

*MORLEY  
HELICOPTERS*

*HUGHES 300*

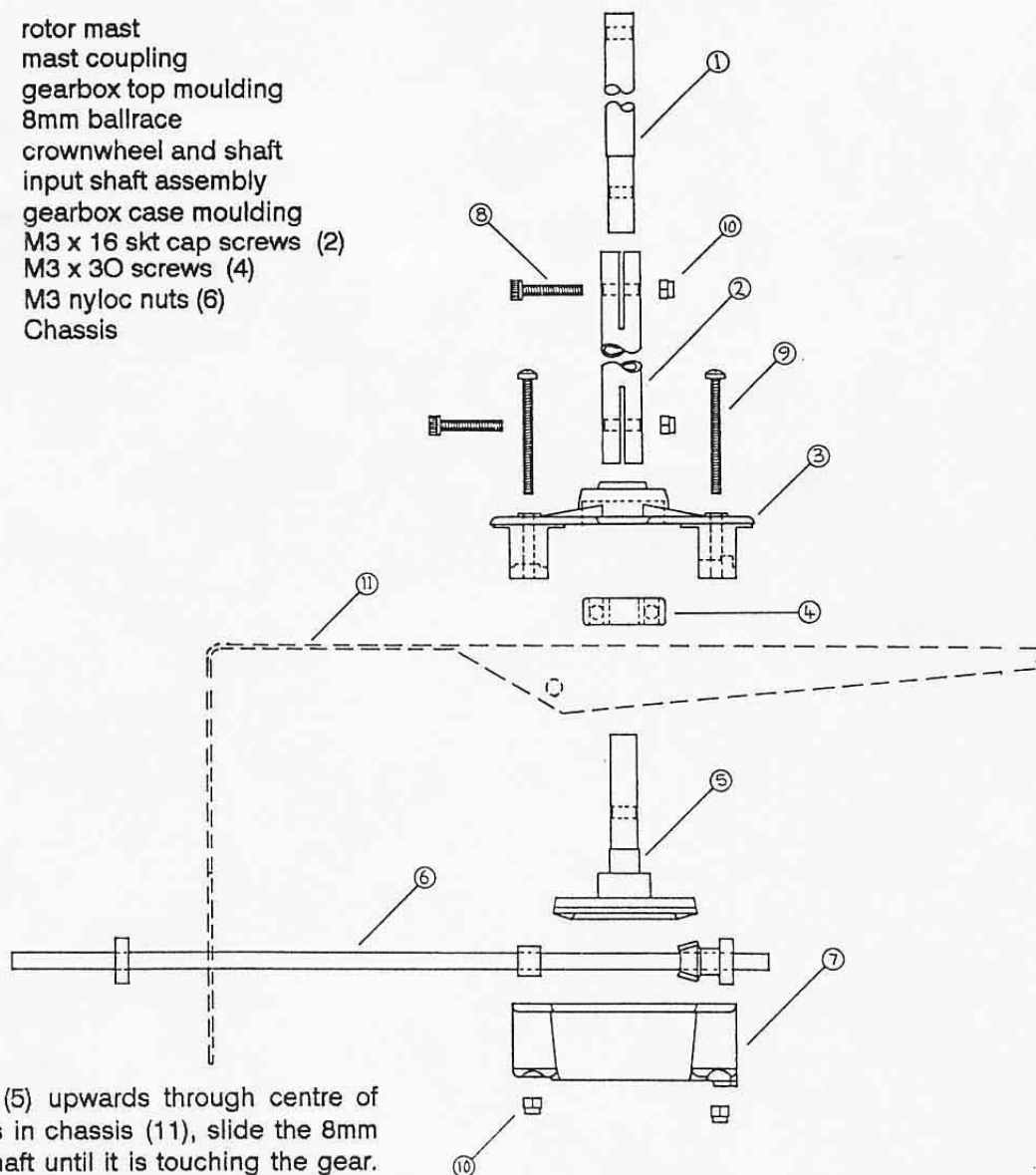
*INSTRUCTION  
MANUAL*

*PLEASE READ CAREFULLY  
BEFORE ASSEMBLY*

STOCK CODE      Diagram key

OMG/MAST	1	rotor mast
OMG/CPL	2	mast coupling
OMG/C1	3	gearbox top moulding
OMG/BB	4	8mm ballrace
OMG/CWS	5	crownwheel and shaft
OMG/ISA	6	input shaft assembly
OMG/C2	7	gearbox case moulding
M3x16SC	8	M3 x 16 skt cap screws (2)
M3x30	9	M3 x 30 screws (4)
M3NLN	10	M3 nyloc nuts (6)
300CH/BASE	11	Chassis

MAIN GEARBOX



With crownwheel shaft (5) upwards through centre of the three adjacent holes in chassis (11), slide the 8mm ballrace (4) down the shaft until it is touching the gear. The gearbox top moulding (3) is also slid down the shaft (5), over the ballrace (4), and through the chassis (11). Make sure the (larger) recess in the moulding for the input ballrace is at the rear.

➤ **IMPORTANT:-** Pack the gearbox with a light grease i.e:- fill the base.

Place the input shaft assembly (6) into position and pull the lower gearbox case (7) into position with four M3 x 30 screws (9) and M3 nyloc nuts (10). Tighten fully. Do not worry if the gearbox appears 'tight' at first as it will soon bed in with use. Do not be tempted to slacken off the screws to obtain free rotation. Assemble the mast (1) to the gearbox using the coupling (2) with M3x16 socket cap screws (8) and M3 nyloc nuts (10).

➤ After 30 minutes of running check and re-tighten the screws if necessary.

N.B.

Please note, a sachet of the correct type of gearbox lubricant is now supplied in your kit. This grease should also be used for the hex couplings where indicated on page 11.

STOCK CODE	Diagram key	
0MR/EM	1	engine mount mouldings
0MR/FAN	2	fan
0MR/FD	3	fan duct
0MR/FDE	4	fan duct extension
0MR/FLY	5	flywheel
0MR/DISC	5A	cork disc
0MR/P14T	6	drive pulley, 14T
0MR/SP	7	starter pulley
300CH/BASE	8	chassis
300CH/SEAT	9	seat back
300CH/ST115	10	115mm stay tube (2)
300CH/ST105	11	105mm stay tube (2)
300CH/ST115	12	115mm stay tube (2)
300CH/ST120	13	120mm stay tube (1)
300CH/ST250	14	250mm stay tube (2)
300CH/CS	15	crossmember (2)
300CH/SS	16	spacers (2)

## ENGINE MOUNT &amp; CHASSIS

300CH/ENDS	17	nylon stay ends pack
300CH/TOP	18	mast oilite bearing holder
0MG/OIL	19	5/16 oilite bearing
M4X8	20	M4x8 screws (6)
M4N	21	M4 nuts
M4X30	22	M4x30 screws (4)
ST3	23	No8x3/8 self tappers (11)
M3X10	24	M3x10 screws (3)
M3X20	25	M3x20 screws (3)
M3N	26	M3 nuts (6)
ST1	27	No2x3/8 self tapper
M6SPW	28	M6 shake proof washers
M3x20SC	29	M3 x 20 skt cap screws (4)
M3NLN	30	M3 ny;loc nuts (5)
M3X25	31	M3x25 screws (2)
M4SW	32	M4 star washers (4)

It may be necessary to ream out the hole in the flywheel (5) to suit your engine, to check this first fit the flywheel on backwards to ensure the face meets the prop driver face.

Temporarily fit the cork disc (5A) followed by the flywheel (5) on engine crank, next place the engine between the mounts (1) and place so that a 1mm gap exists between flywheel rear face and the top front of the mounts. Mark the engine mounts (1) through the 4 crankcase mount holes then drill 3mm holes (it may be necessary to cut away one of the vertical stiffeners). Secure motor using four M3x20mm socket cap screws (29) and M3 nyloc nuts (30). Fit a brass ball from the controls (pack 5) to the engine throttle lever and adjust lever so that when half open it is horizontal and rearwards.

Place a crossmember (15) in position at the bottom of the chassis (8) from behind, now put in place the engine mount assembly and secure with four No 8x3/8 self tappers (23). If using a helicopter engine (with heat sink head), at this point ensure that there is clearance between the head and gearbox input shaft, if not it may be necessary to remove material from the top right hand side of the cylinder fins. Then fit the spacers (16) and remaining crossmember again using self tappers (23). Check that the glow plug is accessible from above - elongate the access hole if required, a remote glow plug socket is a useful item and should be fitted now.

