

ASSEMBLY INSTRUCTION

■ BELL UH-1B

iroquois

1/7.4 SCALE

GX-20



技術で拓く真心のクオリティー

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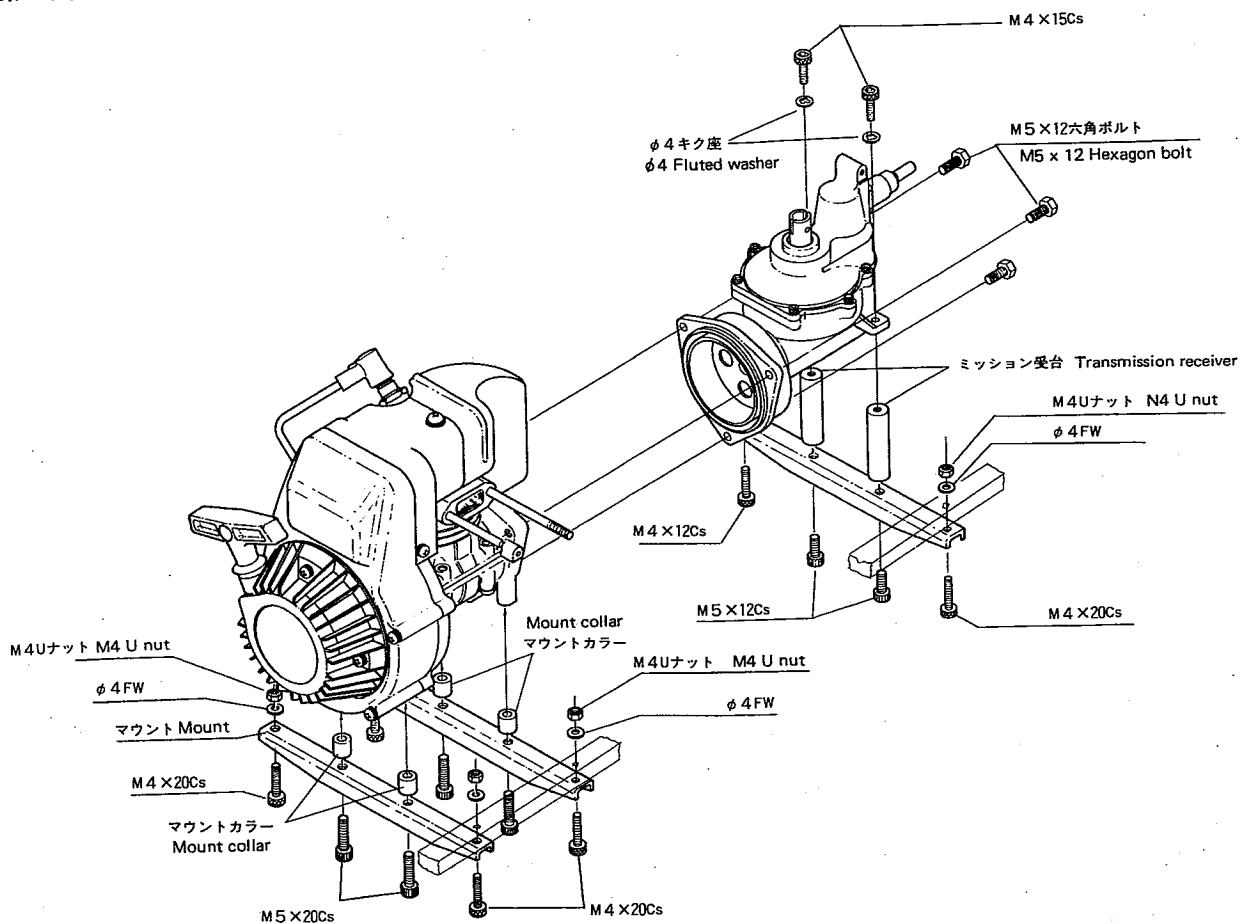
このたびは、弊社製品、UH-1B イロコイス GX-20を、お買い上げ下さいまして、
ありがとうございました。

この説明書は、愛機を常に最良の状態に保ち、安全で楽しい飛行を行なっていただくために、正しい組立、調整、取扱方法について説明しております。内容を充分理解され、説明書にならって組立てて下さい。

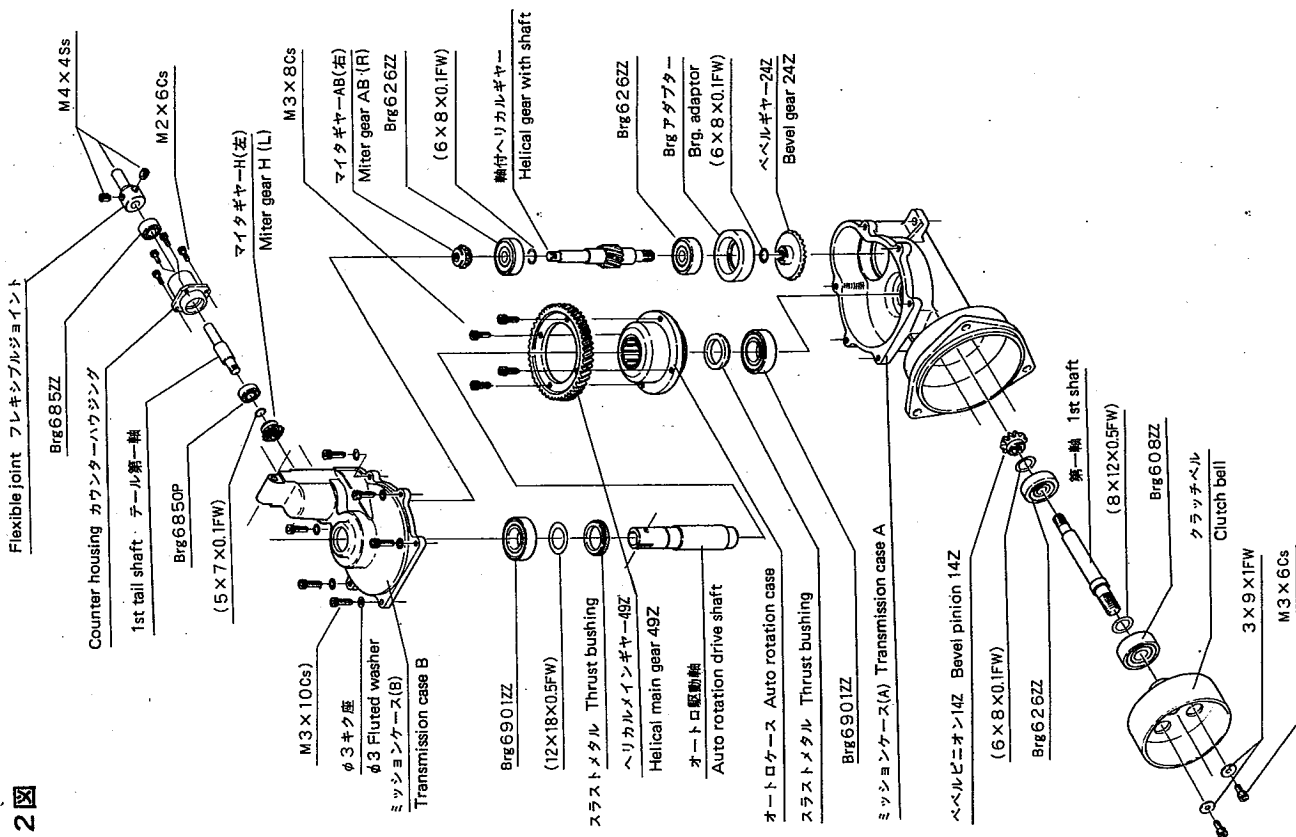
UH-1B イロコイス GX-20 組立説明書目次

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- 第2図 エンジン、ミッション、マウントの組立
- P2 第3図 ピッチアップ、コントロールレバーの組立
- P3 第4図 ローターヘッド分解図
- 第5図 ウォッシュアウトの組立図
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- 第8図 テールミッション、テールローターの組立
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- P8 第14図 フロント・ドアの組立図
- 第15図 サイド・ドアの組立図
- P9 第16図 アクセサリー、下部カバーの図
(下部カバーの取付は、第11図で説明済)
- 第17図 アクセサリー類の取付図
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- 第19図 ブレードのバランス調整図
- P11 第20図 メインブレード、ピッチミキシングの調整

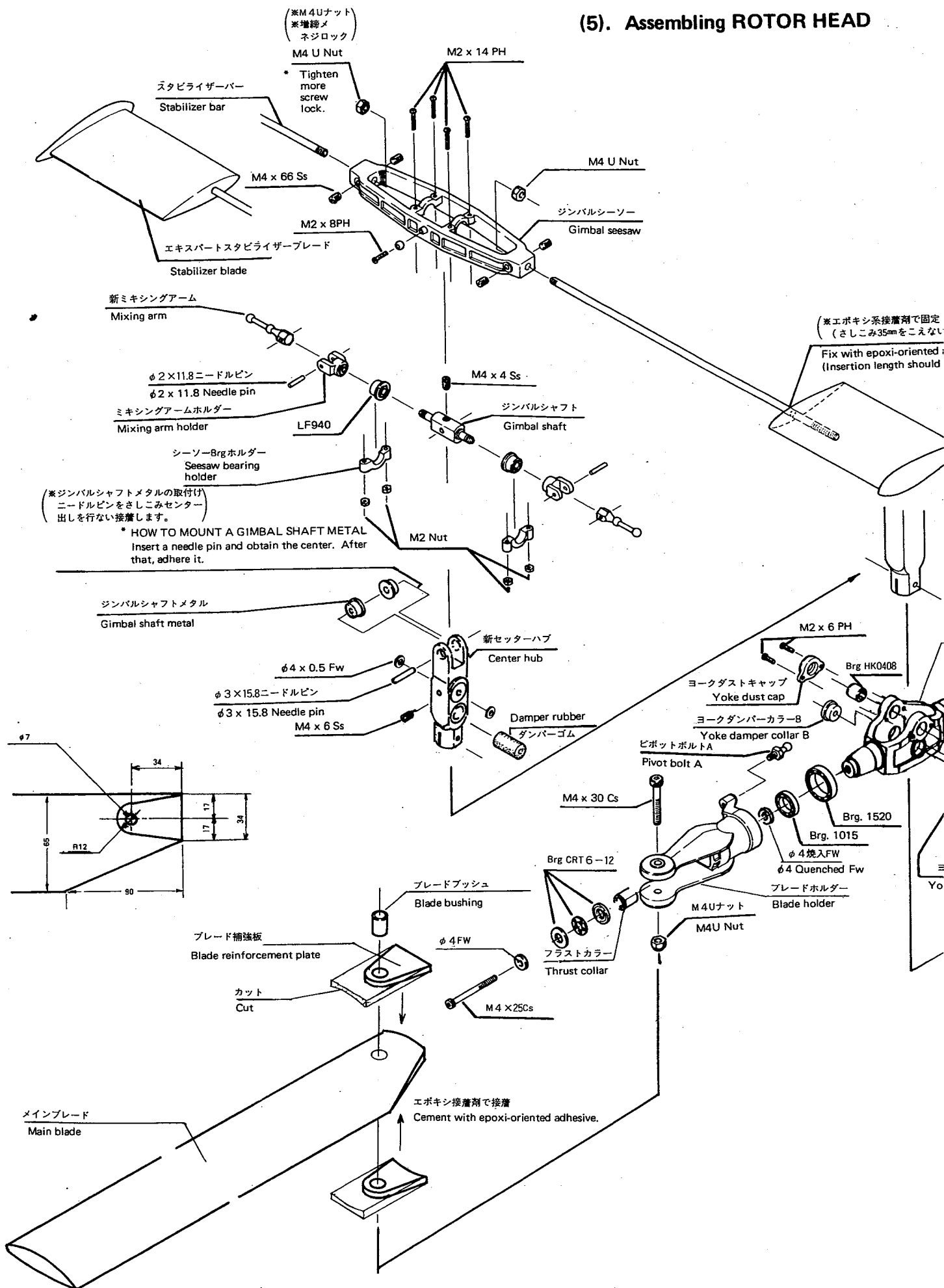
第1図



第2図



(5). Assembling ROTOR HEAD



Never fail to check the head section before flying. Check if each screw or nut or bolt is loosened. If the stabilizer bar, the main mast, the main blade and the like should be damaged, never fail to check the followings.

- (1) Check whether or not the yoke is damaged.
- (2) Check whether or not the blade holder.
- (3) Check whether or not all screws, nuts and bolts are damaged.

If there are doubtful section, replace the new parts, before flight.

