

**MORLEY
HELICOPTERS
LTD.**

**MXB BUILDING
MANUAL.**

**PLEASE READ CAREFULLY
BEFORE ASSEMBLY.**

PACK 1

MAIN GEARBOX

STOCK CODE	Diagram Key	
MXB/CHAN	1	MXB channel (Pack 3)
OMG/MAST	2	rotor mast
OMG/CPL	3	mast coupling
OMG/C1	4	gearbox top
OMG/BB	5	8mm ballrace
OMG/CWS	6	crownwheel & shaft
OMG/ISA	7	input shaft
OMG/C2	8	gearbox bottom
MXBTB/IDLER	9	tailrotor idler

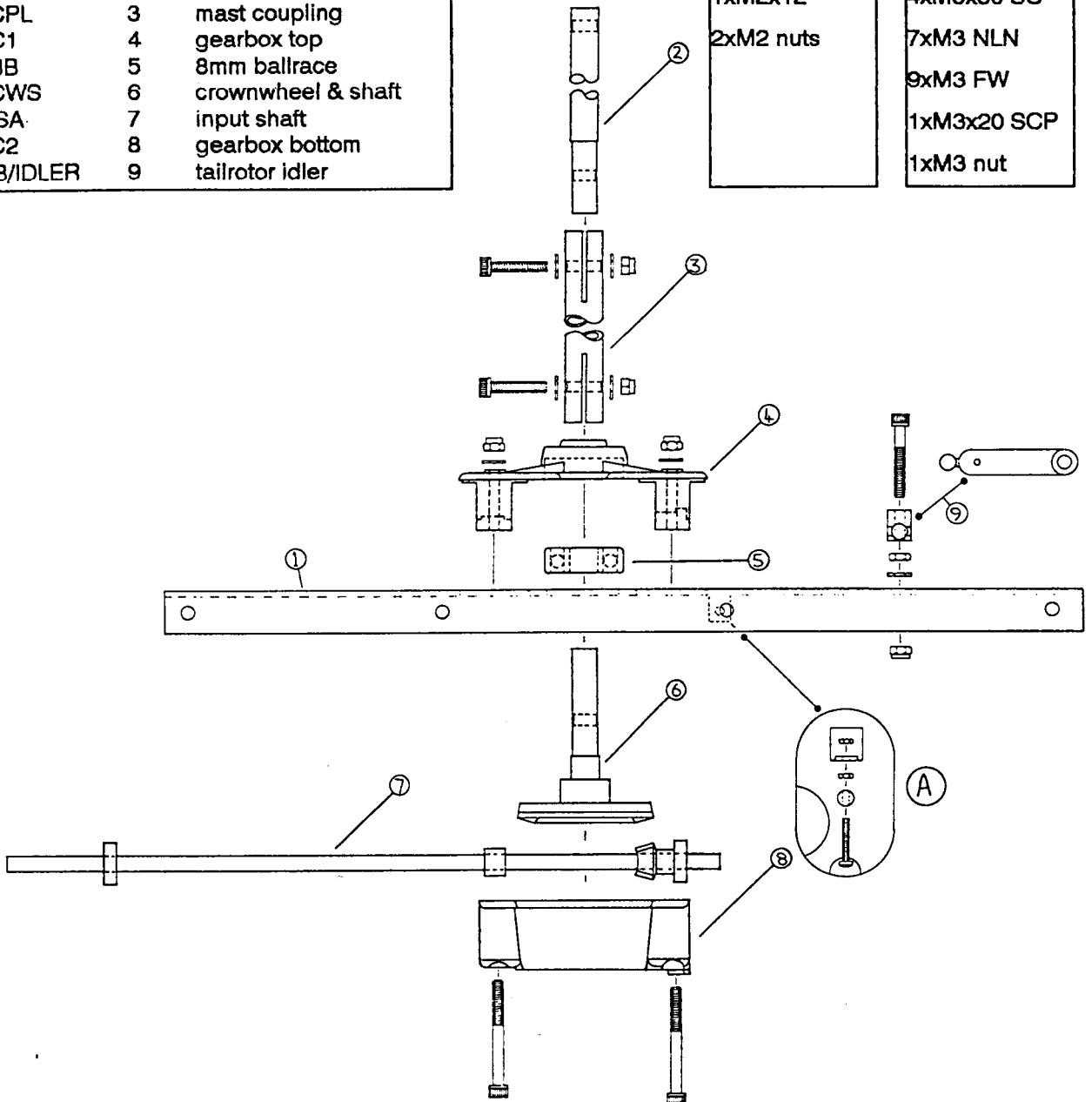
Fasteners from :-

Pack 11

1x brass ball
1x M2x12
2x M2 nuts

Pack 12

2x M3x16 SC
4x M3x30 SC
7x M3 NLN
9x M3 FW
1x M3x20 SCP
1x M3 nut



Fit a brass ball to the folded tab on the MXB channel (1) (see DIAG A) using an M2x12 screw and M2 nuts. With the crownwheel shaft (6) upwards through the centre large hole of the channel (flanges downwards), slide the 8mm ballrace (5) down the shaft until seated. The gearbox top (4) also slides over the shaft, ballrace and through the chassis. Make sure the small ballrace seating in the moulding is at the rear to take the input shaft (7).

Fill the gearcase bottom (8) with a light grease up to the crownwheel level. Place the input shaft (7) into

