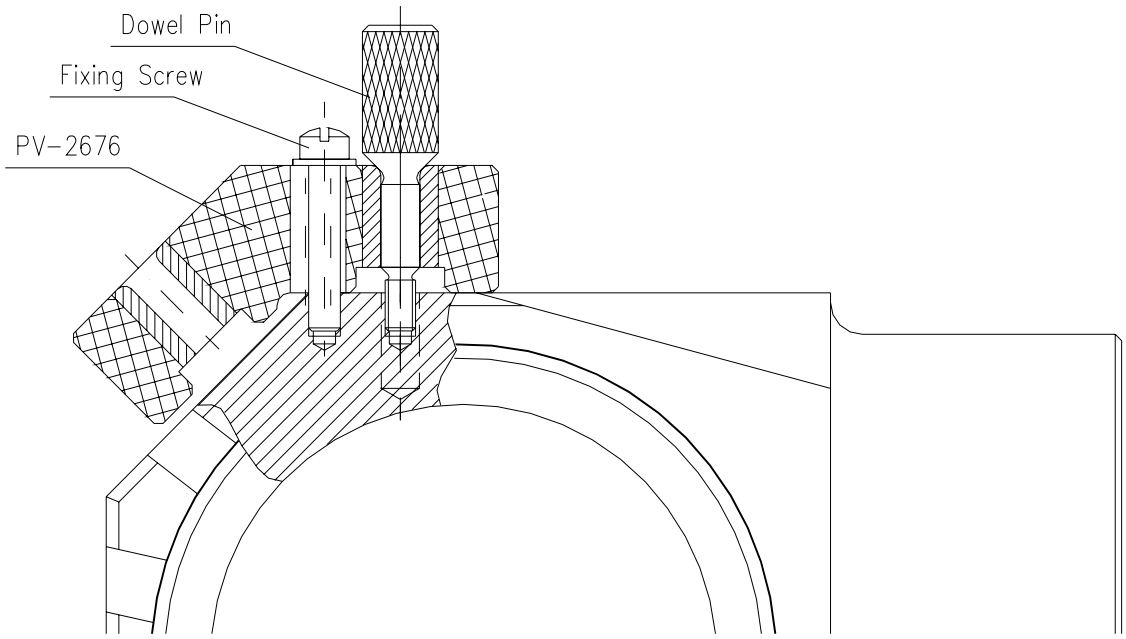


Fig.2

1. Fix the device PV-2676 with the Dowel Pin on the present rear- and with the Fixing Screw on the forward guide rod fixing hole (UNF No. 10-24) (Fig. 2).