*お願い:

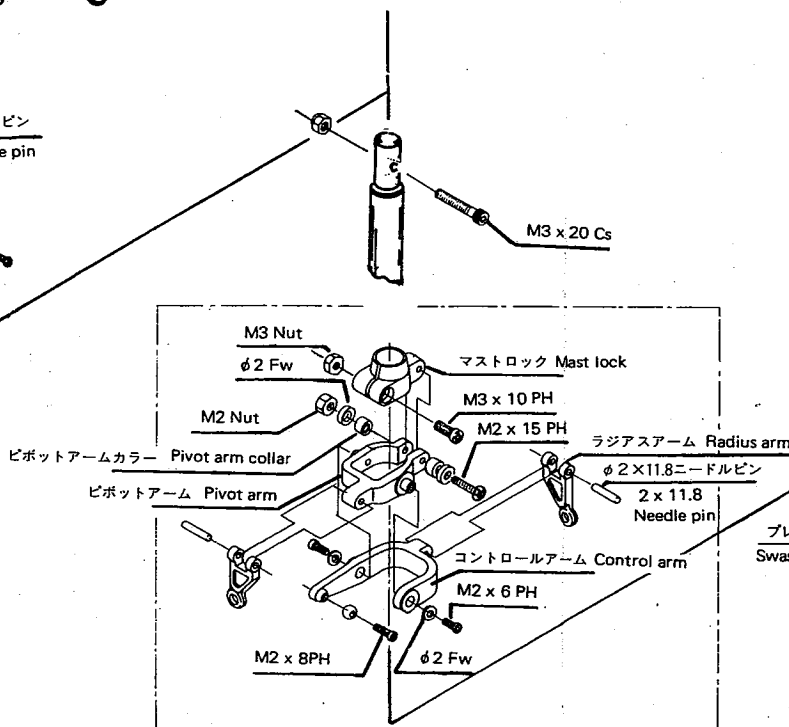
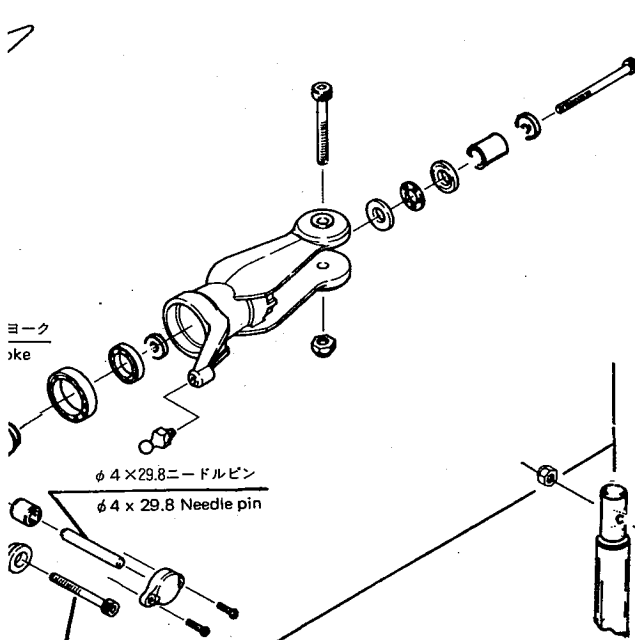
ヘッド部分は飛行前に必ず点検し、ネジのゆるみ、各部品のチェックを行い、早めにパーツの交換をお願い致します。

※スタビライザーバー、メインマスト、メインプレートなどの破損事故が発生した場合は、必ず以下の点を確認・点検願います。

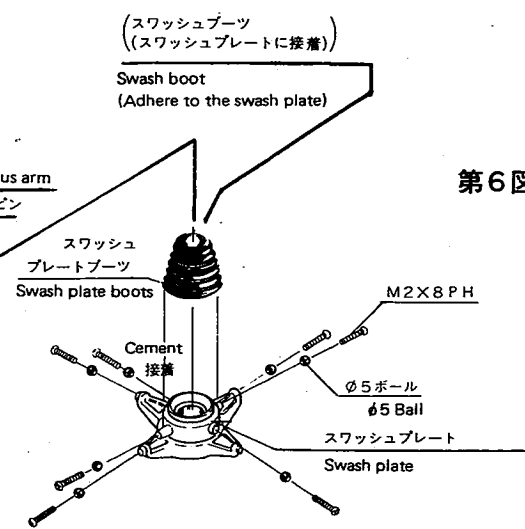
- ① ヨークの破損の有無
- ② ブレードホルダー破損の有無
- ③ すべてのネジの破損の有無

その他いざさかでも疑問のある箇所は新しい部品と取替えて飛行して下さい。

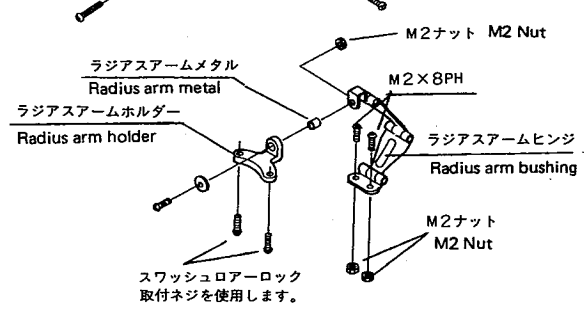
と)
hesive.
t exceed 35mm)