position and pull the bottom case into place using M3x30 socket cap screws, M3 flat washers and M3 nyloc nuts. Do not worry if the gearbox appears tight at first as it will soon bed in. Do not be tempted to slacken off the screws to obtain free rotation. Assemble the mast (2) to the gearbox using the coupling (3) and secure with M3x16 socket cap screws, M3 flat washers and M3 nyloc nuts. Fit the tailrotor idler (9) using an M3x20 socket cap plain shank screw, M3 nut, M3 flat washer and M3 nyloc nut (to be fitted in the hole nearest the gearbox). Adjust the nuts accordingly to obtain a friction and slop free movement

PLEASE NOTE.

YOUR MXB MOTOR MOUNT HAS BEEN SUPPLIED
READY DRILLED TO SUIT EITHER THE IRVINE
OR O.S. MOTORS. IN EACH CASE THE .40 IS
THE SAME SIZE AS THE .46 IN RELATION TO
LENGTH AND WIDTH ETC.
IF YOU ARE USING A DIFFERENT MAKE OF
MOTOR IT WILL BE NECESSARY TO RE-DRILL
OR SLOT THE MOUNTING HOLES.

PACK 2

ENGINE MOUNT & CHASSIS

STOCK CODE	Diagram key	
MXB/MOUNT	1	engine mount
OMR/FLY	2	flywheel
OMR/FAN	3	fan
OMR/P16T	4	16 tooth pulley
OMR/SP	5	starter pulley
OMR/FD	6	fan duct
OMR/FDB	7	fan duct backplate
OMR/DISC	8	cork disc