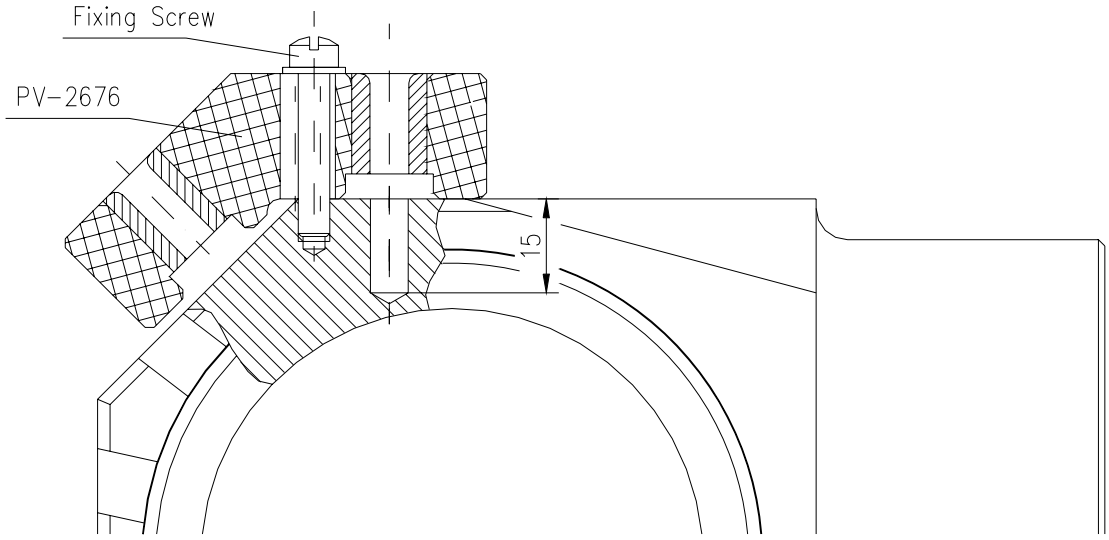


Fig.3

2. Remove the Dowel Pin and drill the rear fixing hole up to ø6,3mm(0.25 inch) and 15mm(0.6 inch) deep (Fig. 3).

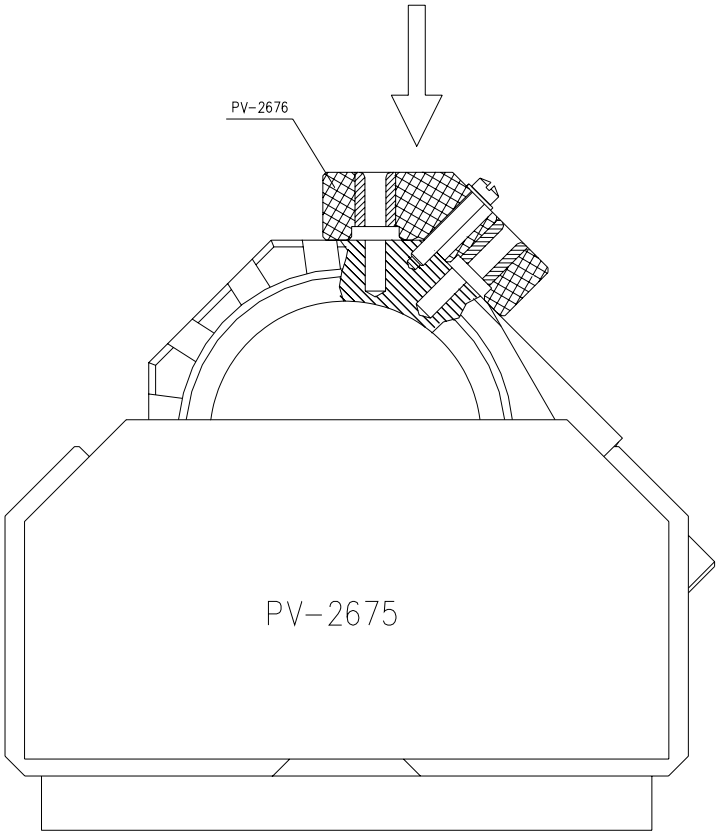


Fig.4

3. Put the hub into the drilling fixture PV-2675 (Fig.4).

4. Loose the Fixing Screw, slide the Drilling Device PV-2676 against the 45° chamfer of the hub and tighten the Fixing Screw again.

5. Now drill the new hole for the forward fastening thread of the rod guide with ø6,3mm(0.25 inch) and 15mm(0.6 inch) deep.

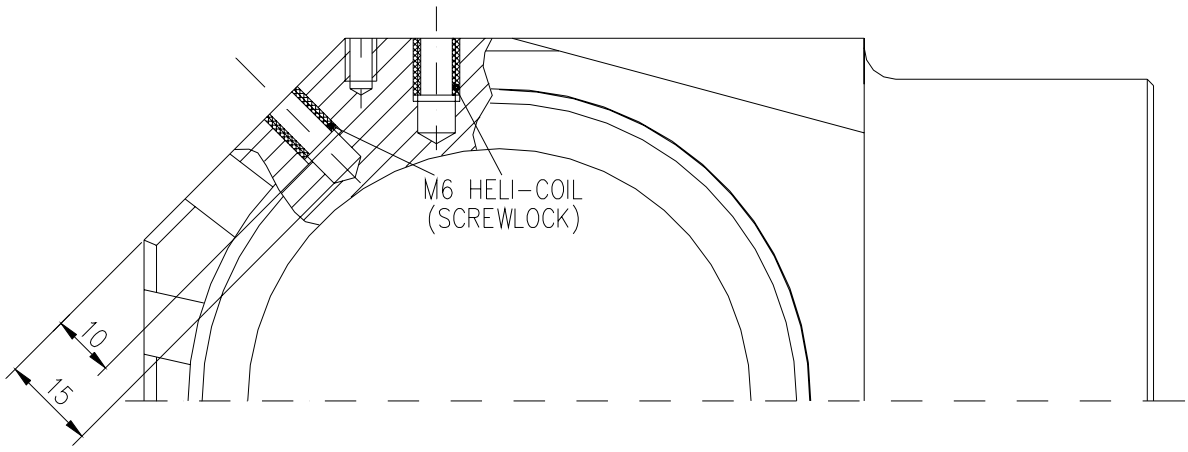


Fig.5

6. Thread the bored holes to M6 Heli-Coil to a depth of 10mm(0.4 inch).

7. Put in the self locking Heli-Coil inserts M6x1,5d (No. 01320060009) (Fig.5).

NOTE

After implementation Modification P, the Letter “P” has to be stamped into the hub behind the Serial-No. and to be written on the identification decals on the blades.

C. General information about HO-V62 Modification”P” with the new parts

Reassamble procedures are similar as before the Modification “P” and described in the HOFFMANN COMPONENT MAINTENANCE MANUAL E157 / Chapter 7.