第5図



第6図

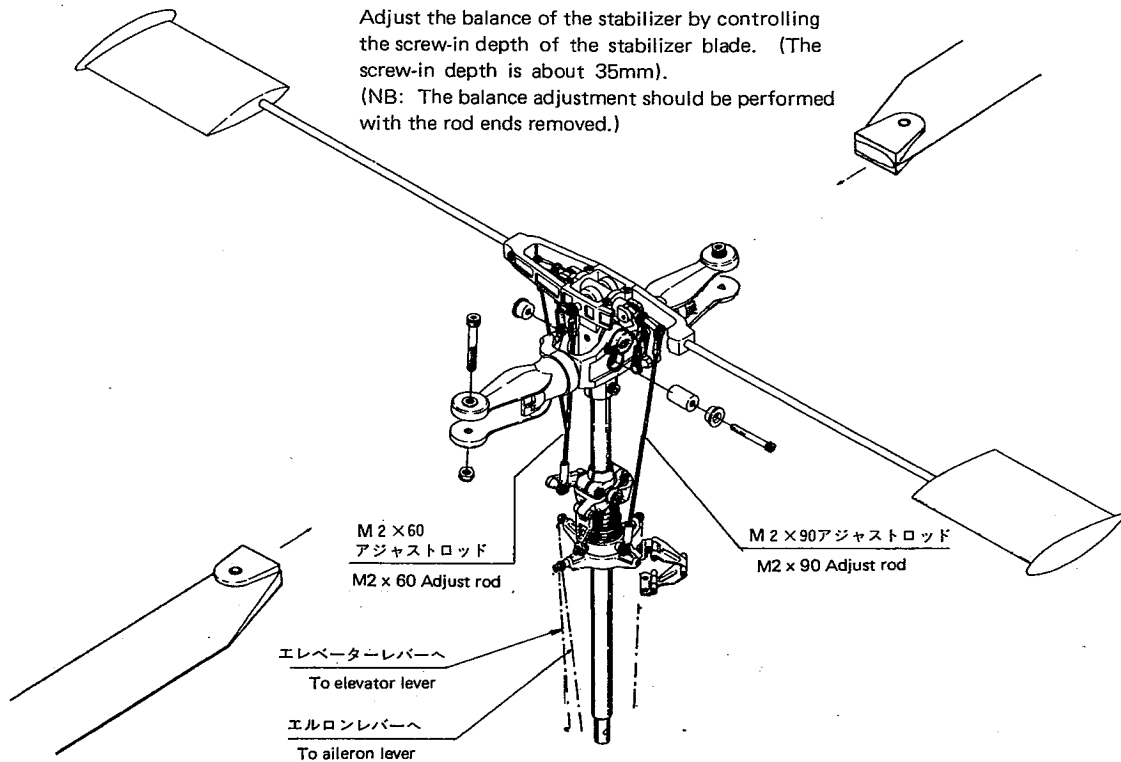


スワッシュローアロック 取付ネジを使用します。
Use the swash lower lock mount screw

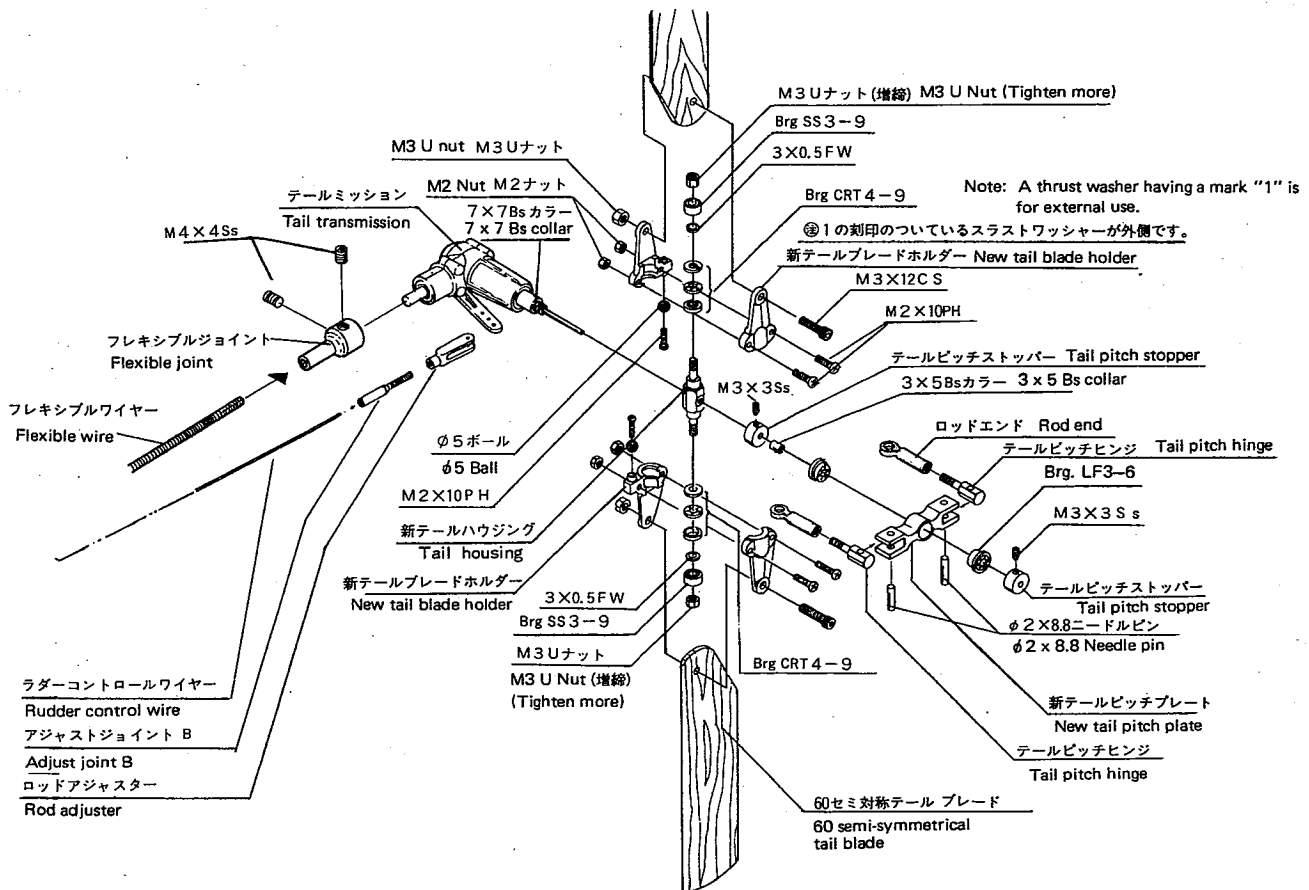
第7図

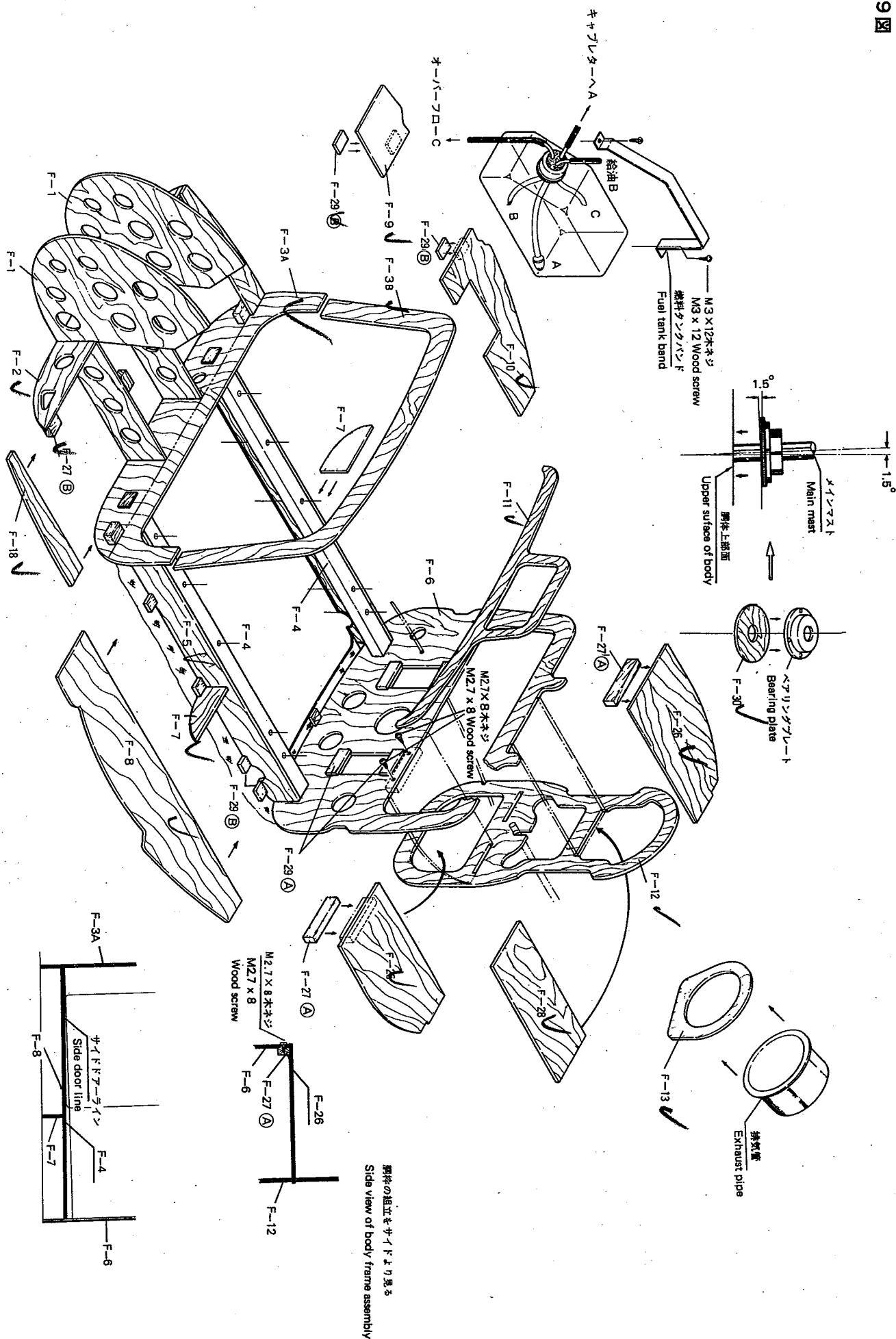
スタビライザーのバランスはスタビライザーブレードのネジ込み量によって調整して下さい。(ネジ込み量は約35mmです)
 ③バランスは、ロッドエンドをはずして行なう。

Adjust the balance of the stabilizer by controlling the screw-in depth of the stabilizer blade. (The screw-in depth is about 35mm).
 (NB: The balance adjustment should be performed with the rod ends removed.)