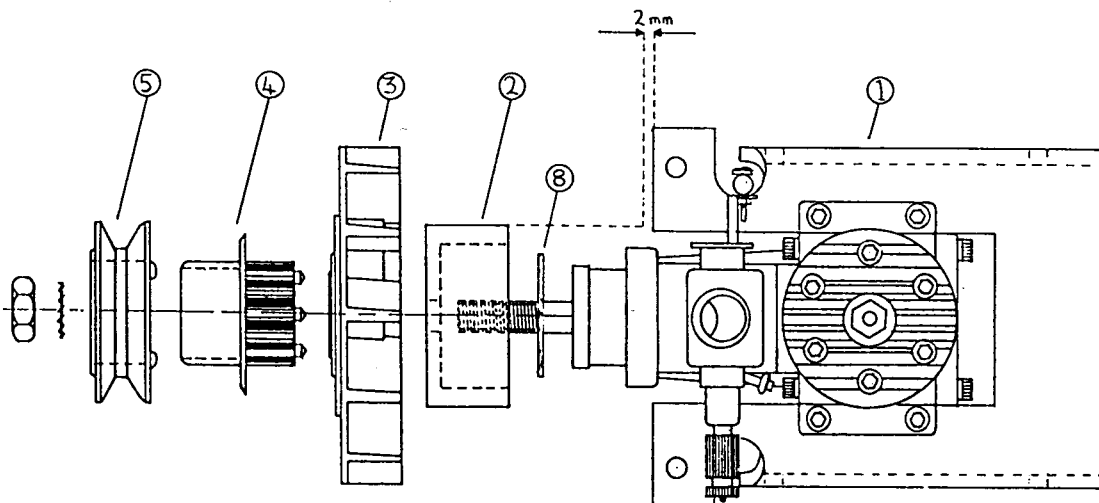
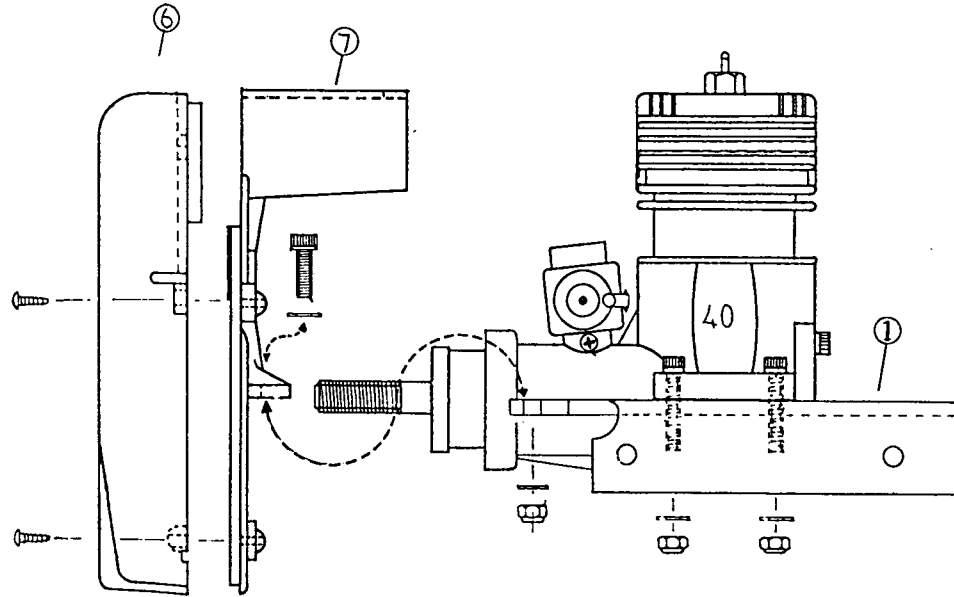
Fasteners from :-

Pack 11

- 1xM2x12
- 2xM2 nuts
- 1xbrass ball
- 1xM6 SPW
- 3x2x1/4 s/tap

Pack 12

- 4xM3x16 SC
- 6xM3 NLN
- 2xM3x10 SC
- 12xM3 FW



Temporarily fit the flywheel to the engine, ensuring that the inside face is against the engine prop-driver. Place the engine centrally in the mount and locate lengthwise to give 2mm clearance between the mount and flywheel. Mark through the crankcase holes onto the engine mount, then remove engine and drill 3mm holes in the marked positions. Remount the engine and secure with M3x16 socket cap screws, M3 flat washers and M3 nyloc nuts.

The fan (3), pulley (4), fan duct (6) and fan duct back plate (7) assembly is shown above but is best left until the engine mount has been fitted into the chassis side frames.