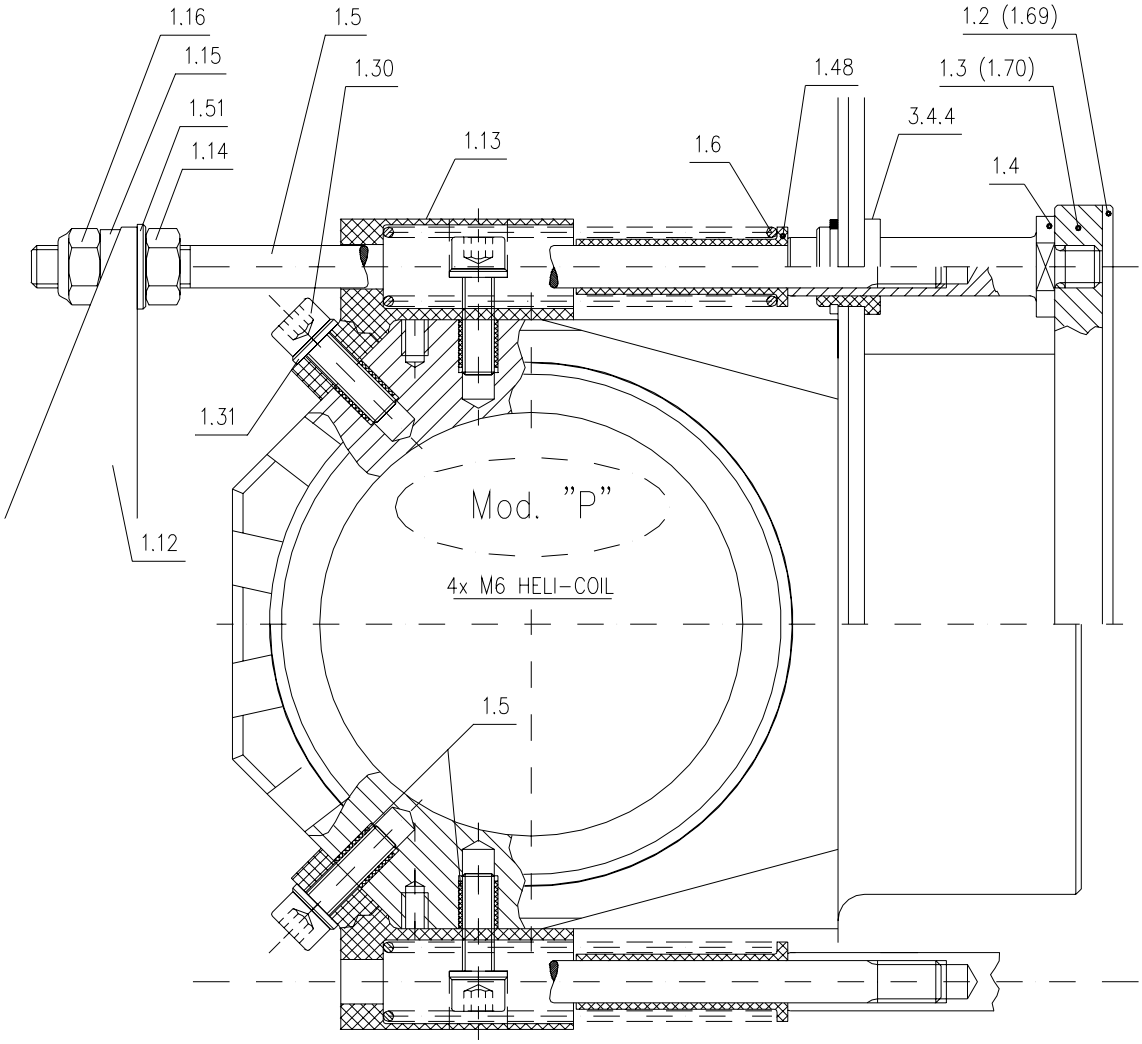


Fig.6

NOTE

Before installing the Thrust plate assy (1.2/1.3 or 1.69/1.70) to the hub unit, make shure that the four rods (1.5) are parallel to each other and vertical to the Thrust plate.

D. Part List

New parts required for Modification “P”.

Pos.	Part Number	Name	Qty
1.	VP20-482B+	Hub (preassembled)	
1.1.1	VP20-482B	Hub	1
1.1.5	01320060009	Heli-Coil (M6x1,5d)	4
1.4	VP20-1737	Stud	4
1.5	VP20-1720	Rod	4
1.6	VD-252AD	Spring	4
1.12	VP20-1721	Yoke	1
1.13	VP20-1735	Rod Guide	2
1.14	DIN934-M8-8	Nut	4
1.15	VP20-1722	Spacer	4
1.16	LN9348 M8	Stop Nut	4
1.30	DIN912-M6x20-8.8	Screw	4
1.31	DIN433-B6,4	Washer	4
1.48	VP20-1736	Bushing	4
1.51	DIN125-B8,4	Washer	4
3.4.4	VP30-523	Bushing	4
1.2 with 1.3 **universal**	VP20-490d With 20-529	sliding ring with Thrust plate	1/1

(Alternative):

1.69 with 1.70 **at Rotax 912**	VP20-1454 With 20-1455	sliding ring with Thrust plate	1/1

E. Required tools

Qty	Tool	P/N
1	Drilling Fixture	PV-2675
1	Drilling Device incl. Bushings, Dowel Pin, Screw and Washer	PV-2676
1	Drill 6,3 mm	For Modification “P”
1	Tap drill for Heli-Coil M6	For Modification “P”