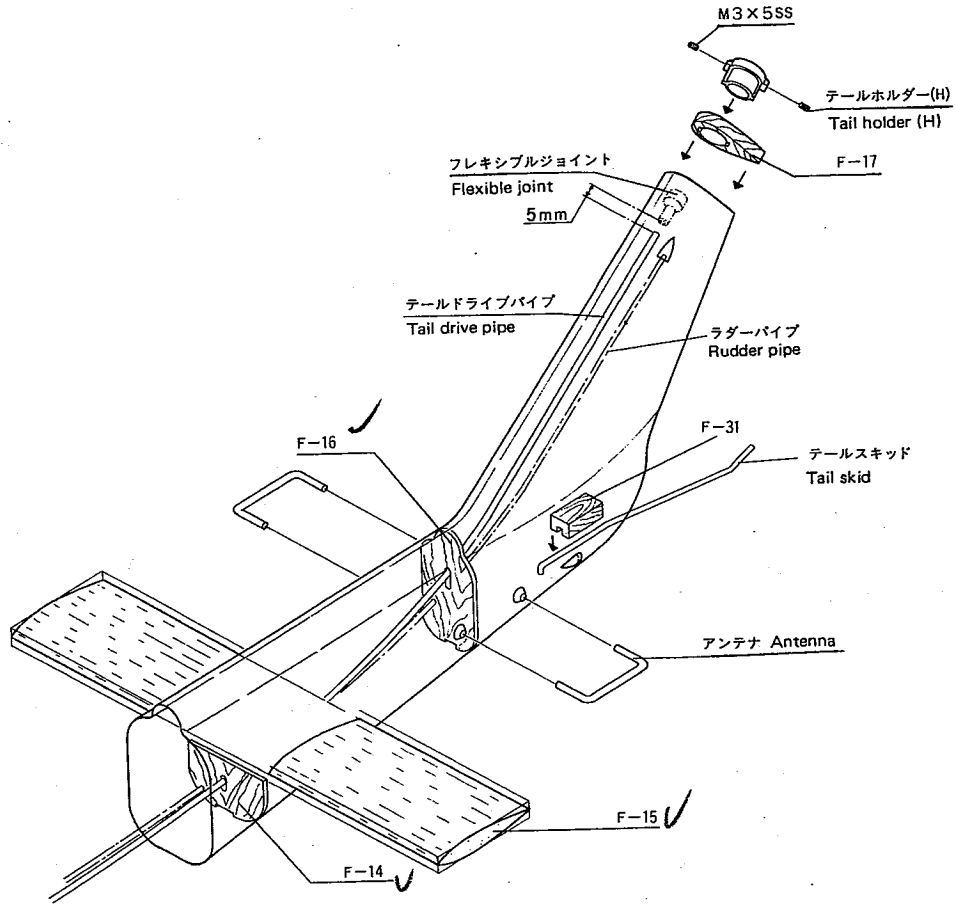


第8図

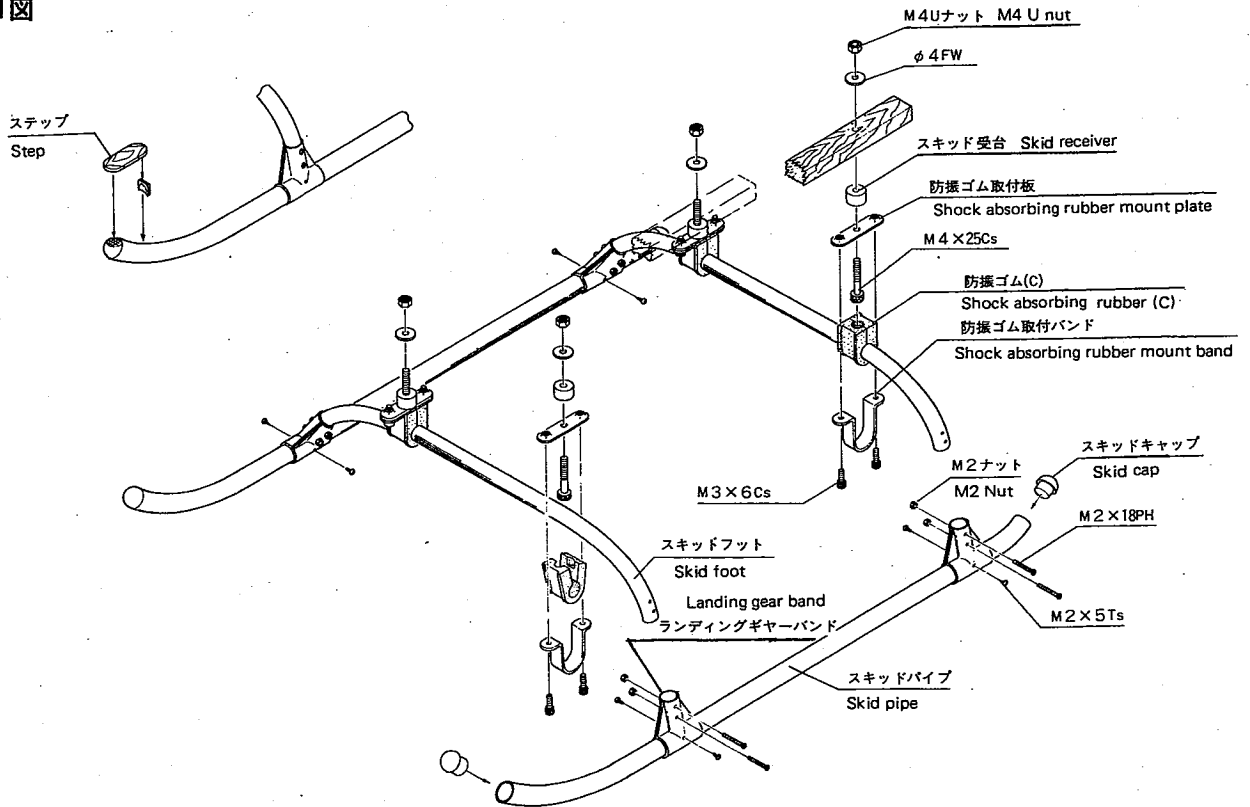




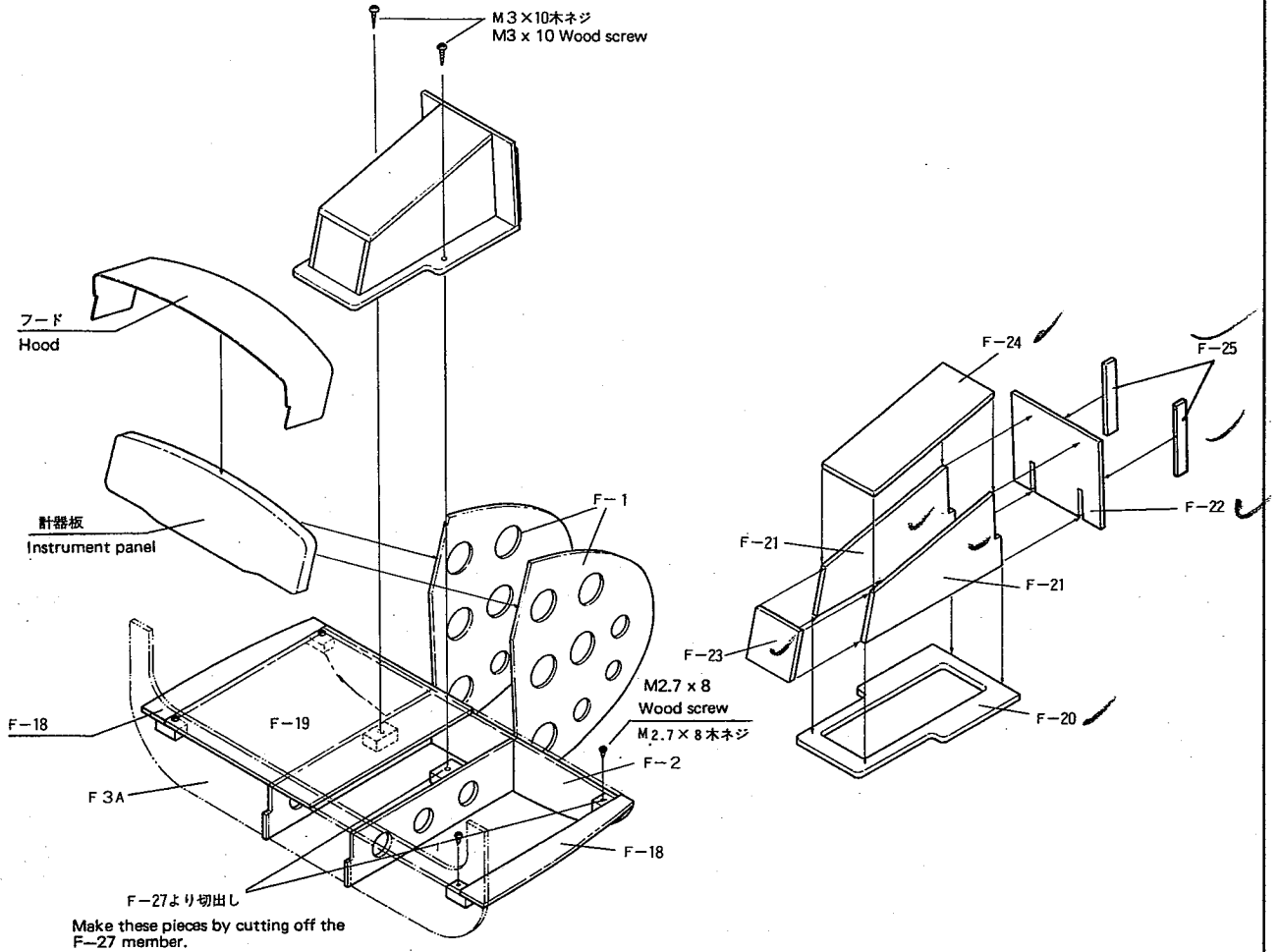
第10図



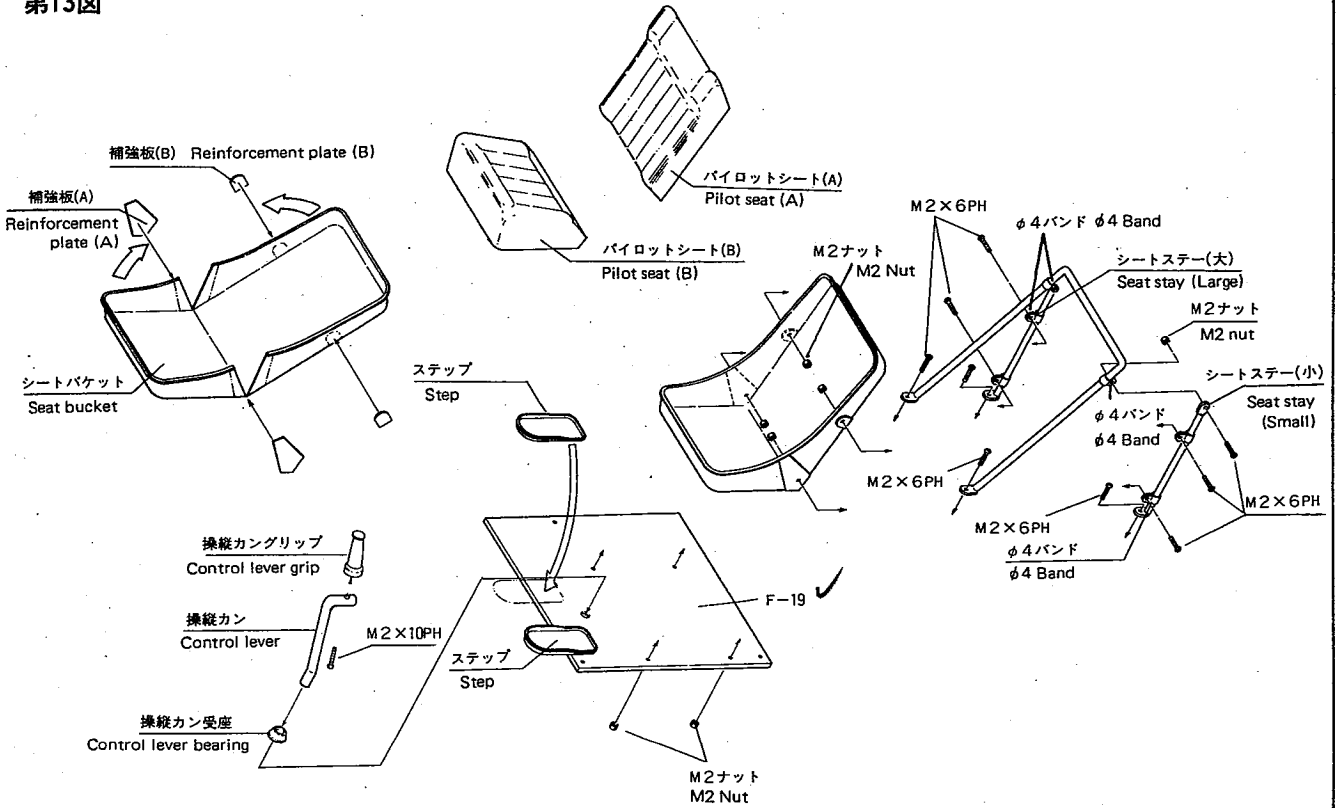
第11図



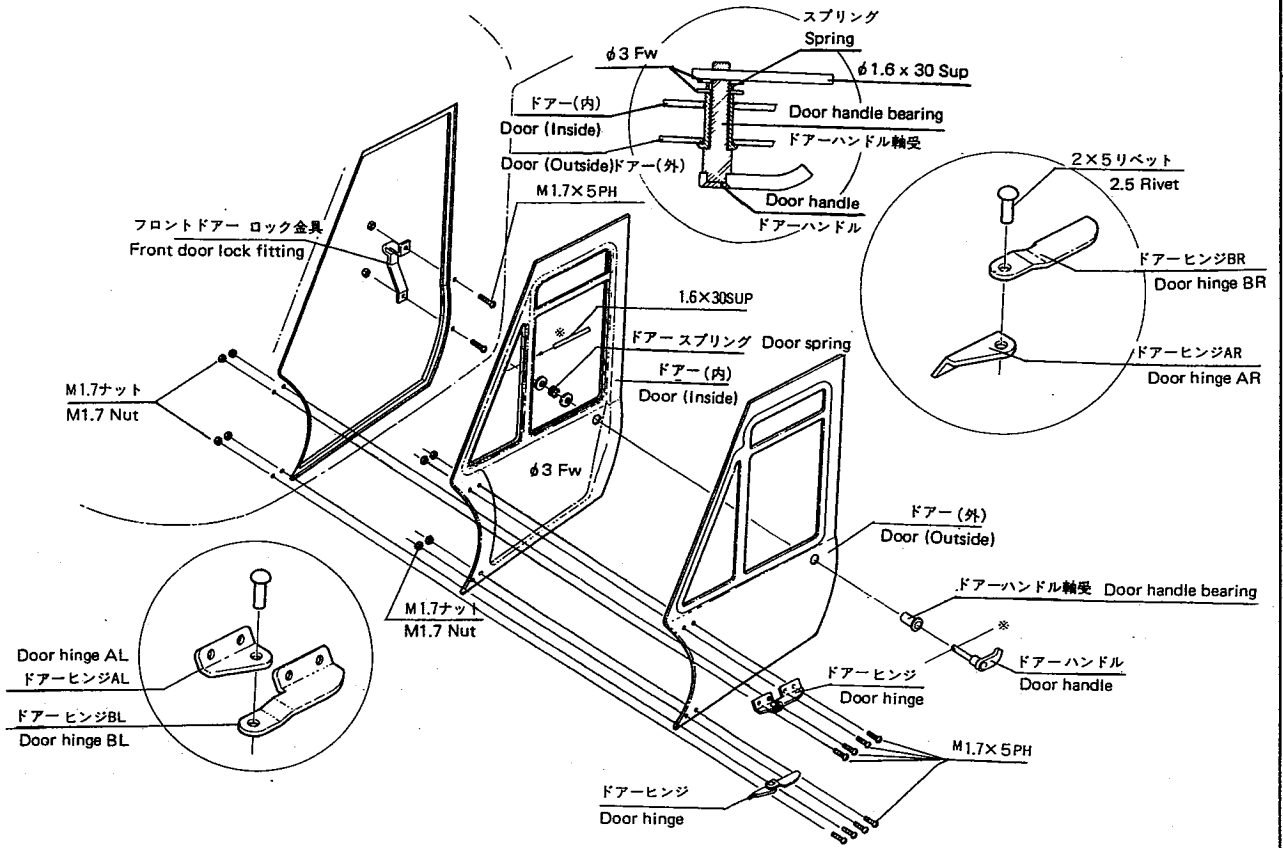
第12図



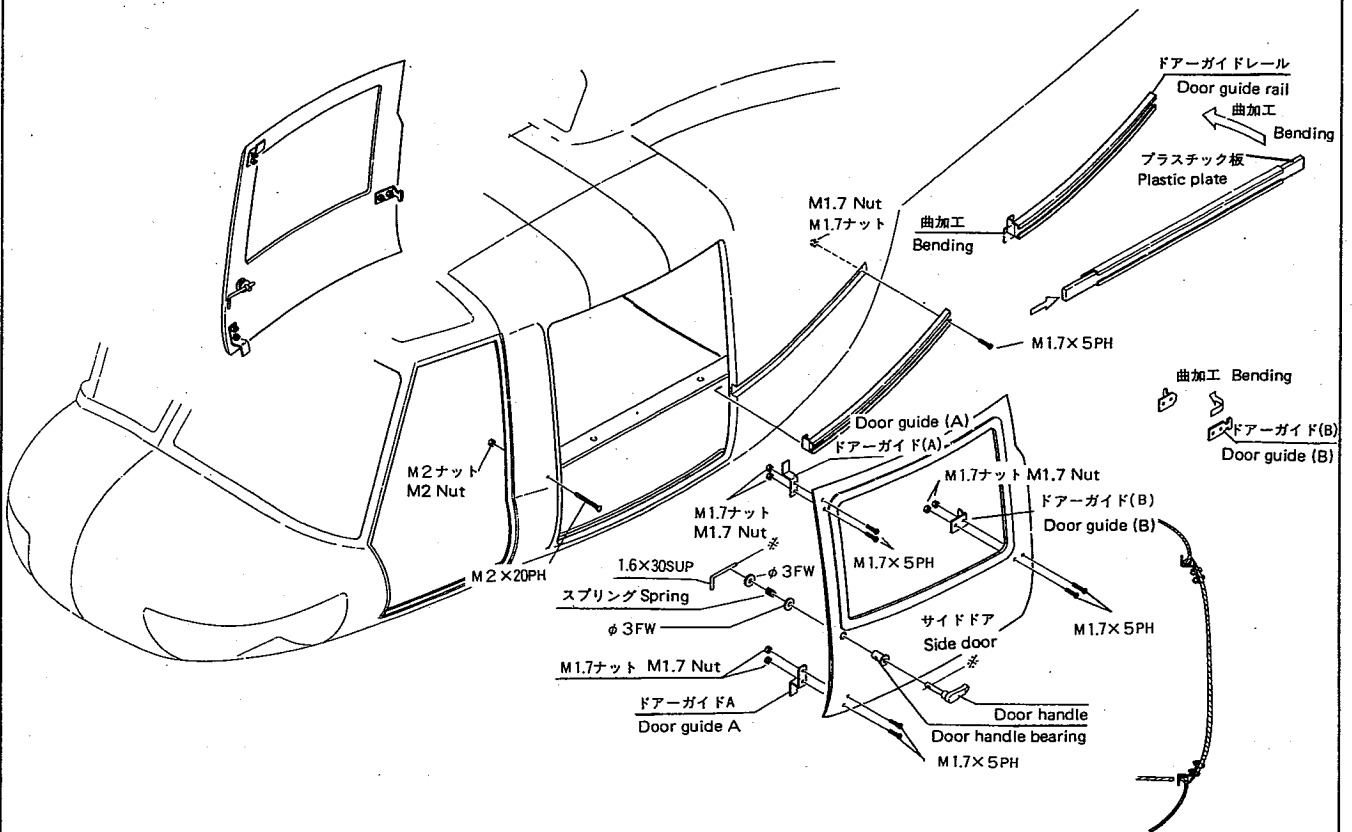
第13図



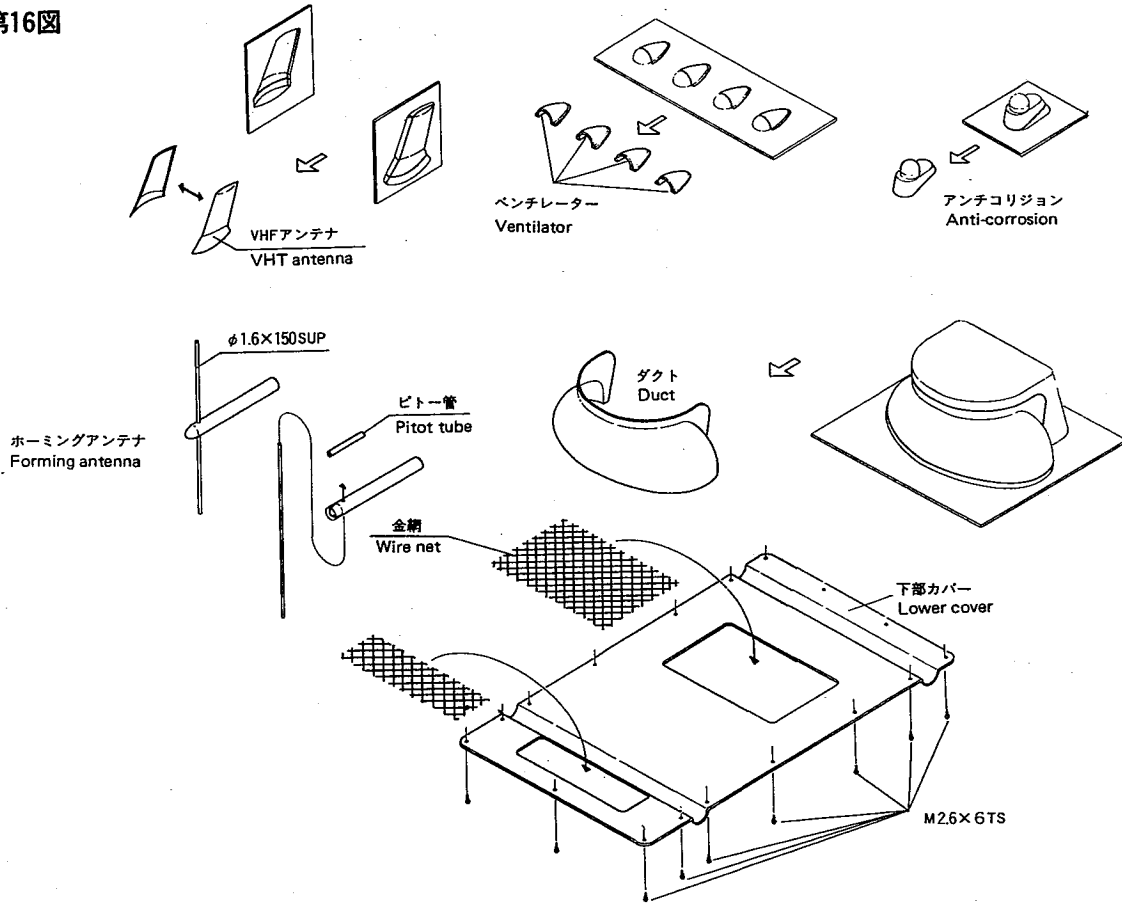
第14図



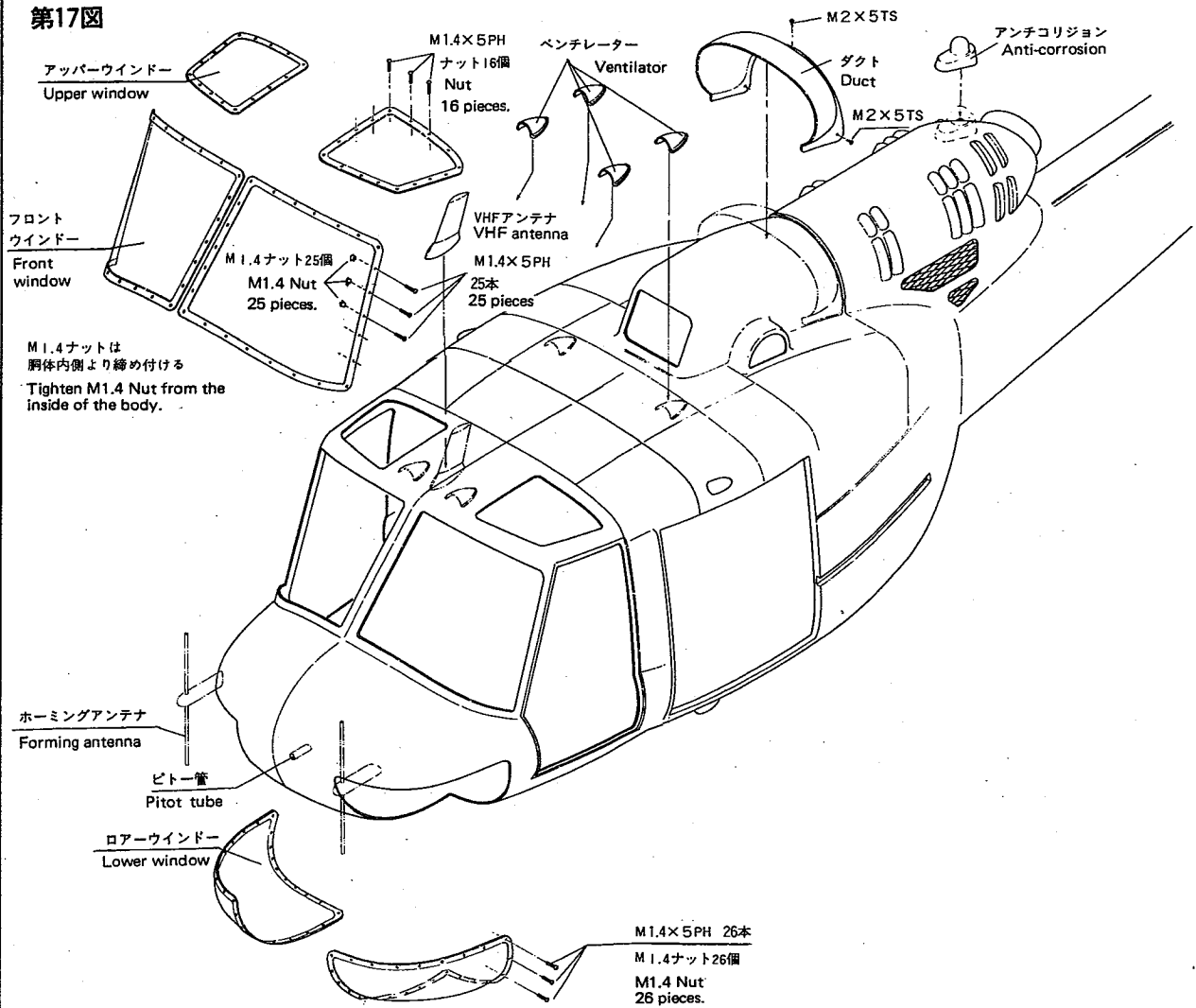
第15図



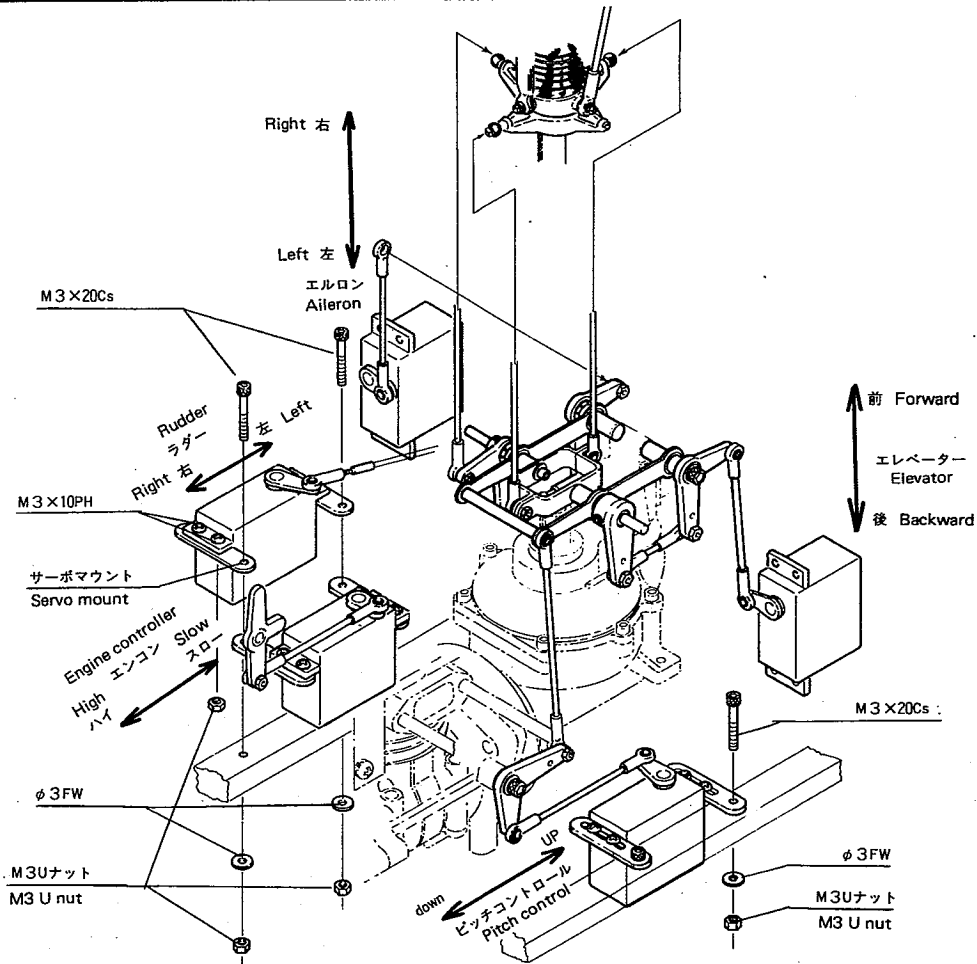
第16図



第17図

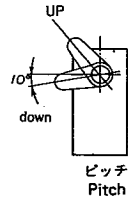
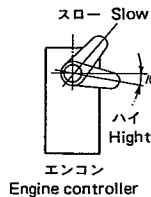


第18図