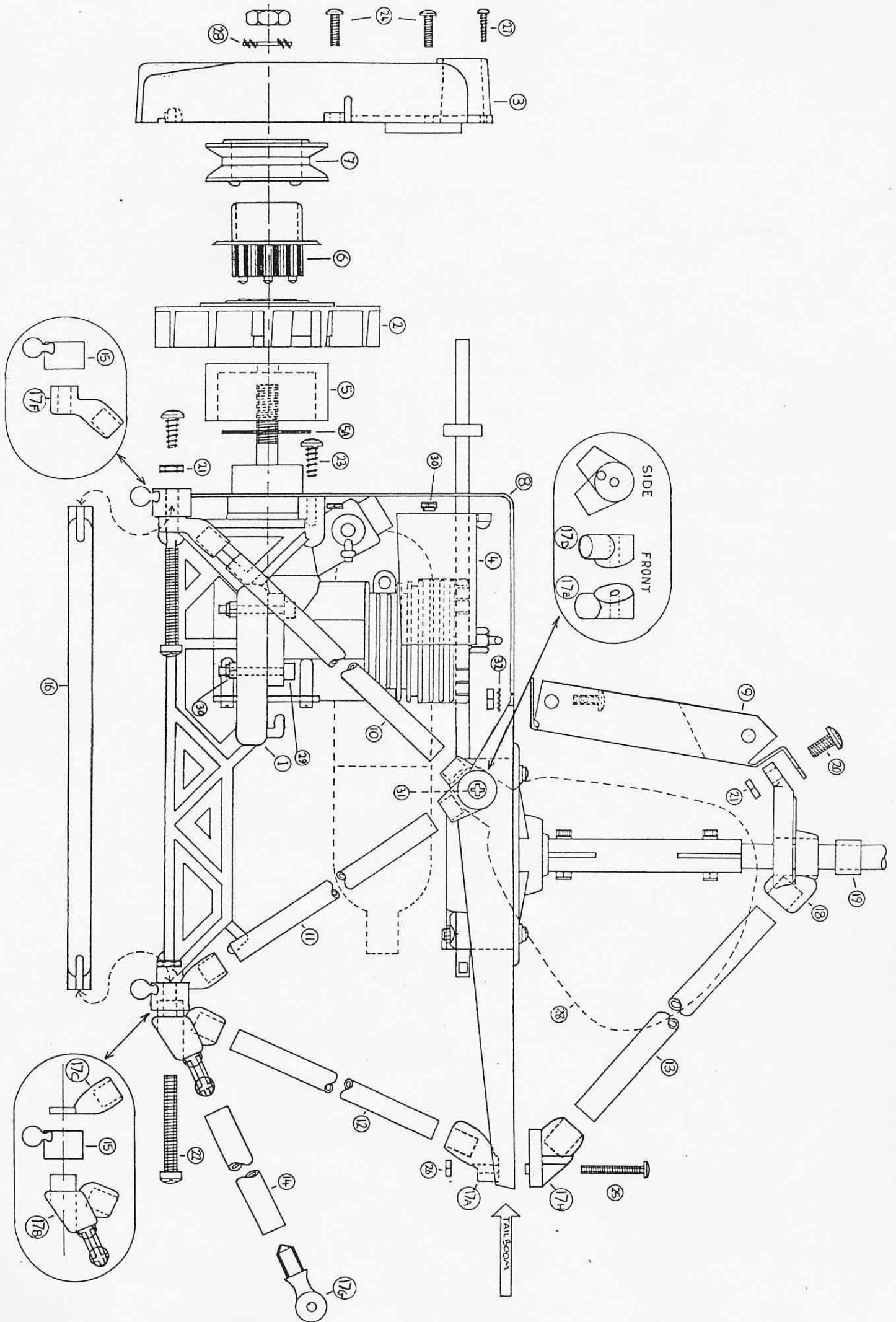
Refit cork disc, flywheel, fan (2), and 14T pulley (6) and secure with M6 shake proof washer (28) and prop nut. Affix starter pulley (7) to 14T pulley using epoxy or cyano. Fit fan duct (3) to the front of the assembly using M3x10 screws (24) and M3 nuts (26) with nyloc nut (30) on top screw. Fit the moulded duct extension (4) at the rear, holding in place with a small self tapping screw (27). The extension may be

cut away if necessary to clear the cylinder head. Next fit the seat back (9) and the oilite holder (18) using M4 x 8 screws (20), M4 nuts (21) with M4 star washers (32) under the chassis.

Borrow the boom end (1) from the tail boom (pack 8) and temporarily bolt in place with stay end (17a). Next install (17b) & (17c) - dry fit stay tubes (12) in between these ends and then check that the chassis top is parallel with the bottom rail of the engine mount. If all is correct then the stay tubes can be glued in place. For the best results it is recommended that all stay tubes are roughened up on the areas where they will be glued into the stay ends. This can best be done by hand turning each end inside a strip of course emery paper.

To glue the ends onto the tubes we recommend using epoxy, either fast setting or if you have the patience slow setting epoxy will make a stronger joint. Next dry fit stay tubes (10) & (11) with stay ends (17c,d,e&f). Note that (17d) & (17e) are reversed on the right hand side.

Score the inside of the boom support tubes (14) with a sharp screwdriver, glue in stay ends (17g), temporarily bolt both tubes together through stay ends (17g) and then glue this assembly on to the inclined dowels of stay ends (17b). Finally dry fit the stay tube (13) between stay end (17h) and the mast top bearing housing (18). Note - ensure that the oilite bearing (19) will slide freely into the cavity of part (18), it may be necessary to tweak the top fold of the seat back (9) to achieve this. When the correct fit is found, glue stay tube into place. When that is dry, glue the oilite bearing into its cavity, taking care not to let glue get onto the mast. This can be done with cyano (superglue) or a smear of epoxy glue. The exposed ends of the M4x30 screws are used during installation of the undercarriage.



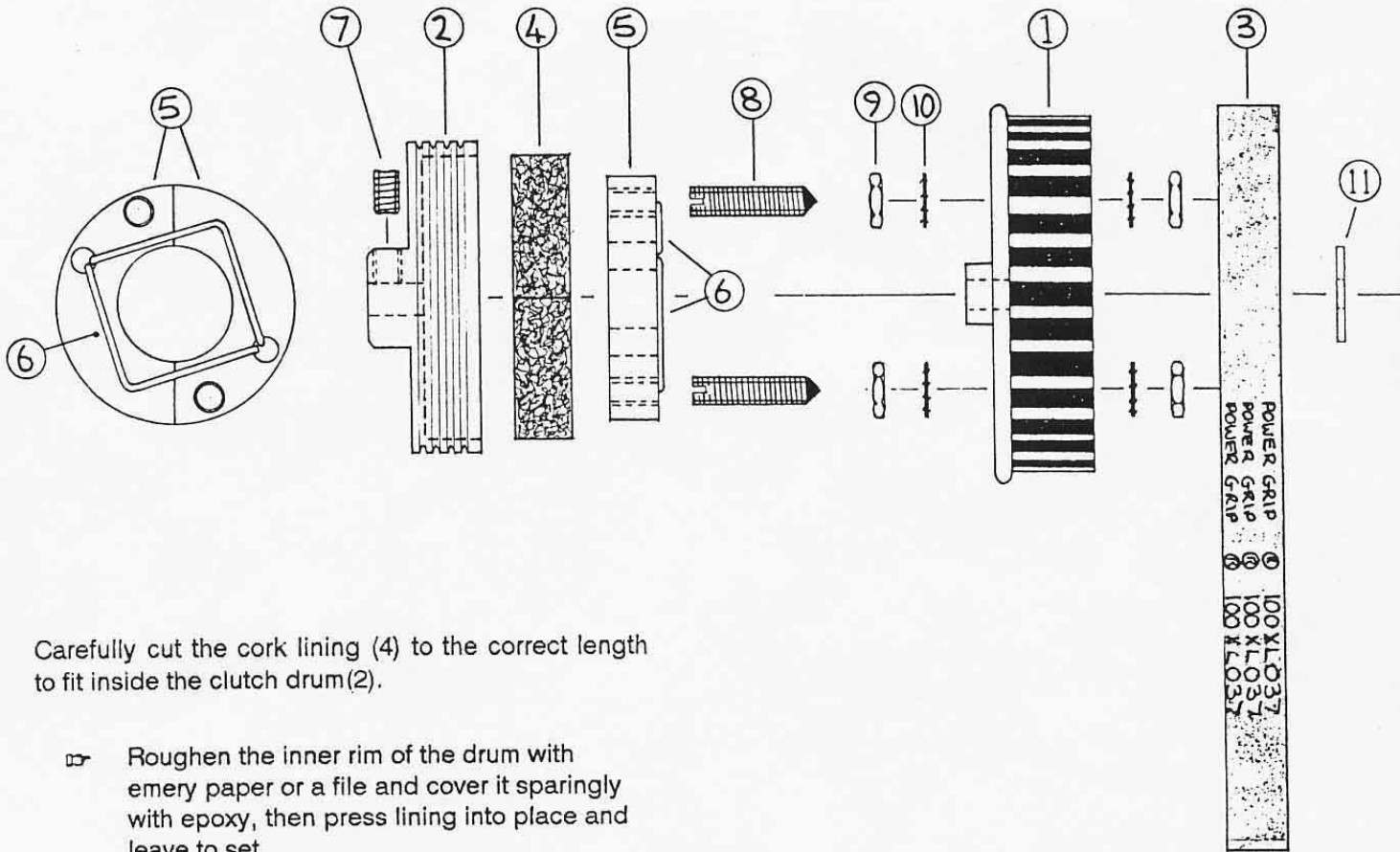
# PACK 3

STOCK  
CODE

Diagram  
key

0CL/LP	1	large pulley, 32T
0CL/DRUM	2	clutch drum
0CL/XL100	3	drive belt, 100mm
0CL/LINER	4	cork liner
0CL/SHOES	5	clutch shoes (2)
0CL/SPRINGS	6	clutch springs (2)
M4X6SS	7	M4x6 socket set screw
M4X18TS	8	M4x18 threaded stud (2)
M4N	9	M4 nuts (4)
M4SW	10	M4 star washers (4)
3/16W	11	3/16 I/D washer set screw key

# CLUTCH



Carefully cut the cork lining (4) to the correct length to fit inside the clutch drum (2).