PACK 3

STOCK	Diagram	
CODE	key	
MXB/CHAN	1	g/b mount channel
MXB/CF	2	crossmember flat
MXB/CR	3	crossmember raised
OMG/OIL	4	5/16 oilite bearing
MXB/EDGE	5	fuel tank edging rubber
MXB/FTBRKT	6	fuel tank bracket
MXB/PYLONS	7	cabin mounting pylons (4)
MXBUC/BRKTS		u/c fixing brackets (2)

ENGINE MOUNT & CHASSIS

Fasteners from :-

Pack 11

2xM2x12

2xM2 nuts

2xbrass balls

Pack 12

14xM3x8 SC

14xM3 FW

8xM3 NLN

Pack 13

1xM4x30 PS

12xM4x10 SC

5xM4 NLN

1xM4 nut

13xM4 FW

Bolt the gearbox channel assembly between the side frames with M3x8 socket cap screws and M3 nyloc nuts with M3 flat washers under the screw heads

Fit the pylons (7) to the outside of the frames using M3x8 socket cap screws and M3 flat washers (see DIAG A).

- ☞ NB The forward pylons are mounted over the 3.8mm holes to enable some adjustment when fitting the canopy.

Take one of the straight bellcranks (Pack 6) and bolt to the inside of the right hand frame with an M4x30 plain shank screw, M4 nut, M4 flat washer and M4 nyloc nut (flat washer under nyloc nut). Fit the brass balls as shown (DIAG B) with M2x12 screws, M2 nuts and loctite. At this stage, whilst the throttle bellcrank is accessible the control rods can be fitted to the brass balls. Take a 37mm pushrod (Pack 10) and screw a ball end (Pack 6) to each end to give an overall length of 55mm, then attach to the long arm of the bellcrank (this rod will go vertically to connect to the throttle arm on the motor when fitted). The second rod which will connect to the throttle servo is made from a 100mm pushrod (Pack 10) with ball ends fitted to an overall length of 115mm :- Note these lengths are approx and may need to be adjusted to suit your servo/engine.

Slide the raised crossmember (3) down the main mast and secure with M4x10 socket cap screws and M4 flat washers, next smear the outside of the 5/16 oilite bearing (4) with epoxy and slide down the shaft into the crossmember (taking care not to get epoxy onto the shaft when pushing fully home).

Bolt the engine mount assembly between the side frames with M4x10 socket cap screws and M4 nyloc nuts with M4 flat washers under the screw heads.

Fix the fan duct to the fan duct backplate with cyano and No2x1/4 self tapping screws, once dry fit to the engine mount with M3x10 socket cap screws, M3 flat washers and M3 nyloc nuts.