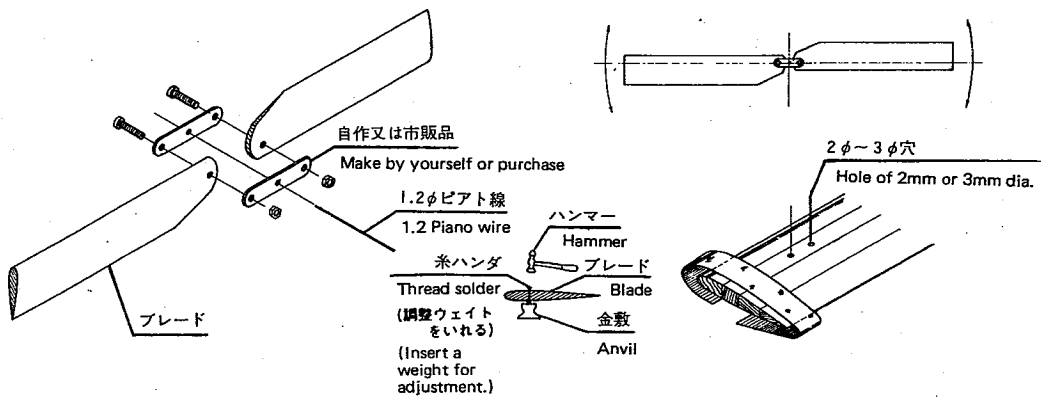
When engine control is at "SLOW".

エンコンスロー時
ミキシング量
Mixing amount
ホバリング時
When hovering.



第19図

(メイン及びテール)



図示のように重量バランスをとり、さらに丸棒などの上で重心点、バランスをとってブレードの完全調整をしておきます。

又翼端部の色別(トラッキング調整のため)をしておきます。

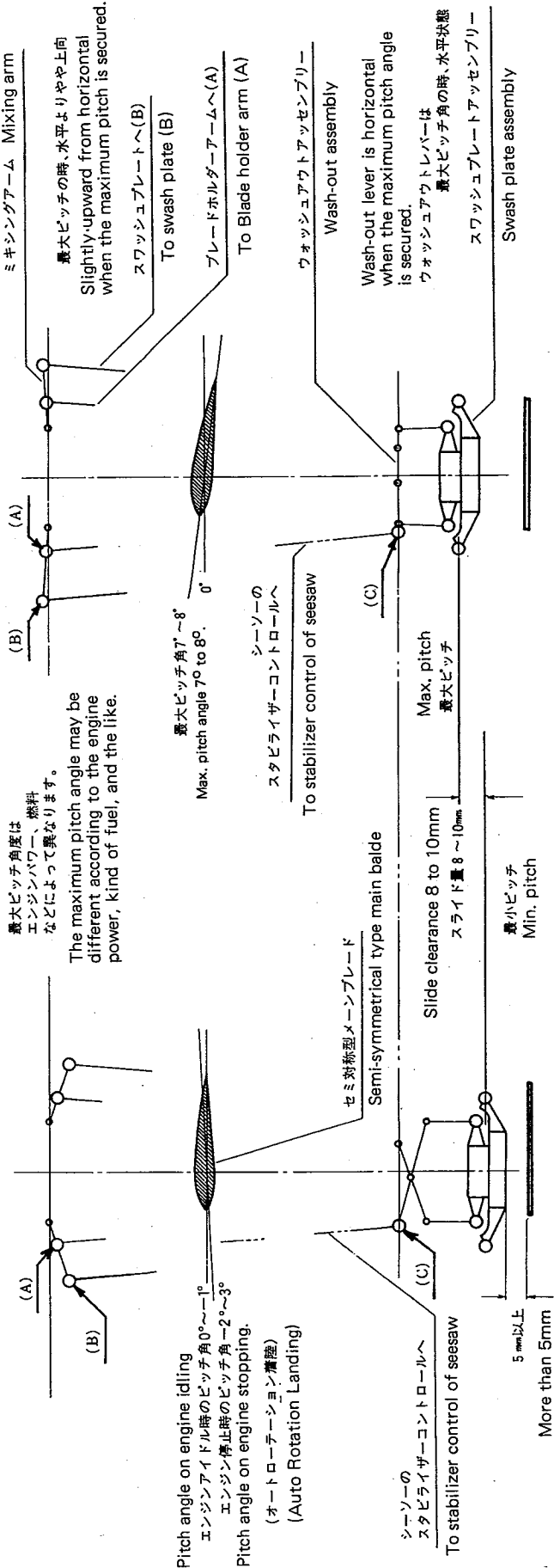
Secure the balance in weight as shown in the illustration. Then, secure the center of gravity and the balance by placing it on a round rod for perfect adjustment of the blades. And please distinguish the blade end from another one (for easier tracking adjustment).