- Roughen the inner rim of the drum with emery paper or a file and cover it sparingly with epoxy, then press lining into place and leave to set.

Thread the M4x18 threaded studs (8) into the clutch shoes (5) with the slotted end just level with the surface of the shoe. Place an M4 nut (9) at the rear half a turn clear of the shoe, then locate the clutch springs (6) in the clutch shoes and add M4 star washers (10) onto the studs.

Place the assembly into the large pulley (1) and secure with M4 star washers (10) and M4 nuts (9). Adhesive tape across the shoes is a help while doing this to keep the springs in place.

- Check that the shoes are able to swing outwards slightly, due to centrifugal force when the engine is running while being strongly retained by the springs when stationary.

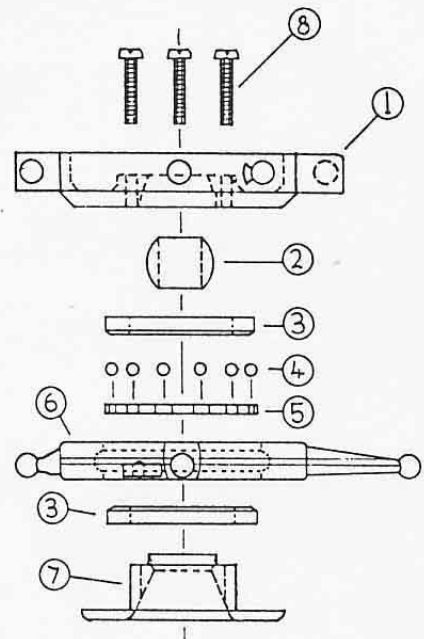
Place the 3/16 washer (11) over the input shaft, then fit the drive belt (3) round the engine pulley and slide the clutch assembly onto the input shaft positioning the drive belt over the 32T pulley followed by the clutch drum. Tighten the clutch drum M4x6 socket set screw (7) against the flat on the input shaft.

## PACK 4

STOCK CODE	Diagram key	
0SP/TOP	1	top moulding
0SP/BALL	2	centre ball
0SP/RING	3	alloy rings (2)
0SP/CAGE/BRG	4	ball bearings (12)
0SP/CAGE/BRG	5	bearing cage
0SP/CENTRE	6	centre plate
0SP/BOTTOM	7	bottom moulding
M2X12	8	M2x12 screws (4)

☞ This unit is preassembled and should be placed over the rotor mast with the long arm facing to the rear ready for connection to the control system.

## SWASHPLATE



## PACK 5

STOCK CODE	Diagram key	
0CON/CA	3	cradle arms (2)
0CON/BELL	4	bell cranks (2)
0CON/TMNT	5	twin servo mount
0CON/SSSM	6	side servo mount (3)
0CON/MNT	7	bell crank mount blocks
0CON/SH75	8	75mm bell crank shaft
0CON/SH30	9	30mm bell crank shaft
ACC/BJ	10	ball ends (29)
M4X16	11	M4x16 screws (2)
M4SW	12	M4 star washers (2)
M4N	13	M4 nuts (4)
M3X16	14	M3x16 screws (2)

## CONTROLS

M3N	15	M3 nuts (10)
M2X12	16	M2x12 screws (18)
ACC/BJ	17	brass balls (18)
M2N	18	M2 nuts (22)
M3X8	19	M3x8 screws (8)
M3SW	20	M3 star washers (10)
0CON/STUD	21	pushrod connector
0CON/ROD37		37mm pushrod (4)
0CON/ROD50		50mm threaded stud
0CON/ROD65		65mm pushrod (4)
0CON/ROD100		100mm pushrod
0CON/ROD135		135mm pushrod

Fit one of the straight bellcranks (4) on the 30mm shaft (9) between the mounting blocks (7), with brass balls fitted to outside (right) edge using M2x12 screws (16) and M2 nuts (18). The assembly is fitted through the hole on the right of the chassis, with the blocks positioned under the chassis and held by two M3 x 16 screws (14) and nuts (15). This operates collective pitch control as in the diagram.

Fit all the brass balls with M2x12 screws (16) and M2 nuts (18) to the remaining three bellcranks as shown in the diagrams, using threadlock on the nuts.

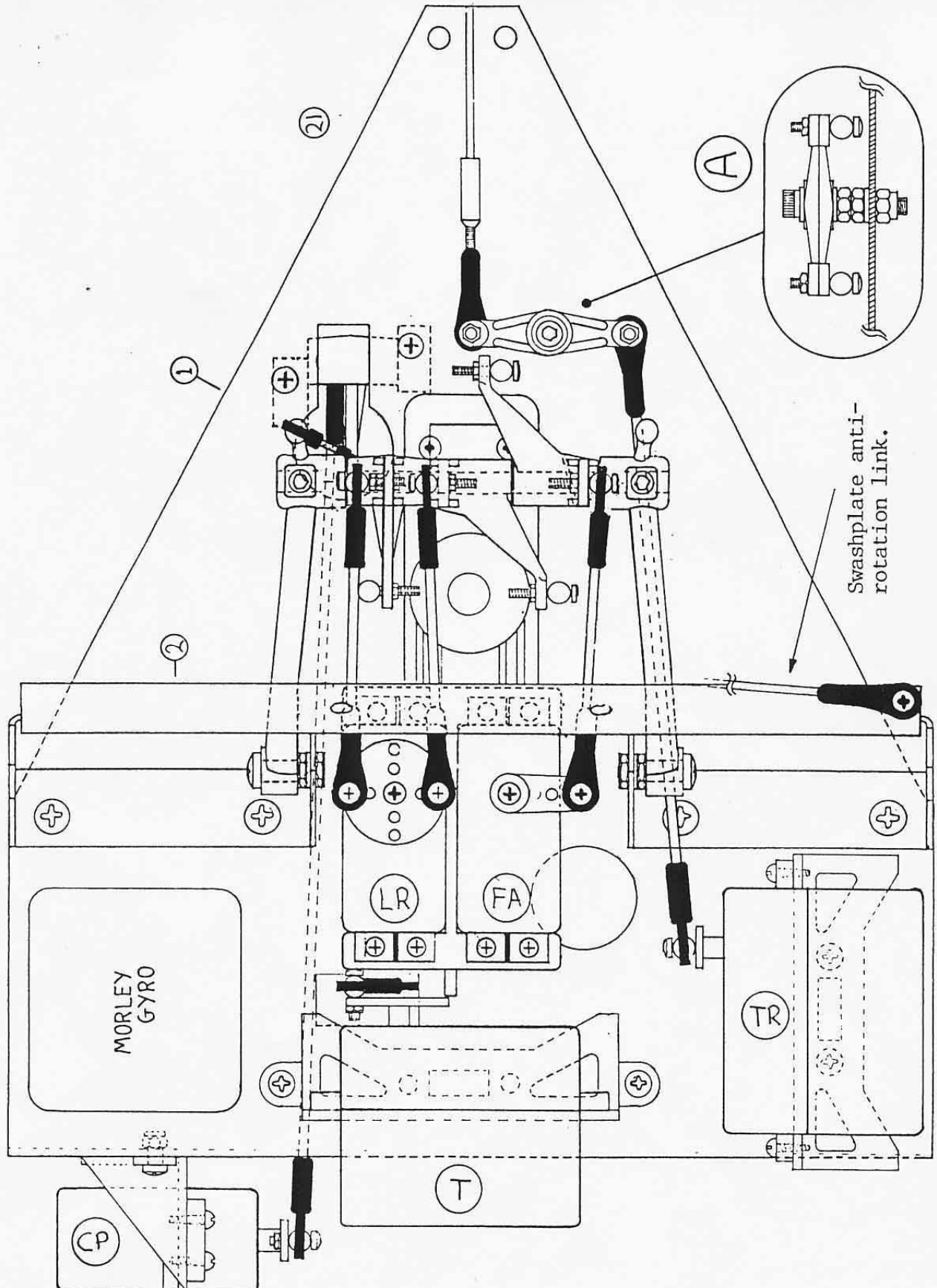
☞ The top ball on the straight bellcrank should have an extra nut to give clearance. Lightly grease the 75mm shaft (8) and slide the bellcranks on to it followed by the cradle arms (3) at each end.

Fit the cradle arms to the seat back (2) using an

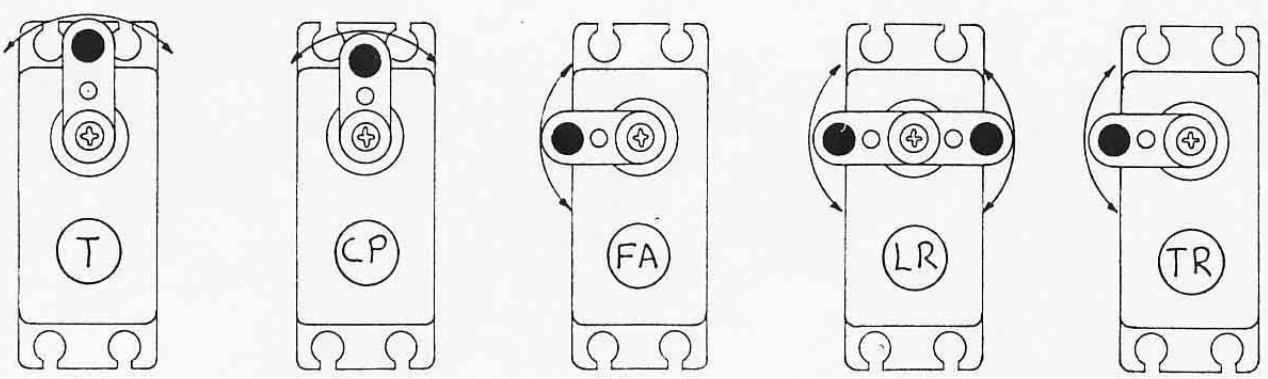
M4 x 16 screw (11) and an M4 nut (13) on each side of the metal and an M4 star washer (12). Tighten the grub screw at the end of each cradle arm so it begins to bite on the 75mm shaft, then give half a turn more being careful not to overtighten. The assembly must be smooth in operation without being loose.