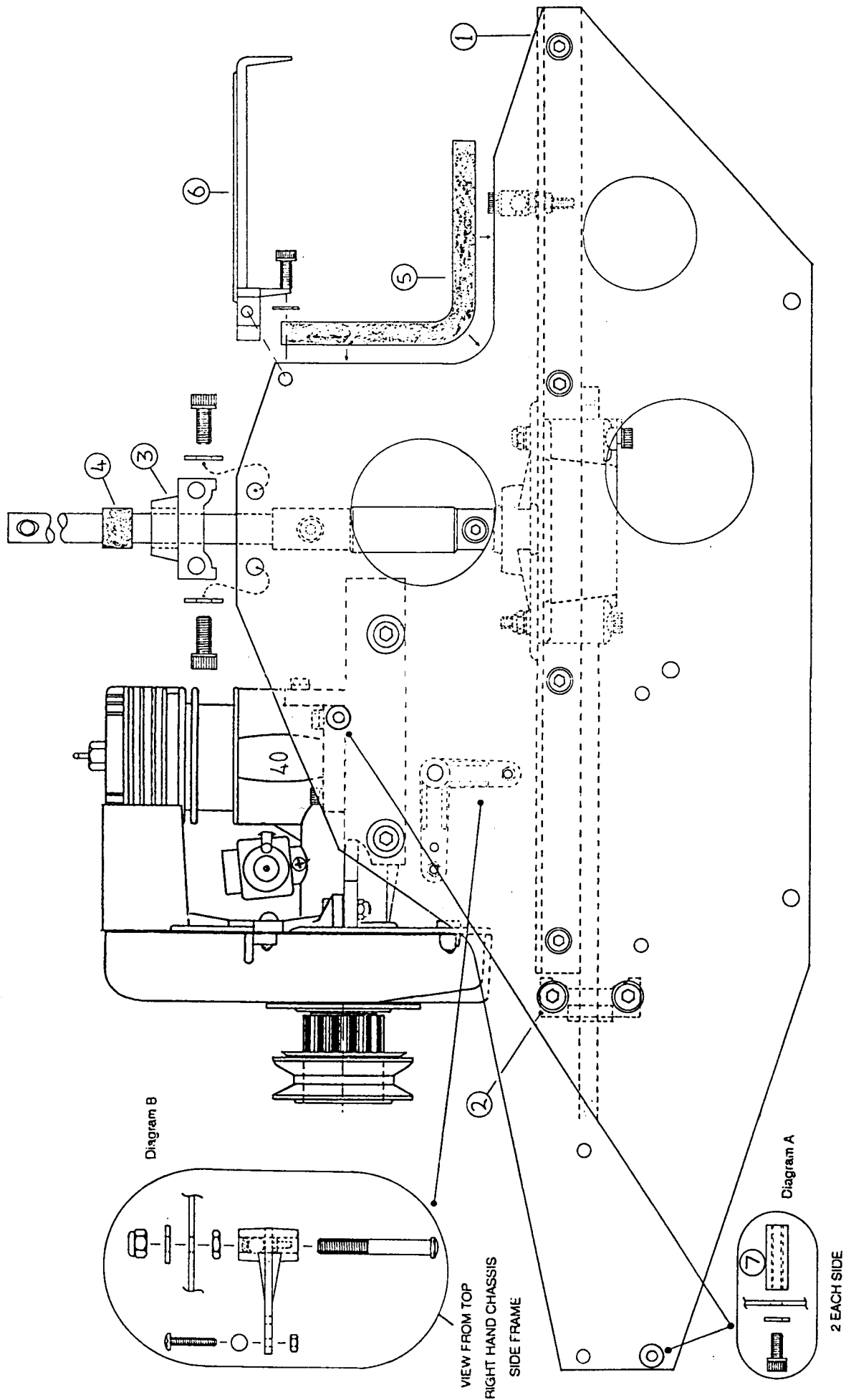
Fit in the following order to the engine :- cork disc , flywheel, fan, 16 toothed pulley and secure with the M6 shake proof washer and engine nut. Next glue the starter pulley onto the 16T pulley with cyano and adjust the position of the fan housing for all round clearance.

Push the flat crossmember (2) over the input shaft front bearing and secure with M4x10 socket cap screws and M4 flat washers.

The rubber edging (5) is cut in two and pressed onto the side frame edges as shown to seat the fuel tank. The tank bracket (6) is held in place with M3x8 socket cap screws and M3 flat washers (this can be done later when the tank is ready for fitting).

The undercarriage fixing brackets which are left over from this pack are used at a later stage.

ENGINE MOUNT & CHASSIS



PACK 4

CLUTCH

STOCK CODE	Diagram key	
0CL/LP	1	large pulley, 32T
0CL/DRUM	2	clutch drum
0CL/XL100	3	drive belt
0CL/LINER	4	cork liner
0CL/SHOES	5	clutch shoes (2)
0CL/SPRINGS	6	clutch springs (2)