—メインブレード・ピッチ・ミキシングの調整—
 — Adjusting of MAIN BALDE, PITCH, MIXING —

—調整編—
 —ADJUSTING—

エンジンアイドリング
 最小ピッチの状態
 Engine idling under the
 minimum pitch

エンジン高速
 最大ピッチの状態
 Engine High Speed under the
 maximum pitch



Thank you very much for your having purchased our product "UH-1B IROQUOIS GX-20". The ASSEMBLING PROCEDURES MANUAL deals with correct assembling, adjustment, and handling methods in order to keep your assembled model helicopter at its best conditions and to enjoy yourself in flying it in safety. Therefore, please carefully read it to acquaint yourself with the structure and construction. And please assemble in accordance with this manual.

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UH-1B IROQUOIS GX-20
ASSEMBLING PROCEDURES

1. ASSEMBLING ENGINE, TRANSMISSION AND MOUNT (SEE FIGS.1 AND 2)

- 1). Mount the mount collar and the mount at the engine with M5 x 20 CS. Set two mounts so that they may become parallel each other. (Pitch : 78mm).
- 2). Mount the transmission receiver at the main transmission with M4 x 15 CS and $\phi 4$ fluted washer. Besides, provide the transmission receiver with the mount with M5 x 12 CS:
- 3). Mount the transmission at the engine with three M5 x 12 hexagon bolts. At this time, tighten the three bolts, paying attention so that the mount of engine may become parallel to that of the transmission.

2. ASSEMBLING COLLECTIVE PITCH SYSTEM AND CONTROL LEVER (SEE FIG. 3)

- 1). First of all, assemble the elevator lever. Tighten the screws and nuts firmly by using a loosening prevention agent.
NOTE: Check to see if the elevator shaft (A) is aligned with another shaft (B). Correct the disalignment by using the elevator lever.
- 2). Assemble the parts with checking the direction of each lever and the mounting direction and/or position of $\phi 5$ balls.
- 3). Carefully check all the screws and nuts, etc., so that you may not forget tightening them.
- 4). In case the movements of rod end (ball link) is hard, nip the outer periphery between pliers or the like with being attached to a $\phi 5$ ball.

3. ASSEMBLING ROTOR HEAD (SEE FIG. 4)

Since the rotor head rotates at a high speed, provide all the screws or the like with screw-locking agent to prevent them from being loosened.

- 1). As the yoke and blade holder are already assembled at our workshop, check to see if the movements of the blade holder are smooth.
NOTE: As bearings 1520 and 1015 in the blade holder are heat-fit, warm or heat the whole blade holder to remove them when disassembling and re-assembling.

- 2). Mount an accessory pivot bolt (A) at the pitch arm portion of the blade holder.
- 3). Fit a bearing 0408 in the hole at the upper side (i.e., thick side) of the yoke. When fitting, place a wood or metal member, whose thickness is 10 to 12mm, in the central hole of the yoke. Carry it across the block and lightly push it in from outside. (If the bearing is tapped by a small hammer for insertion, never fail to attach a flat wood board to the bearing). The bearing may be inserted in a place by clamping with a little large pliers. Locate it so that it may come out a little (i.e., by about 0.5mm) from the inside surface.
- 4). Insert the damper rubber in the center hub. It becomes easier to insert the damper rubber if soap water is attached to it.
- 5). Assemble the center hub and the yoke blade holder with $\phi 4 \times 29.8$ needle pin. At this time, it is better that a $\phi 4 \times 0.5$ FW (flat washer) is lightly adhered to the needle pin hole of the center hub. Set the needle pin with M4 x 6 SS (set screw) and provide it with a yoke dust cap.
- 6). Mount the yoke damper collars (A) and (B) with M3 x 25 CS (cap screw). The tightening degree of this damper collar may change the flapping damper effect more or less.
- 7). Fit a gimbal shaft bushing to the center hub from its inside. And set the gimbal shaft with $\phi 3 \times 15.8$ needle pin. After the central part of the needle pin is set with a SS (set screw), adhere the gimbal shaft bushing to the center hub by an instant adhesive. At this time, it is better that the bushing is in contact with the shaft side so that the gimbal shaft may not move at this time.
- 8). Assemble the gimbal seesaw according to the drawings so that no play may occur at the bearing receiver and bearing itself of the seesaw. After that, it is highly recommended that they are cemented together with an instant adhesive.
- 9). Attach the stabilizer bar to the seesaw and provide it with a M4U nut at the inside. Tighten this nut extremely. (If it comes in contact with the mixing arm, file the tip end a little). Then, take out the stabilizer bar extremely outwards, and set it with M4 x 6 SS (set screws) at both sides.
- 10). Mount the stabilizer blade. (Attach a tape as sign at the point far by 35mm from the tip end of the stabilizer bar), Coat a little

bit of epoxi-oriented adhesive to the inside of a hole of the blade and screw in the blade in the stabilizer bar. Set it at the point where the sign is provided in advance. But if it does not enter there, fix it at the same position at both right and left sides.

NOTE: In case the right/left weight balance can not be secured through the above procedures, adjust the weight by adhering vinyl tapes or the like to the stabilizer blade.

- 11). Mount a reinforcement plate and a blade bushing at the main blade. Work the reinforcement plate according to the drawing and illustration. Never fail to cement it with a long-term type epoxi-oriented adhesive. Further, bury the blade bushing. Drill the lower part of the hole a little largely, and the blade bushing is cemented and fixed with epoxi-oriented adhesive.

For adjusting the balance of main blade and tail blade, please refer to Fig. 19 for further details.

4. ASSEMBLING WASH-OUT AND SWASH PLATE (SEE FIGS. 5 AND 6)

- 1). Assemble the wash-out according to Fig. 5.
- 2). Mount $\phi 5$ ball at the swash plate according to Fig. 6.
- 3). Similarly, assemble the radius arm hinge. Mount the radius arm holder by using the lower lock mount screw of the swash plate. The mounting direction of the hinge is the rear side (rearward by 45° in the left side) of the arm which is not provided $\phi 5$ ball of the swash plate and lower plate.
- 4). Cement the boot to the swash plate.

5. ASSEMBLING TAIL MISSION AND TAIL ROTOR (SEE FIG, 8)

- 1). Mount the flexible joint at the 1st tail transmission shaft.
- 2). Screw the tail housing in the 2nd shaft for cementing. (As this part is apt to be loosened, cement it with a locking agent without fail).
- 3). Place the bearing in the tail housing. As there are two kinds of the thrust washer, assemble it according to the instruction of the illustration.
- 4). Since there are two kinds of the blade holder, please don't make any mistake.

6. ASSEMBLING BODY FRAME (PART I) (SEE FIG. 9)

- 1). Cut off the cut section of the body frame along the cutting line (Refer to Fig. 17 of page 9). Next, saturate waste cloth with benzene or lacquer thinner and completely wipe off the mould release agent, which may be adhered to the body frame. Furthermore, sand the whole surface and the cut section by a sanding paper having meshes #400 until the luster goes away.
- 2). Cut off the exhaust pipe among the plastic accessories, along the cutting line. Coat the flange portion of the exhaust pipe with an adhesive (contained in a tube) for plastics and cement it, truing up at the hole of F-13 member. After cementing is completed, give a coat of iron-rust color paint (brown + Black + Silver) to inside and outside of the exhaust pipe.
- 3). Insert the assembled F-13 member from inside of the body frame and adjust the F-13 member so that the exhaust pipe may come out by about 15 to 18mm from the edge of the body. After that, cement it to the body with an epoxi-oriented adhesive.
- 4). Cement the F-12 member to the required position inside of the body with an adhesive-oriented adhesive (At this time, be careful for the direction of pipe groove for rubber control). (In case the body frame is not fit to the body, correct the body frame).
- 5). Cement four F-29A members of 25mm long (make these members from F-29 10 x 100 veneer board) at the illustrated position of F-6. (Be careful for the direction of pipe hole for rudder control). Next, adjust so that the F-6 member may come to the required position of body. Then, temporarily cement it at four or five points with an epoxi-oriented adhesive of 5 to 30 minute solidifying type.
- 6). Assemble F-1 and F-2 members and temporarily set F-3A member at the body so that it may come to the required position. Before that, insert F-4 wood member in the square hole of F-6 and F-3A in advance. (F-4 is not cemented at this time). After temporarily cementing F-3B and F-11 members at the required position as well, completely cement them at the body with using a long-term hardening type (5 to 8 hour type).
- 7). Give a coat of 5 - 30 minute hardening type adhesive to the flange portion of the bearing plate (supply a little grease to the bearing in advance), and cement it to the center of F-30 member.

NOTE: Don't cement the other body frames here because they are assembled in the clause of ASSEMBLING THE BODY FRAME, PART II.

7. SETTING ENGINE AND TRANSMISSION (SEE FIG. 9)

- 1). Locate the engine and transmission assembled according to Fig. 2 from the lower opening section of the body. Insert the main mast through the main mast hole at the upper part of the body and mount it at the transmission assembly with M3 x 16 CS (cap screw) and M3U nut. (At this time, keep the carburetor and the silencer removed. Refer to the illustrations of the instruction manual of the engine).
- 2). Make the body upside down. At this time, support it by means of stands or the like at the front and rear sides so that the tip end of the main mast may not come in contact with the ground. (Be careful so that the body may not move loosely and so that the body may not be injured).
- 3). Determine the positions of engine and transmission so that the mast may come to the center of the mast hole of the body. At this time, in case the F-4 wood member doesn't come in contact with the three aluminum mount, widen the square hole for F-4 of the F-6 body frame upwards or downwards, and adjust this assembly so that the three aluminum mounts may come completely in contact with the F-4 and the mast may come to the center of the hole. After this adjustment is completed, cement all of them completely with a long-term type epoxi-oriented adhesive (i.e., 5-8 hour type).
- 4). After the F-4 is completely cemented, drill a mount hole of $\phi 4$. First of all, drill a hole of the mount at the transmission side through which M4 x 20 CS (cap screw) is inserted in advance. Next, drill a mount hole at the starter side of the engine. At this time, check to see if the main mast is located at the center. Then, when drilling a hole to the mount at the transmission side, drill a hole at the diagonal (opposite) position as well. Similarly insert a M4 x 20 CS (cap screw) and temporarily fix it with a FW (flat washer) and M4U nut. After that, drill the remaining holes and fix the mount with M4 x 20 CS (cap screw), FW (flat washer) and M4U nut. (Return the body to the original state and keep it horizontally).

8. ASSEMBLING BODY FRAME, PART II

- 1). Insert the bearing plate cemented to the F-30 member into the mast. Then, form and correct the F-30 by a file so that it may become parallel to the body. And cement it to the body. (Finally, it is fixed after painting is completed).
- 2). Cement the remaining body and the like to the required position. Adjust and cement F-8, F-9 and F-10 members so that they may not be parallel to the F-4 wood member but may become parallel to the lower line of the side door.

NOTE: F-27B is made by cutting F-27 to the length of 15mm. F-29B is made by cutting F-29 to the length of 10mm. (F-29B is mounted at the position (Fig. 16) of the lower cover mounting screw hole).

- 3). For the fuel tank, bend the pipe and mount the hose so that the relations of A-A, B-B and C-C of the illustration may be obtained. The hose should be of gasoline-resisting property. (As a silicon hose is damaged by gasoline, it can not be used for this purpose).