Fit moulded ball ends (10) to each end of three 65mm rods, and connect the bellcranks to the swashplate. The overall tip to tip length of the rods and ends should be approx. 80mm. The rear rod needs to be cranked so that it clears the mast support tube. Two ball ends, end to end on a 12mm length of threaded stud connect the collective pitch bellcrank to the cradle assembly, tip to tip approx 41mm. As the collective bellcrank is moved it raises or lowers the cradle & its bellcranks, which in turn move the vertical position of the swashplate on the main mast.





Swashplate anti-rotation link.



THROTTLE  
10-12 mm

COLLECTIVE PITCH  
10 mm

FORE/AFT CYCLIC  
12 mm

LEFT/RIGHT CYCLIC  
10 mm EACH SIDE

TAIL ROTOR  
10 mm



- All servos are attached to their relative mounts via the screws provide with the radio system.

## CONTROLS

### SERVO POSITIONS

#### Collective Pitch Servo:-

Fit the servo to its mount (6) then to the chassis with M3x8 screws (19), M3 nuts (15) and M3 star washers (20). Next connect a 135mm pushrod with two ball ends fitted (10) (overall length 169mm), between the servo and the vertical arm of the collective bellcrank. The length of the servo output arm can now be determined. with the throttle/collective stick at centre the output arm should be vertical and the horizontal arm of the bellcrank should just begin to appear through the chassis keyhole slot (see DIAG). At low throttle/collective the crank should be vertical.

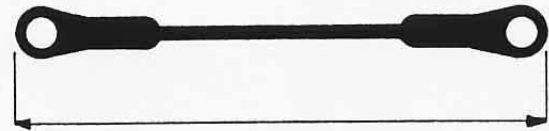
#### Tail Rotor Servo:-

Take the 180 degree bell crank assembly (see DIAG A) and attach the brass balls (17) with M2x12 screws (16) and M2 nuts (18), then secure to the chassis as shown - free movement is essential.

Take a side mount (6) and cut off the outer mounting lugs, before attaching the servo to the mount insert two M3x8 screws (19) into the inner lugs and hold with a spot of cyano. Now screw the servo in place and bolt the mount to the chassis using M3 nuts (15) and M3 star washers (20). Take the 100mm pushrod and fit a ball end (10) to each end (overall length 125mm) and connect to the servo arm and 180 degree bell crank.

#### Cyclic Servos:-

Take the twin servo mount (5) and fit both servos as shown (note sloping end of the mount is towards the rear as are the output arms). Place this assembly on the chassis and push back until it contacts the gearbox top moulding, then position so that the outer brass ball on the left/right cyclic servo clears the seat back inner flange, hold in place and mark through the chassis from underneath onto the base of the mount. Remove the fore/aft cyclic servo and drill 3mm holes, fit the mount to the chassis with M3x8 screws (19), M3 nuts (15) and M3 star washers (20) - remount the servo. Take three 37mm pushrods and fix to each end a ball end (10) (overall length 70mm) and connect between servo arms and vertical arms of the bellcranks.



OVERALL ROD LENGTHS ARE MEASURED TIP-TIP.

#### Throttle Servo:-

Screw the servo to the mount (6) then to the chassis with M3x8 screws (19), M3 nuts (15) and M3 star washers (20). Make a pushrod (overall length 75mm) from a 37mm pushrod and two ball ends (10) and connect the servo to the engine throttle arm. It is very important that the total servo movement matches the mechanical limits of the throttle barrel. Make sure that at full stick position the barrel is wide open without stalling the servo, and at low stick the barrel is fully closed again without stalling the servo. Adjustments can be made either on the servo output arm length or the throttle arm to achieve this.

- Looking from the right hand side the engine throttle arm will turn clockwise to close.

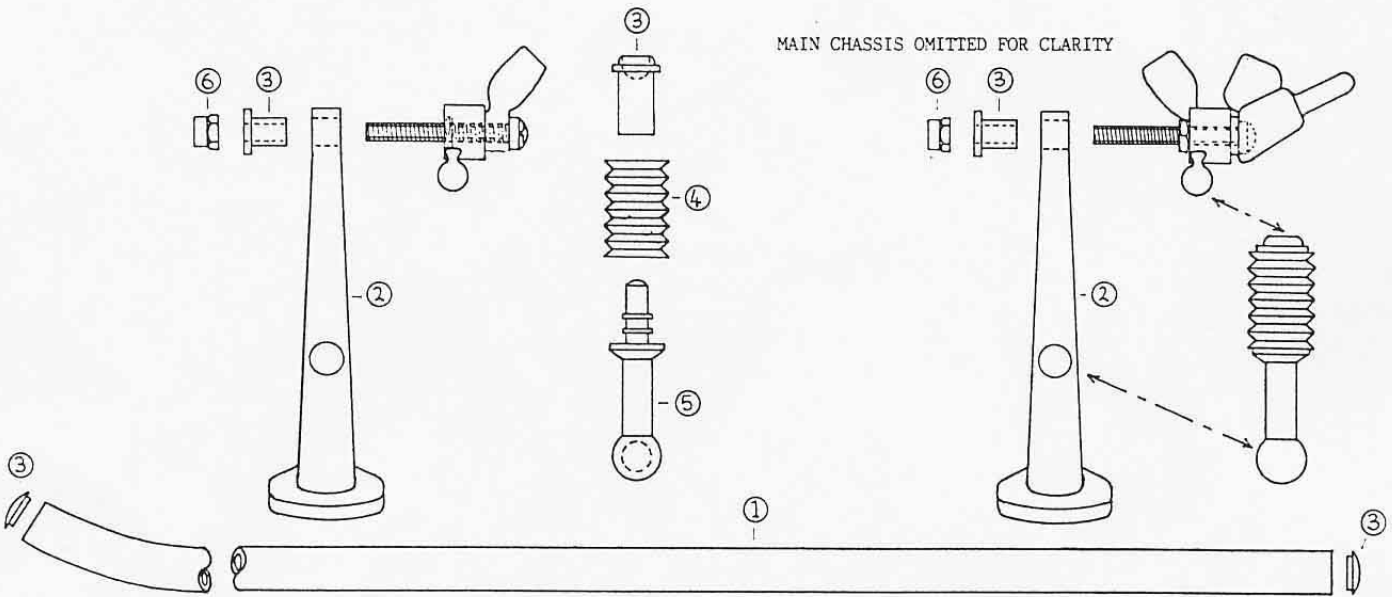
Finally make up the swashplate anti-rotation link from a 65mm pushrod and two ball ends (10) (overall length 87mm). Fit a brass ball (17) to the hole in the seat back top fold (left hand side) using an M2x12 screw (16) and M2 nut (18), place pushrod between here and the front ball of the lower swashplate ring.

This completes the servo fitting, you now need to mount the receiver, gyro, battery and switch. The gyro (optional part GRYO/GOLD recommended) can be fitted on the right side of the chassis floor, and the receiver can be mounted on top of the tail rotor servo both using 3mm thick double sided servo tape. The battery can either be fitted behind the collective pitch servo with double sided servo tape and secured with a tie-wrap or rubber band or if your battery is too big to fit there, then it can be mounted on the cabin floor again using double sided servo tape. The switch can be fitted in a convenient place for operation once the cabin is in place.

STOCK CODE      Diagram key

300UC/SKIDS	1	skids (2)
300UC/LEG	2	leg moulding (4)
300UC/TOP	3	bearing/top/skid end (4)
300UC/DAMP	4	damper (4)
300UC/SKT	5	nyloc socket strut (4)
M4NLN	6	M4 nyloc nuts (4)

UNDERCARRIAGE



Hot water or a hair drier can be used to soften the plastic leg mouldings (2) if it is difficult to apply them over the skids (1).

Glue the skid end caps (3) to the end of the skids using cyano.

Assemble the bearings (3) and legs (2) onto the M4x30 screws (ref CHASSIS DIAG) and secure with M4 nyloc nuts (6). Attach socket struts (5) to the legs and to the chassis via the dampers (4) and the tops (3) as shown above.