9. ASSEMBLING TAIL BODY FRAME (SEE FIG. 10).

- 1). Form F-15 balsa plate so as to be symmetrical as shown in the illustration. Next, attach paper or silk by means of clear lacquer and use a surfacer for under coating. Then, form it so that the surface of tail body frame may not be injured or may be even.
- 2). Drill a hole, at the tail part, through which the tail skid is inserted. Then, completely cement F-31 by using an epoxi-oriented adhesive of long-term hardening type. (Determine the position of F-31 according to the drawing).
- 3). Though the tail holder is cemented at the F-17, eliminate the paints on the cementing surface of the holder by a file or the like in order to make the cementing good. After that, cement it to F-17 with an epoxi-oriented adhesive of long-term hardening type.
- 4). Carefully bend the pipes for tail drive shaft and for rudder control according to the drawings.
- 5). Give a coat of epoxi-oriented adhesive for long-term hardening type to the inside of body and to the surrounding of F-17 in order to mount the F-17 member, and fit it to them. At this time, it is better that the F-17 is warmed or heated by a dryer or the like so as to be completely located in a place of the body.

- 6). Drill a hole, at the body, through which a F-15 member (horizontal tail blade) is inserted. Mark the section of F-15 member according to the lines of the drilling position. Drill it as being careful so that the F-15 may be mounted horizontally. (Cement it later).
 - 7). After checking that the F-16 member comes to the required position of the body, once take it out. Do the same for F014 as well as the above.
 - 8). Mount the flexible joint at the tail transmission with two M3 x 4 SS (set screw) in advance.
 - 9). Give a little bit of epoxi-oriented adhesive (5-30 minute hardening type) to one corner surface of the tail drive shaft, and insert it to the tail joint at the transmission side to enable temporary cementing.
 - 10). Insert the tail drive pipe and the rudder control pipe in F-16. Lead the F-16 to the inside of body. Then, cement it at the required position with epoxi-oriented adhesive.
 - 11). Insert the drive shaft temporarily cemented in the tail transmission in the drive shaft pipe. Further, mount the tail transmission at the tail holder with M3 x 5 SS (set screw).
 - 12). Cement the horizontal tail blade and F-14. Sufficiently be careful for the horizontalness and balance (non-biasing) of the horizontal tail blades.
 - 13). Cement the pipes at F-16 and F-14 members so that a clearance of about 5mm may be secured between the tail drive pipe and the joint.
 - 14). Drill a hole for tail antenna (aluminum of 4mm diameter) at the body. Be careful for the chisel of a drill as the drilling edge may be deformed or damaged if it is not sharp. It is good for the antenna to be mounted with epoxi-oriented adhesive.
10. MOUNTING TAIL BODY AND ADJUSTMENT OF DRIVE SHAFT
- 1). As the tail drive pipe is a little long, cut it to the length of 35mm or so. Cut it off by injuring the outer periphery by means of a dressing file or a triangle file. As a pipe cut to 35mm is used as Pitot tube at the position of accessory, store it separately.
 - 2). Place the tail body in the front body. Before that, insert the rudder control pipe into the holes of F-12 and F-6. Next, insert the tail drive shaft into the joint of tail transmission. However, as

the tail body is a little long, adjust the length by cutting off the conjunction of the tail body a little (by about 5 to 7mm) so that the drive shaft may enter the joint by about 10 to 12mm.

NOTE: As only the tail drive shaft of regular length is available, be careful for the conjunction. If you should make a mistake in conjunction, it will become very difficult to take a counter-measure.

- 3). Make them rough the cementing faces of the outer surface of the conjunction of the front body and the inner surface of the conjunction of the tail body by using a sanding paper whose mesh is rough (eg. #80 to #100), so that the adhesive is well cemented. For this, give a coat of epoxi-oriented adhesive to both of them. Fix the conjunction parts by winding cellopane tape or masking tape. And place the whole assembly so that it may not be slackened. After checking the perpendicularity of the vertical tail blade, it is better that the whole assembly is fixed in the first place. At this time, cement the tail drive pipe at the F-12 member.

11. MOUNTING LANDING GEAR (SEE FIG. 11)

- 1). Reversing the body upside down, there are two grooves for the landing gear. Drill four holes of $\phi 4$ at the central part of F-4 wood member on the line passing through the center of these groove. After drilling these four holes, mount the skid receiver and shock-absorbing rubber mount plate with M4 x 25 CS (cap screw) and a $\phi 4$ FW (flat washer), and M4U nut as shown in the illustration.
- 2). Lightly two shock-absorbing rubbers with the mounting bands at respective skid foot, and temporarily set them at the body.
- 3). Provide the skid pipes with two landing gear bands. Then, mount them at the skid feet, which have been temporarily set before, with M2 x 8 PH (pan head machine screw) and M2 nut.
- 4). Place the body on a horizontal rack, and completely tighten all the screws and nuts of the helicopter as adjusting the seating of the body.
- 5). Mount the skid pipe caps at the skid pipe with epoxi-oriented adhesive.

* As the real helicopter is provided with a step at the front side of the skid, erase the front skid pipe cap horizontally by a file if

you want to mount the step there, and make an elliptical step from a veneer of 3mm thick. Then, cement it with epoxi-oriented adhesive. And it is better that the step is totally formed by a polyester patty.

- 6). Reversing the body again, mount a lower cover at the opening for mounting the engine and the transmission.

12. MOUNTING ROTOR HEAD (SEE FIG. 7)

- 1). According to Fig.7, mount the pre-assembled swash plate, wash-out and rotor head at the main mast (temporarily set them at this time).
- 2). Mount a rod end at both ends of the M2 x 16 rod end. (Leave space of 2mm at the edge of two rod ends. Two same ones are required).
- 3). Fit one edge of the upper rod end to the portion of $\phi 5$ inside of the seesaw mixing arm and fit the other edge to the pitch arm pivot bolt of the blade holder.
- 4). Mount a rod end at both edges of M2 x 60 adjust rod, and connect the control arms of seesaw and wash-out.
- 5). Set the main mast at the position where the whole wash-out becomes horizontal (straight) with the seesaw horizontal.
- 6). Fit the radius arm of the wash-out to $\phi 5$ ball of a higher rack of the swash plate and the upper plate.
- 7). The swash plate is located through the above procedures. So, referring to this position as standard, drill holes, through which the rod that connect the three points having a ball of the lower plate with each lever for pitch up, at the outer periphery of the bearing plate.
- 8). The detailed adjustment other than the aboves are to be performed according to Fig. 20 after all is completed.

Re-check all the parts assembled in the aboves before beginning the subsequent works according to the following description;

- (1). For posture and balance of the helicopter body
- (2). Is the mounting of engine and transmission complete ? Is the main mast mounted to the angle of the instruction ?
- (3). Is the pitch-up system assembled without any mistake ?
- (4). Is the cementing of the body frame perfect ?

(5). Are the tail drive shaft and tail drive pipe assembled as per the description ?

(6). Is the landing gear free from any twisting ?

After the above check is completed, remove all of engine, transmission, landing gear, rotor head, tail transmission, etc. which have been once assembled.

13. ASSEMBLING COCKPIT (SEE FIG. 12)

- 1). For assembling the switch box, form the flange of the inclined part of the plate and use an instant adhesive for wooden works. Cement the F-25 to the position where it may be neatly placed between two F-1 members. Correct the F-22 member to the F-1 member. After sanding the whole by a paper file, give a coat of such caulking agent as sanding sealer to seal up. Furthermore, paint the switch box and the whole inside of the cabin with a light gray paint.
- 2). As F-19 is of a single plate, cut it at the central part to form (Seal up the grains as well as in 1).
- 3). Cut the instruments panel along the cutting line. And paint it with light gray. After that, cement the instruments in a place.
- 4). Paint the hood of instrument panel with lusterless black paint. (Cement the instrument panel and the hood after the body frame is painted with a light gray paint).

14. ASSEMBLING COCKPIT (SEE FIG. 13)

- 1). Cut off the sheet bucket as shown in the illustration. Cement it with an adhesive for plastic uses.
- 2). Bend the seat stays (Large) and (Small) to the angle of the drawing, and assemble them as shown in the illustration. After step is cemented at F-19 member, paint the whole with a light gray paint.
- 3). Give a coat of adhesive for plastic use to the surface of seat and provide it with color powder which is often used in railway's model, in order to bring the reality.
- 4). Cement the receiver seat to the control lever with an instant adhesive or epoxy-oriented adhesive. (Set it so that the length below the receiver seat may become 6mm). Form the underside of the grip to become semi-circular according to the control lever and drill a hole of 2mm diameter 6mm deep. Then, cement and fix it with

epoxi-oriented adhesive together with M2 PH (pan head machine screw) and correct it with patty. Paint it with an lusterless black paint and cement it to the F-19 member with epoxi-oriented adhesive.

15. ASSEMBLING FRONT DOOR (SEE FIG. 14)

- 1). Cut off the door according to the cutting line and correct it to the body.
- 2). For cementing the outside and inside of the door, give a coat of adhesive for plastic use to the cementing surface for temporary cementing. After that, fit them in a place of the body and set it at the body with a cellopane tape. Finally, cement the door so that it may be completely fit to the body (At this time, be careful so that the adhesive may not be attached to the body).
- 3). Determine the position of door handle (as there is a rib in the formed article), and drill a hole of $\phi 5$ hole at the center.
- 4). Cement the door handle bearing to the door with an instant adhesive. Give a little bit of oil to the handle shaft. Determine the length of $\phi 1.6 \times 30$ lock pin to the locking metal fitting. And cement it to the handle shaft with an instant adhesive.
- 5). Adjust the position of the locking metal fitting so that the door may be completely locked. And fix it with M1.7 x 5 PH (pan head machine screw).

16. ASSEMBLING THE SIDE DOOR (SEE FIG, 15)

- 1). Erase the guide rail grooves of the body by using a file in order that adhesive can be well attached there.
- 2). Insert a plastic plate in the guide rail and bend the guide rail according to the curve of the body. After bending is completed, take out the plastic plates.
* If it is bent without use of plastic plate, smooth movement may not be secured. Be careful for this point.
- 3). Supply epoxi-oriented adhesive in the body grooves. Place the guide rail in the groove and mount it with M1.7 screw and nut. Bend the front side of the rail inwards of the body for fixing.
- 4). Fix the door at the required position of body with cellopane tape or the like. Bend the door guide (B) to the guide rail and mark the

- mounting hole. Locate the door guide (A) as well and mark the mounting hole. Then, drill and mount the metal fittings there.
- 5). Cement the door handle shaft from the inside with epoxi-oriented adhesive. Bend the $\phi 1.6 \times 30$ locking pin at the point far by 6 to 7mm from its tip end.
 - 6). Set M2 x 20 PH (pan head machine screw) for locking pin receiver at the position parallel to the mounting position of the door handle. Then, fix it with epoxi-oriented adhesive.
 - 7). Close the door, and fix the $\phi 1.6 \times 30$ lock pin at the door handle shaft with epoxi-oriented adhesive at the position where the lock pin is fit to the M2 x 30 screw.
17. MAKING THE ACCESSORIES (SEE FIG. 16)
- 1). Cut off each accessory carefully according to the drawings.
 - 2). Cement both right and left ends of the VHF antenna with an instant adhesive.
 - 3). For the forming antenna, work the tip end of a round bar and perform under-painting. Then, provide it with a $\phi 1.6$ piano wire.
 - 4). Cement the wire net to the lower cover with a rubber-oriented adhesive (eg.. contact bond).
 - 5). Make a Pitot tube by using a piece materials of tail drive pipe (stainless steel pipe).
18. MOUNTING ACCESSORY WIND (SEE FIG. 17)
- 1). Finish the conjunction and joints of body. If a part is damaged or injured, coat a polyester patty there to correct it.
 - 2). Cement the forming antenna and Pitot tube according to the drawings from inside of the body with epoxi-oriented adhesive. (It is highly recommended that reinforcement members are attached to the inside of body where those are mounted).
 - 3). Place a VHF antenna and ventilator in a place and cement them with an instant adhesive.
 - 4). After the wind shield is temporarily set, mount it the outside of the body by means of M1.4 screw and nut.