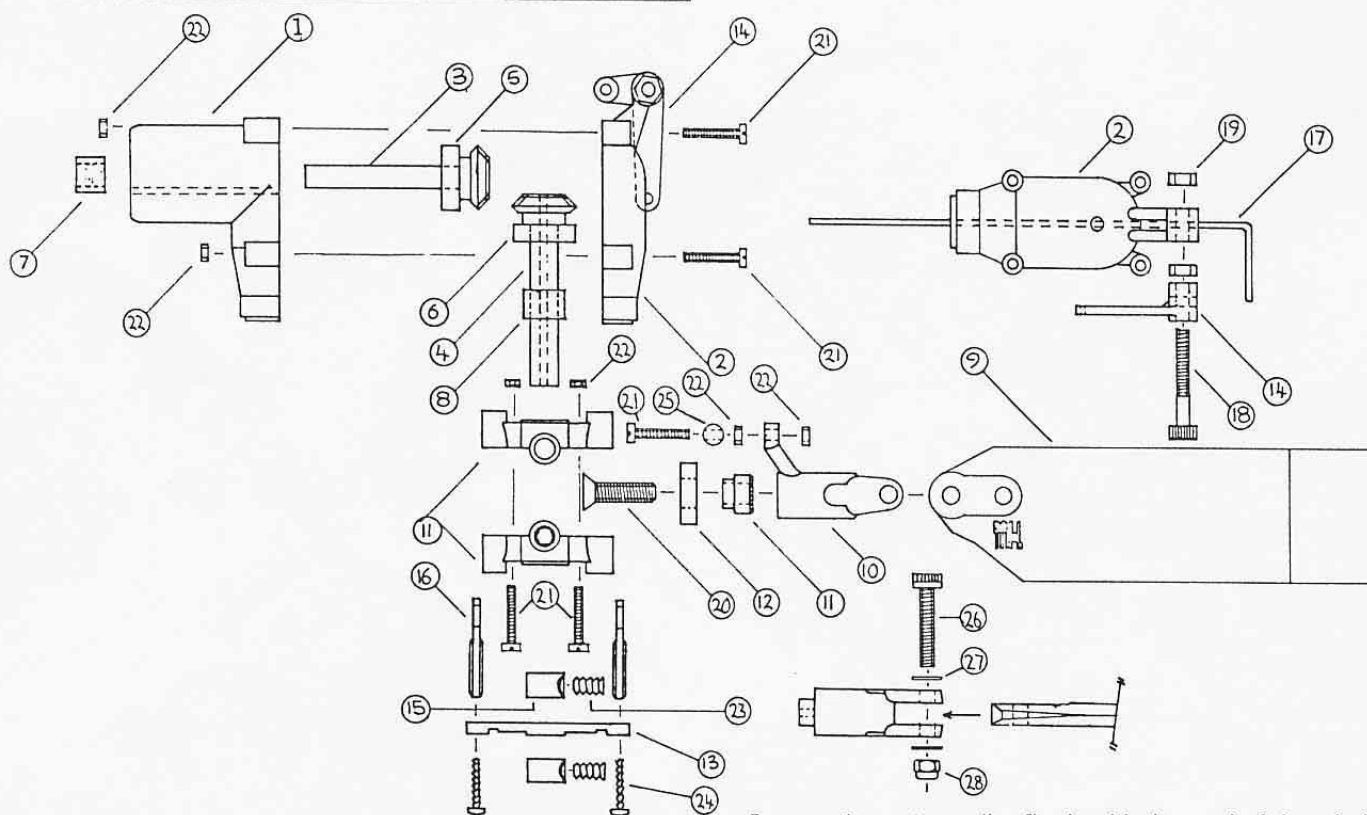
STOCK  
CODE

Diagram  
key

TAIL ROTOR

OTR/C1	1	main gearcase	OTR/CLR	15	control rod collar (2)
OTR/C2	2	gearcase back	ACC/BJ	16	ball end (2)
OTR/GIN	3	input gear and shaft	OTR/WIRE	17	pitch control wire
OTR/GOUT	4	output gear and shaft	M3X20SCP	18	M3x20 skt cap p/shank
OTR/BB1	5	3/16 ballrace	M3N	19	M3 nuts (2)
OTR/BB2	6	6mm ballrace	OTR/CS	20	2ba c/sunk screws (2)
OTR/OIL1	7	3/16 oilite bearing	M2X12	21	M2x12 screws (10)
OTR/OIL2	8	6mm oilite bearing	M2N	22	M2 nuts (14)
OTR/SYMBL	9	tail rotor blades (2)	M4X6SS	23	M4x6 skt set screws (2)
OTR/BM	10	blade mount (2)	ST1	24	No2x3/8 self tappers (2)
OTR/HUB	11	1/2 hub and spacer (2)	ACC/BJ	25	brass balls (2)
OTR/BB2	12	6mm ballrace (2)	M3X16SC	26	M3x16 skt cap screws (2)
OTR/YOKE	13	pitch control yoke	M3FW	27	M3 flat washers (4)
OTR/CRANK	14	tailrotor bellcrank	M3NLN	28	M3 nyloc nuts (2)

➤ Gearbox and hub are pre-assembled.



➤ During assembly, check with the diagram to ensure correct positioning of the parts.

Fit a brass ball (25) to each blade mount (10) with M2x12 screws (21) and an M2 nut (22) either side of the mount.

Push the pitch control wire (17) through the gearbox, then mount the tailrotor bellcrank (14) - (locating the cranked end of the pitch control wire in the hole on the short arm of the bellcrank) - using the M3x20 socket cap plain shank screw (18) and two M3 nuts (19), adjust the position of these nuts to get a friction and slop free movement.

Fit a ball end (16) to each end of the pitch control yoke (13) with a No2x3/8 self tapping screw (24).

Push one of the control rod collars (15) onto the pitch control wire (17) followed by the yoke assembly and the remaining collar.

Secure the outer collar flush with the end of the pitch control wire using an M4x6 socket set screw (23), then move the inner collar outwards to sandwich the yoke assembly between both collars (secure inner collar in same manner).

The yoke (13) should not be trapped but should spin freely when the ball ends (16) are popped over the brass balls (25) - (lubricate this assembly with a spot of grease).

The tail rotor blades (9) are fitted to the blade mounts (10) using M3x16 socket cap screws (26), M3 flat washers (27) and M3 nyloc nuts (28). These should be tightened to give some friction so the blades do not fall under their own weight.

When viewing the helicopter from the left hand side the tail rotor rotates in a clockwise direction with the control arms on the leading edge.

STOCK CODE      Diagram key

300TB/END	1	end moulding
300TB/ATUBE	2	alloy boom tube
300TB/ACL	3	boom clamp
300TB/ACL	4	inner tube support
300TB/TAIL	5	tail plane
300TB/FIN	6	dagger fin bracket
300TB/FIN	7	dagger fin
300TB/SKID	8	skid moulding
300TB/LOCK	9	gearbox lock saddle
300TB/CL	10	8ba x 100mm wire clamp

## H300 TAILBOOM

300TB/B140	11	140mm brass skid tube
ACC/HEX	12	hex. couplings (2)
M4X6SS	13	M4 x 6 skt set screws (6)
8BAN	14	8ba nuts (2)
16GWIRE	15	16 g drive wire
ACC/NAV	16	dummy navigation light
300TB/B430	17	430mm drive tube
300TB/B250	18	250mm control tube
18GWIRE	19	18 g control wire
ST	20	No2x1/4 self tappers (2)

- **IMPORTANT:-** follow the correct sequence of assembly.

Glue the dagger fin bracket (6) into the tailboom (2) with epoxy, then drill two 2mm holes to take the No2x1/4 self tappers (20), fit the screws before the epoxy dries, then glue the dagger fin (7) into the bracket (6) with cyano.

Insert the 430mm brass tube (17) into the lower hole of the end moulding (1) and the 250mm brass tube (18) into the upper hole, then slide the inner tube support (4) onto both tubes (17 through the centre, 18 through the outer hole). Both tubes should protrude approx 1mm through the end moulding (1) and the inner tube support (4) should be 5mm from the rear of the 250mm brass tube (18).

Take this assembly, and viewed from behind twist the inner tube support in a anti-clockwise direction until tubes 17 & 18 come into contact, this will position the 250mm brass tube (18) below and to the left of the 430mm brass tube (17). Without disturbing their positions glue the tubes to the end moulding (1) and the inner tube support (4) with epoxy, also apply epoxy to where the tubes touch.

- Place to one side to dry.

Insert the 18G wire (19) into the boom (2) and through the bottom hole in the dagger fin bracket (6), likewise with the 16G wire (15) but through the top hole. Push both wires (15&19) until they exit from the front, then slide the inner tube support/end moulding assembly (now fully dry) into the tailboom (2) from the front at the same time locating the 16G wire (15) into the 430mm tube (17) and the 18G wire in the 250mm tube (18), continue to push the assembly in using the 16G wire (15) to locate the 430mm tube (17) into the middle hole of the dagger fin bracket (6), apply epoxy to the end moulding (1) before finally pushing home.

- Ensure that the end moulding bolt flange is at 90 degrees to the dagger fin (7) when viewed end on.

Without removing the wires (15&19), push one of the male couplings (12) over the rear end of the 16G wire (15), then put a 90 degree bend in the wire approx 2mm long and pull the coupling back over the bend into the recess, securing in place with two M4x6 socket set screws (13). Also put a 90 degree bend in the 18G wire (19) about 5mm long.

Taking the pre-assembled tailrotor gearbox, place the bent end of the 18G wire (19) through the long arm of the bellcrank (from above), also place one of the female couplings (12) onto the input shaft using an M4x6 socket set screw (13).