19. FOR PAINTING (SELF-DEFENSE ARMY)

- 1). Provide each windshield with masking tapes completely along the line.
- 2). Paint the inside of the body with a light gray paint.
- 3). The positions where fluorescent (orange) color or yellow painting of the tail section are painted, paint the position with a white color, covering the width a little wider than that of those colors.
- 4). Provide them with masking tapes the positions where fluorescent (orange) color or yellow painting of the tail section are painted. (See the drawings).
- 5). Paint the whole body with an olive drab color. Continuously paint with fluorescent color and yellow color.
- 6). Attach the stickers or the like to the required positions. At this time, cut them off along their profile as strictly as possible.
- 7). Arrange every sticker on a table without removing the rear adhesive sheet, and adhere masking tape to the stickers from upside. After that, remove the rear adhesive sheet and carry a sticker to its required position with both ends held by your hands one after another. So, it will become easier to position the stickers.
- 8). In case of performing lusterless painting, mix a flat base in the clear lacquer (at the ratio of 20 to 25%). Then, paint the body totally.

20. MOUNTING THE SERVO & LINKAGE (SEE FIG. 18)

- 1). Mount the servo mounts at the rudder servo, throttle servo and collect pitch servo, respectively, with M3 x 12 PH (pan head machine) and M3U nut.
- 2). Determine the position of servo mount on the F-4 wood member from the rear side of the body. Then, drill holes of $\phi 3$ on the F-4 member.
- 3). Mount the servos after the mounting and rotation direction of the servos are well checked according to Fig. 18.

Now, all the assembling procedures are completed. Here is the highest class R/C Helicopter "Bell UH-1B IROQUOIS GX-20" in front of you. It is made by yourself. Flying "Bell UH-1B IROQUOIS GX-20" as well as the real helicopter is also by yourself. Check all the parts one more time to secure the perfectness before flying it. We do hope that you will send us your heartfelt flight reports.

PACKING LIST FOR UH-1B IROQUOIS GX-20

The table below shows the parts of the drawings and of the illustrations and the arrangement number of the parts in the parts case.

PARTS NO.	PARTS NAME	Q'TY
A. MAIN TRANSMISSION ASSEMBLY		
A- 1	Transmission case A	1
2	Transmission case B	1
3	Clutch bell	1

Remarks:

The quantity and quality of the kits have been well checked and inspected before shipment. However, if you should find anything inconvenient, please immediately inform the head office or the shop, where you purchased, together with the parts number e.g. DZ-O-O ;

The specifications shall be subject to change without any prior notice.

PARTS NO.	PARTS NAME	Q'TY
A. MAIN TRANSMISSION ASSEMBLY		
A- 1	Transmission case A	1
2	Transmission case B	1
3	Clutch bell	1
4	1st shaft	1
5	Bevel pinion 14Z	1
6	626 ZZ	1
7	608 ZZ	1
8	M3 x 6 Cs	2
9	3 x 9 x 1 Fw	2
10	8 x 12 x 0.5 Fw	2
11	Helical gear with shaft	1
12	Bevel gear 24Z	1
13	Miter gear AB (R)	1
14	Brg. adaptor	1
15	626 ZZ	2
16	5 x 7 x 0.1 Fw	1
17	6 x 8 x 0.1 Fw	2
18	Helical main gear 49Z	1
19	Auto rotation case	1
20	Auto rotation drive shaft	1
21	Thrust bushing	2
22	HFL 1426	1
23	6901 ZZ	2
24	M3 x 8 Cs	4
25	12 x 18 x 0.5 FW	1
26	Counter housing	1

PARTS NO.	PARTS NAME	Q'TY
A- 27	Miter gear H (L)	1
28	1st tail shaft	1
29	Flexible joint	1
30	685 oP	1
31	685 ZZ	1
32	M2 x 6 Cs	4
33	M4 x 4 Ss	2
34	M3 x 10Cs	6
35	ø3 Fluted washer	6
36	M5 x 12 Hexagon bolt.	3
B. ENGINE MOUNT		
B- 1	Engine mount	3
2	Mount collar	4
3	Transmission receiver	2
4	M4 x 15 Cs	2
5	ø4 Fluted washer	2
6	M4 U nut	6
7	ø4 Fw	6
8	M4 x 20 Cs	6
9	M5 x 12 Cs	2
10	M5 x 20 Cs	4
11	Exhaust rubber	1
12	Exhaust pipe	1
13	M4 x 10 Cs	2
C. COLLECTIVE PITCH SYSTEM		
C- 1	L-type metallic lever	3
2	LF740	3
3	L740	3
4	Elevator torque lever	1
5	Collect pitch lever boss	1
6	Collect pitch lever	2
7	LF740	4
8	Elevator lever	2
9	Elevator shaft A	1
10	Elevator shaft B	1
11	M2.6 x 8 Cs	2
12	ø2.5 Fw	2
13	M2 x 12 Cs	2
14	ø5 Ball	2
15	M2 Nut	2
16	Lever collar E	2
17	Pitch lever joint	1
18	M2 x 8 PH	1
19	M2 x 10 PH	1
20	ø5 Ball	8
21	M2 x 10 PH	4
22	M2 Nut	10
23	Rod end	10
24	M2 x 12 PH	3
25	M2 x 16 Adjust rod	2
26	M2 x 50 Adjust rod	4
27	Brg. collar A	5
28	Brg. collar D	2
29	Aileron lever stopper	1
30	M3 x 3 Ss	1

PARTS NO.	PARTS NAME	Q'TY
D. ROTOR HEAD		
D- 1	Expert stabilizer blade	2
2	Stabilizer bar	2
3	Gimbal seesaw	1
4	Blade holder	2
5	Yoke	1
6	Brg. 10-15	2
7	Brg. 15-20	2
8	CRT 6-12	2
9	ø4 Quenched washer	2
10	ø4 Fw	2
11	Thrust collar	2
12	M4 x 25 Cs	2
13	Center hub	1
14	Radius arm	2
15	Mast block	1
16	Control arm	1
17	Pivot arm	1
18	Main mast	1
19	Swash boots	1
20	Swash upper plate	1
21	Swash lower plate	1
22	Swash inner ring A	1
23	Swash inner ring B	1
24	Brg. 20-25	1
25	SF-10	1
26	M2 x 6 PH	4
27	Swash lower lock	1
28	Bearing plate	1
29	6900	1
30	Mixing arm	2
31	Mixing arm holder	2
32	Seesaw Brg. holder	2
33	Gimbal shaft	1
34	LF 940	2
35	Yoke damper collar A	1
36	Yoke damper collar B	1
37	Yoke dust cap	2
38	HK0408	2
39	Gimbal shaft bushing	2
40	M2 x 60 Adjust rod	1
41	M2 x 90 Adjust rod	2
42	Mechanical case A-B	1
44	Radius arm holder	1
45	Radius arm A	2
46	Radius arm B	1
47	Radius arm C	1
48	2 x 11.8 Needle pin	3
49	Radius arm bushing	1
50	Pivot bolt A	2
51	Pivot arm collar	2
52	ø2 x 11.8 Needle pin	4
53	ø3 x 15.8 Needle pin	1
54	ø4 x 29.8 Needle pin	1
55	Damper rubber	1
56	Rod end	10
57	ø5 Ball	9
58	M4 x 4 Ss	3
59	M4 x 6 Ss	5
60	M2 x 5 PH	1
61	M2 x 6 PH	6
62	M2 x 8 PH	11
63	M2 x 14 PH	4
64	M2 x 15 PH	1
65	M3 x 10 PH	1
66	M3 x 16 Cs	5

PARTS NO.	PARTS NAME	Q'TY
D- 67	M3 x 20 Cs	1
68	M3 x 28 Cs	1
69	M4 x 30 Cs	2
70	ø2 Fw	7
71	4 x 8 x 0.5 Fw	2
72	ø3 Fw	4
73	M2 Nut	8
74	M3 Nut	1
75	M3 U nut	7
76	M4 U nut	4
77	M2 x 16 Rod screw	2
78	Moulded seat	1
79	Main rotor blade	2
80	Main rotor blade reinforcement plate (Upper)	1
81	Main rotor blade reinforcement plate (Lower)	1
82	Blade bush	2
E. TAIL SECTION		
E- 1	Tail rotor blade	2
2	Tail holder H	1
3	M3 x 5 Ss	2
4	Tail pitch lever	1
5	Tail gear box A	1
6	Tail gear box B	1
7	Miter gear H (R)	1
8	Miter gear H (L)	1
9	1st tail shaft	1
10	2nd tail shaft	1
11	3 x 5 Bs collar	1
12	Tail pitch rod	1
13	M2 x 10 PH	5
14	ø2 Fw	2
15	Brg. 685 oP	2
16	Brg. 685 ZZ	2
17	7 x 7 Bs collar	1
18	W-type tail blade holder R	2
19	W-type tail blade holder L	2
20	W-type tail pitch plate	1
21	W-type tail housing	1
22	Tail pitch stopper	2
23	3 x 5 Bs collar	1
24	Rod end	2
25	Tail pitch hinge	2
26	ø2 x 8.8 Needle pin	2
27	Flexible joint	1
28	Brg. LF3-6	2
29	Brg. SS3-9	2
30	Brg. CRT4-9	2
31	M4 x 4 Ss	2
32	ø5 Ball	2
33	M3 x 16 Cs	2
34	M2 x 10 PH	6
35	M2 Nut	6
36	M3 U nut	4
37	M3 x 3 Ss	2
38	3 x 6 x 0.5 Fw	2

PARTS NO.	PARTS NAME	Q'TY
F. LANDING GEAR ASSEMBLY		
F- 1	Shock absorbing rubber C	4
2	Skid cap	4
3	Skid receiver	4
4	Skid cap	2
5	Skid foot	2
6	Shock absorbing rubber mount plate	4
7	Shock absorbing rubber mount band	4
8	Landing gear band	4
9	M3 x 6 Cs	8
10	M4 x 25 Cs	4
11	M2 x 18PH	8
12	M2 x 5 Ts	8
13	M2 Nut	8
14	M4 U nut	4
15	ø4 Fw	4
G. BODY		
G- 1	Body	1
2	Body stern section	1
3	Side door R	1
4	Side door L	1
5	Body frame	1 set
6	Front door R	1
7	Front door L	1
8	Window	1
9	Seat	2
10	Lower cover	1
11	Instrument panel	1
12	Accessories	1
13	Transcribing mark	1
14	Meter M	1
15	Wire sticker	4
16	Drawing	1
17	Instruction manual	1
18	Parts list	1
19	Questionnaire sheet	1
20	Leaflet of radio control	1
21	Tail skid	1
22	Door hinge A R	2
23	Door hinge A L	2
24	Door hinge B R	2
25	Door hinge B L	2
26	2 x 5 Rivet	4
27	Door handle	4
28	Door shaft	4
29	Door spring	4
30	Door handle bearing	4
31	ø 1.6 x 30 Sup	4
32	Side door guide (A)	4
33	Side door guide (B)	2
34	Side door rail	2
35	Guide rail bent core	1
36	Front door lock fittings	2
37	Pilot seat stay (Large)	2
38	Pilot seat stay (Small)	4
39	ø4 Band	12
40	Wire net	4
41	Stern antenna	2
42	ø 1.6 x 150 Sup	2
43	Fuel tank 300cc	1 set
44	Fuel tank band	1
45	Hobby oil	1

PARTS NO.	PARTS NAME	Q'TY
G- 46	M1.4 x 5 PH	140
47	M1.4 Nut	140
48	M1.7 x 5 PH	34
49	M1.7 Nut	34
50	M2 x 6 PH	20
51	M2 Nut	20
52	M2 x 5 Ts	3
53	M2.6 x 6 Ts	17
54	M2.7 x 8 Wood screw	12
55	M3 x 10 Wood screw	4
56	M2 x 20 PH	2
57	Control lever grip	2
58	Control lever	2
59	Control lever bearing	2
60	M2 x 10 PH	2
61	L-type wrench 1.5	1
62	L-type wrench 2.0	1
63	L-type wrench 2.5	1
64	L-type wrench 3.0	1
65	L-type wrench 4.0	1
H. LINKAGE		
H- 1	M2 x 130 Reinforcement adjust rod	3
2	M2 x 80 Reinforcement	1
3	Rod end	11
4	ø5 Ball	7
5	M2 x 8 PH	5
6	M2 x 10 PH	2
7	M2 Nut	7
8	M4 x 12 Cs	1
9	L-type metallic lever	1
10	LF 740	1
11	L 740	1
12	Brg. collar A	1
13	Adjust joint B	2
14	Tail drive shaft	1
15	Tail drive pipe	1
16	Rudder control shaft	1
17	Rudder control pipe	1
18	Rod adjuster	1
19	Servo mount	6
20	M3 x 20 Cs	4
21	M3 U nut	4
22	ø3 Fw	4
23	M3 x 12 PH	12
24	M3 U nut	12