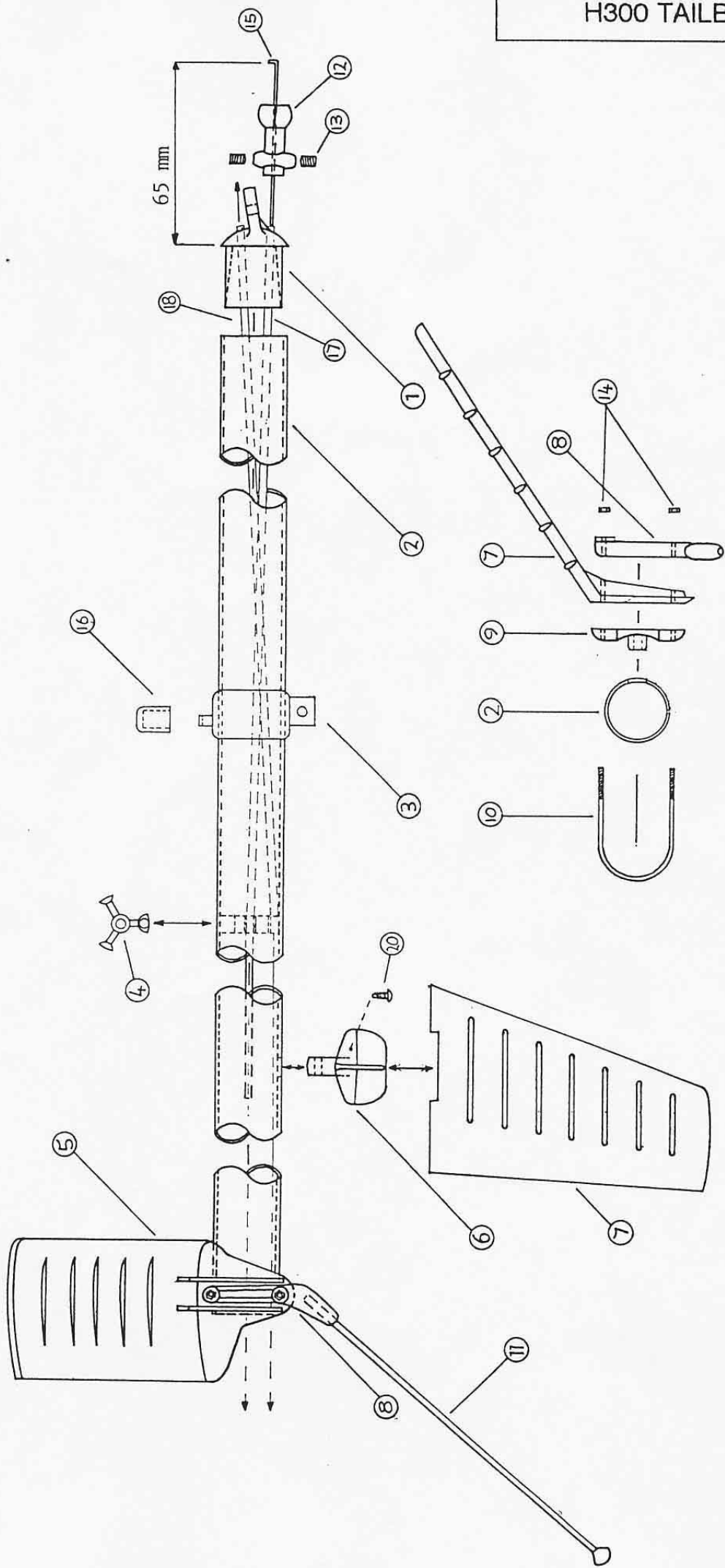
Place the gearbox into the tailboom (2), lining the hole in the boom with the one in the gearbox whilst engaging the couplings at the same time. Secure the whole unit in place using the wire clamp (10), lock saddle (9), tail plan (5), skid moulding (8) and two 8ba nuts (14).

The second male coupling (12) slides over the front end of the 16G wire (15) with a 90 degree bend placed 65mm from the end of the boom (see DIAG) and secured as before (make sure the hex coupling at the tailrotor end is fully home before bending).

The remaining female coupling (12) is fitted to the main gearbox input shaft with the last M4x6 socket set screw (13).

- **IMPORTANT:-** Lubricate couplings with plenty of grease, failure to do so will result in overheating and failure.

H300 TAILBOOM



## PACK 9

## ROTORHEAD

STOCK CODE	Diagram Key	
ORH/PLATE	1	alloy head plate
ORH/BBM	2	blade & bearing mounts
ORH/TP	3	top plate moulding
ORH/MT	4	mast top moulding
ORH/RUBS	5	teeter rubbers
ORH/FBZZ	6	flybar zig-zag
ORH/FBOA	7	flybar operating arms
ORH/FB	8	flyblades
ORH/FBAR	9	flybar
ORH/BUT	10	head button
ORH/OIL	11	3mm oilite bearings
ORH/LINK	12	double ended links
ORH/BB	13	6mm ballraces
OSP/MIX/DRI	14	small mixer arms
" " "	15	large mixer arms
" " "	16	mixer slider fork

### Fasteners from

#### M2

6xM2x12  
6xM2 nuts  
4xbrass balls

#### M3

6xM3x16 SC  
2xM3x20 PS  
2xM3x20 SC  
4xM3x25 SC  
4xM3x30 SC  
12xM3 NLN

#### M4

2xM4x30 SC  
2xM4 NLN

### Diagram A.

Before commencing assembly of the rotorhead ensure that the 'TOP' marking on the alloy headplate (1) is uppermost.

Lightly grease the bearings (13) then fit the bearing and blade mounts (2) over them, fitting the two M3x16 socket caps into the recesses. Insert two M3x25, two M3x30 socket cap screws and nyloc nuts, taking care not to overtighten them as this will cause binding on the bearings.

Clamp the incidence arm ends together with an M2x12 screw and nut as tightly as possible to prevent the M3x16 from moving. Thread on a small mixer arm (14) onto each of the protruding screws leaving them at least one full turn clear of the boss (these must be free to move).

### Diagram B.

Bolt both mix/dri arms (15) to the slide fork (16) using M3x20 socket cap plain shank screws. Ensure correct orientation i.e:- fork faces up and arms pivot freely without slop.

Slip this assembly over the mast and connect the arms to the swashplate balls on the upper ring (refer to COMPLETED HEAD DIAGRAM).

### Diagram C.

Sandwich the headplate between the mast top moulding (4), teeter rubbers (5) and top moulding (3), holding together with M3x16 socket cap screws and nyloc nuts. Make sure the nuts are pulled home and the rubbers are evenly and firmly clamped but not distorted.

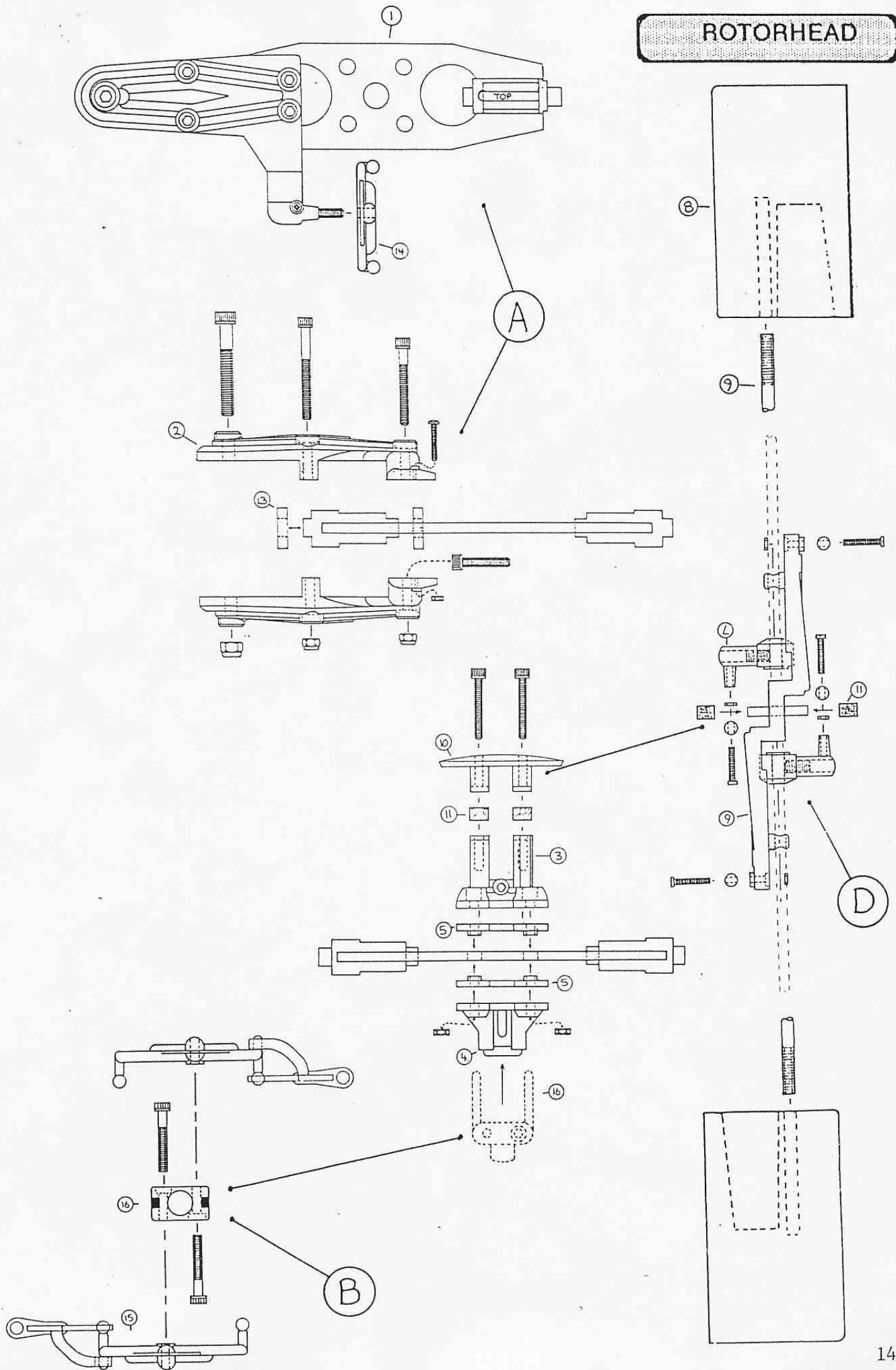
Fit the assembly on the mast and secure with a single M3x20 socket cap screw through the top moulding and the hole in the mast.

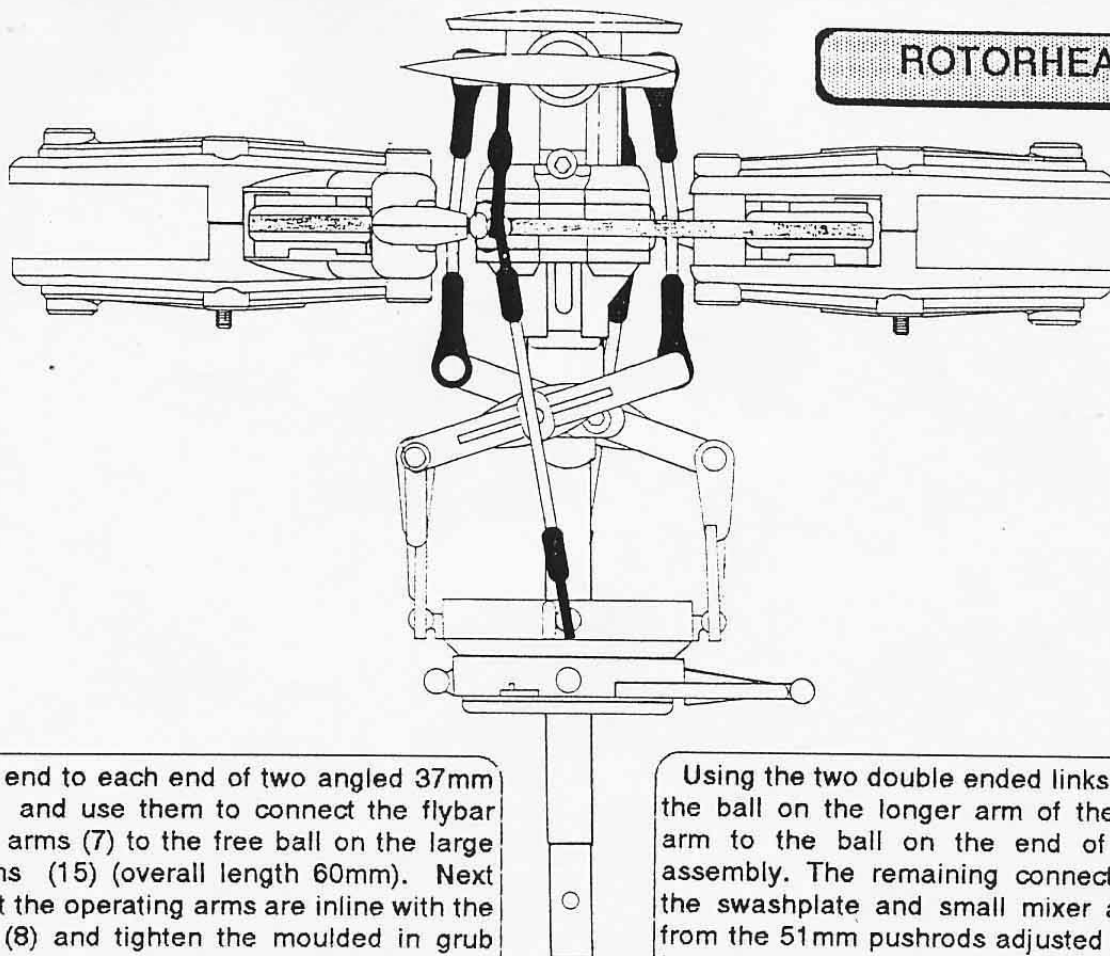
### Diagram D.

Fit a brass ball to each end of the zig-zag (6) using M2x12 screws and nuts, also to the stub on each flybar operating arm (7) (making sure the M2 nut goes under the brass ball). Pass the flybar (9) through the zig-zag threading on the flybar operating arms as shown. The flyblades (8) are fitted to the flybar by screwing them on to the threaded ends until they reach the end stops.

Slide the two oilite bearings (11) over the small central shaft moulded into the zig-zag then place on the pillars on the top moulding. Carefully position the head button (10) over the bearings and secure with two M3x20 socket caps (do not overtighten)

# ROTORHEAD





**ROTORHEAD**

Fit a ball end to each end of two angled 37mm pushrods and use them to connect the flybar operating arms (7) to the free ball on the large mixer arms (15) (overall length 60mm). Next check that the operating arms are inline with the flyblades (8) and tighten the moulded in grub screw (ensuring the flybar is centrally placed in the zig-zag).

Using the two double ended links (12) connect the ball on the longer arm of the short mixer arm to the ball on the end of the zig-zag assembly. The remaining connection between the swashplate and small mixer arm is made from the 51mm pushrods adjusted to an overall length of 66mm.

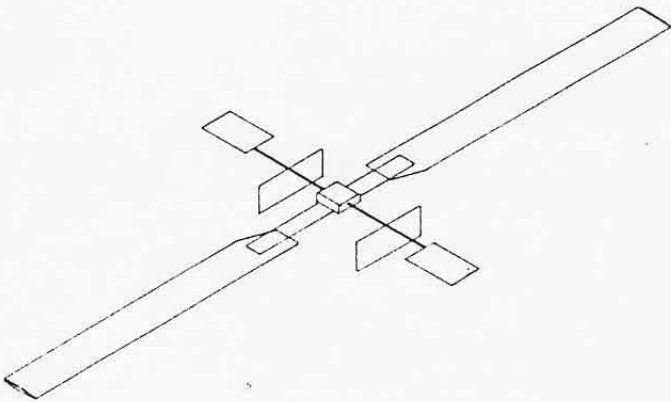
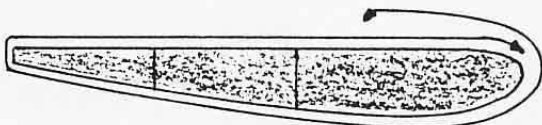
**MAIN BLADES**

Covering.

First lightly sand the blades with a fine grade paper to a smooth finish, then paint the root and tip sections followed by covering the long parallel section with the fablon supplied as to the direction shown below. When completed press a brass bush into each of the 6mm holes in the blade roots, these act as blade pivot bearings. Fit the blades to the head using M4x30 socket cap screws and M4 nyloc nuts (the blades must be held firmly and evenly but should not pivot under thier own weight).

Balancing.

Place the completed rotor head and blade assembly across the jaws of a vice or two glass turnblers supported by the flybar as shown below. If the blades are level at rest then all is ok, however, if the one blade is higher then it must be weighted to bring it level with the other. The best way to do this is to cut a strip of vinyl tape (optional part ACC/GLOW) and place it on the blade tip and trim until balance is correct, then wrap around securly.



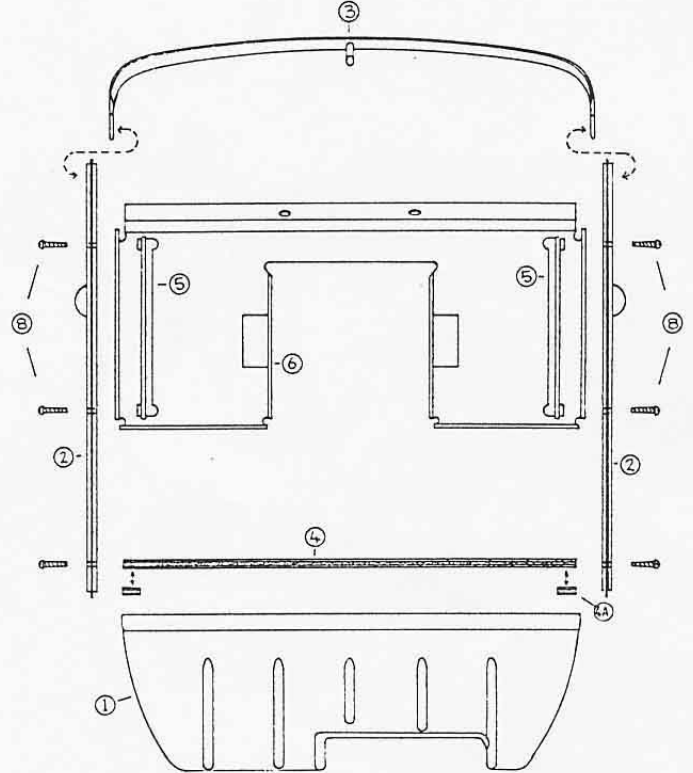
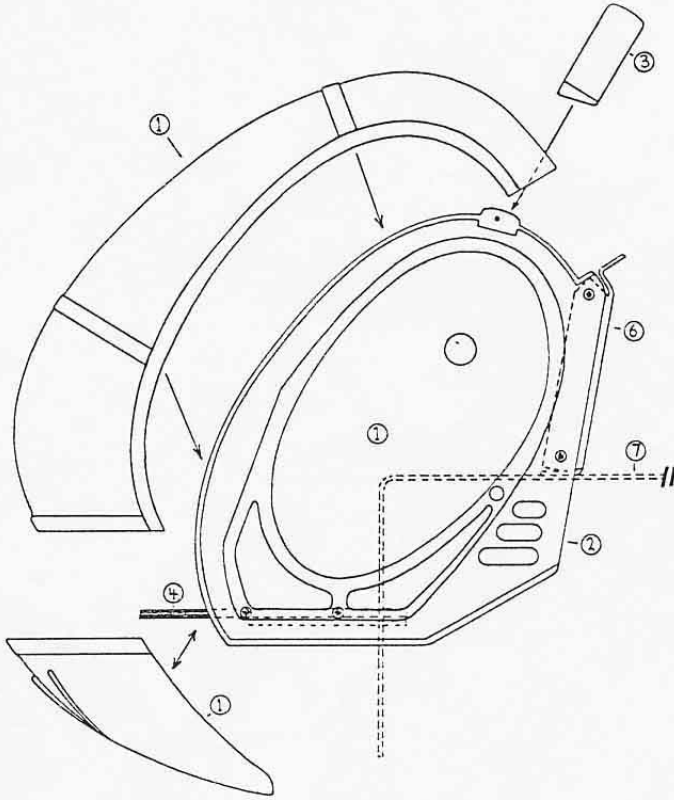


STOCK  
CODE

Diagram  
key

300CAB/SHT	1	clear canopy sheet
300CAB/SIDE	2	cabin side (2)
300CAB/BAR	3	roll bar
300CAB/FLR	4	cabin floor
300CAB/CAT	5	catch/screw anchor (2)
ST1	8	No2x3/8 self tappers (8)
300CAB/TK		dummy fuel tank (2)

CABIN



When cutting (with a sharp pair of scissors) the clear mouldings (1), it is essential that this operation is carried out in a warm room to avoid unwanted splitting.

Glue the screw anchors (5) to the inner edges of the seat back (6) using cyano. Fix the cabin sides (2) to the seat back using No2x3/8 self tappers (8) into the screw anchors (5).

The ply reinforcing strips (4A) are glued (cyano) onto the edges of the cabin floor (4) 1mm from the outer edge. The floor can now be painted, once dry it can be screwed and glued (epoxy) between the cabin sides (2) using the remaining No2x3/8 self tappers (8).

- The floor should be dry fitted so holes can be marked and a 1mm pilot hole drilled to avoid splitting.

Cut the canopy apron (1) and glue in place with impact adhesive, noting the portion near the engine pulley is cut away to allow access for the starter belt (optional part ACC/B5 recommended).

Cut out the canopy bowl (1) using the marked lines on the top and bottom, but for the sides cut 5mm clear of the marked line (this area is used to glue the bowl to the sides using impact adhesive). The bottom edge of the bowl should overlap the top of the apron by about 6mm.

Assemble the dummy tanks with the vac-formed sides and the 410mmx35mm strip from the clear mouldings (1) cut into two equal lengths. The clear moulding should be trimmed to approx 2.5mm from the edge. Both these can then be painted along with the rollbar (3) before final assembly.

Cut out the clear door/windows (1) using the sides (2) as a guide then glue into place using impact adhesive.

The dummy console (1) can now be assembled/painted and stuck in place in the middle of the floor (4). The rollbar is glue on the out side of the sides (2) as shown above and the dummy fuel tanks are screwed in place on the stay tube fittings (see CHASSIS DIAG dotted outline).

## SETTING UP

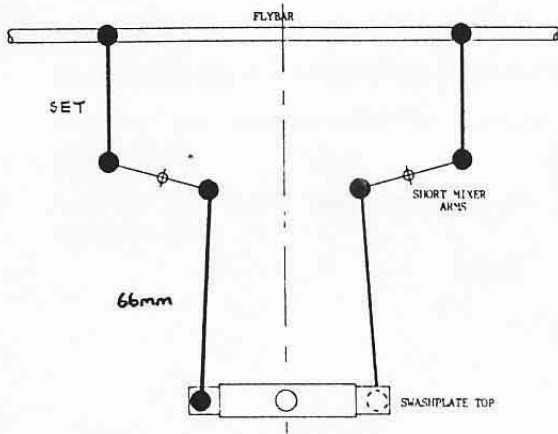
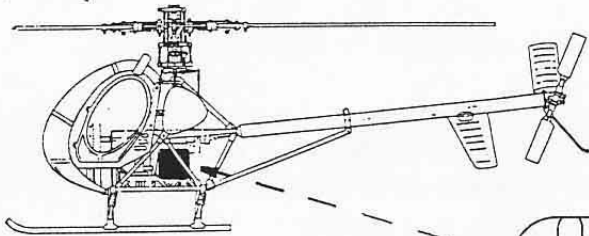


DIAGRAM 1

Assembly of fuel tank.



Assemble the fuel tank as in the diagram and fasten on the seating behind the engine with light rubber bands. These must not be tight or engine vibration will cause foaming of the fuel.

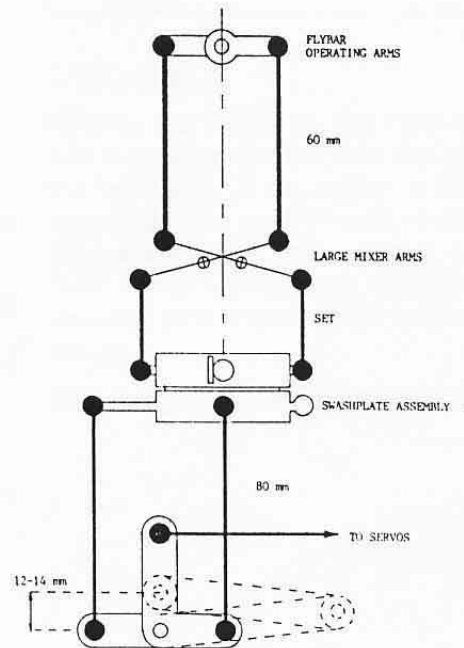


DIAGRAM 2

### THROTTLE.

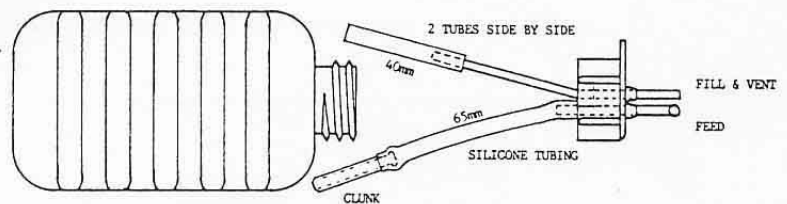
Check again that the throttle servo drives the throttle arm to its extremes without stalling and that the throttle arm rotates clockwise to close.

### COLLECTIVE PITCH.

Select half or centre stick position (servo arm should be vertical) so the crank is just showing through the 'keyhole' slot (adjust pushrod to achieve this position). Move stick to bottom position then to the top, the travel of the ball on the vertical arm of the bellcrank should be 18mm, if more or less adjust servo arm length to correct.

### CYCLIC SERVOS.

First select centre stick & trim on collective pitch and centre trims on both cyclics, then adjust the three rods between the servos and the bellcranks until the swashplate is perfectly level. Next adjust the bellcrank to swashplate rods, with the stick at bottom position the swashplate should just (only just) contact the mast oilite bearing holder, and moving the stick to the top the swashplate should travel 13mm (measured on the mast).



Next check the swashplate to mixer lever rods are 65mm and short mixer levers to flybar zig-zag are 39mm (see DIAG 1), also the rods from the long mixer arms to the flybar operating arms are 60mm (see DIAG 2).

### TAIL ROTOR.

With the tailrotor stick and trim at neutral the servo arm should be vertical, adjust the rod until the 180 bellcrank assembly is straight across the chassis.

Now cut the 18G wire leaving 45mm protruding from the front of the boom, next solder the threaded end connector from the controls (pack 5) and fit a ball end. Adjust the ball end so that the bellcrank at the tail is at right angles to the boom.

With all controls at centre positions adjust the swashplate anti-rotation link so that the long arm of the swashplate lower ring is in line with the tailboom.

## SETTING UP

### FINAL CHECKS.

Left cyclic tilts the swashplate to the left.

Back cyclic tilts the swashplate backwards.

Pushing the throttle/collective forward raises the swashplate.

Left tail pulls the tailrotor bellcrank forward to increase pitch.

### GYRO CHECK.

Holding the model by the rotor head in one hand and supporting the tail with the other (one finger on the bellcrank), if the model is swung to the right - clockwise - the gyro should cause the servo to pull the crank forward, giving left to compensate for the right swing. Increasing collective pitch will also increase (left) tailrotor pitch to counteract the added torque.

ATS check (if available) on your transmitter.

If this is your first model helicopter, at this stage do not be tempted to fly it yourself. We strongly advise that you either return to the retailer where purchased or contact your local model flying club, who can put you in touch with a member that can help you trim the model and explain how to get you off the ground.

We wish you every success with your helicopter.