Fasteners from :-

Pack 11

1x3/16 washer

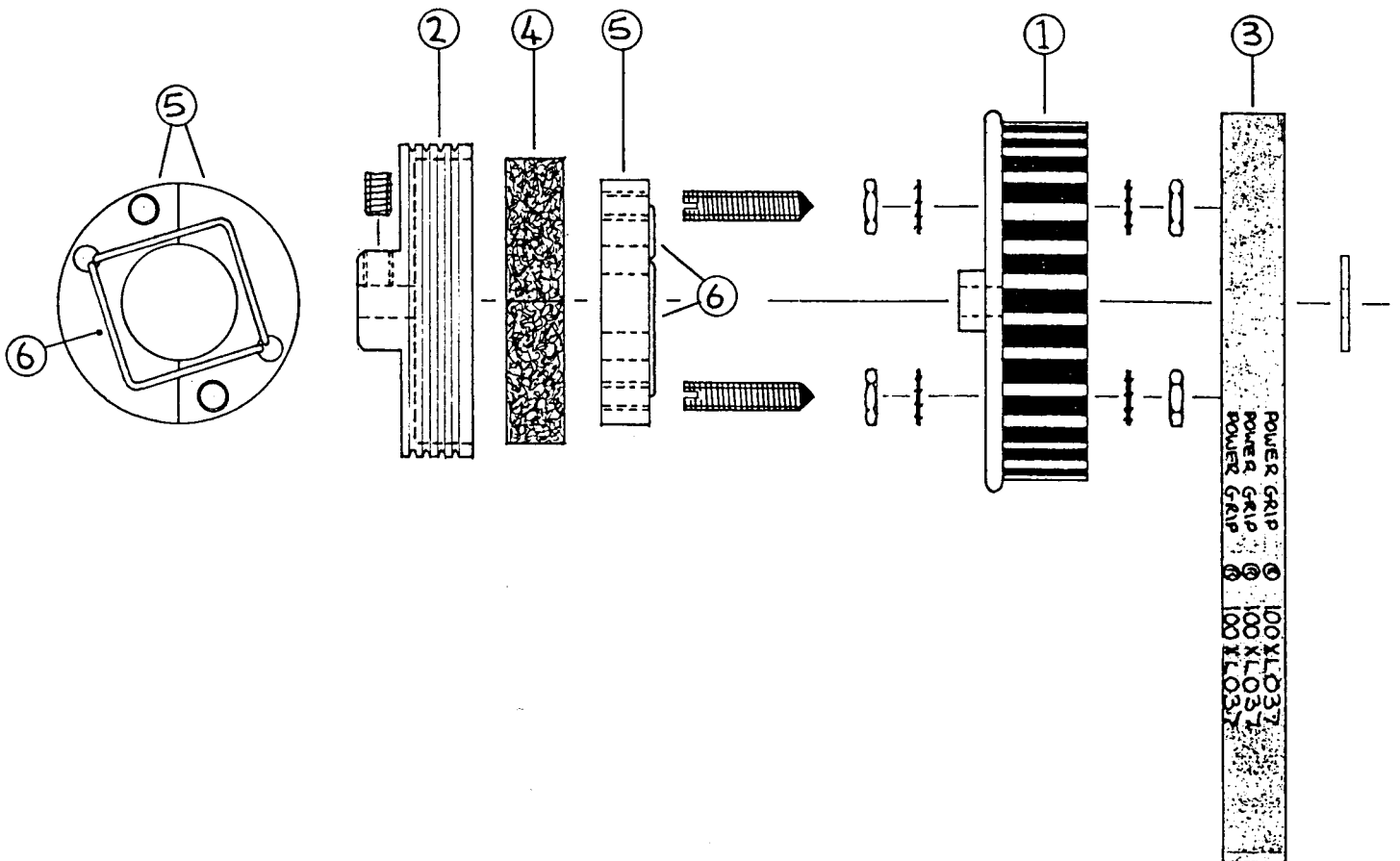
Pack 13

1xM4x6 SS

2xM4x18 TS

4xM4 nuts

4xM4 SW



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 and cover it sparingly with epoxy, then press the lining into place and leave to set.

Thread the M4x18 threaded studs into the clutch shoes (5) with the slotted end just level with the surface of the shoe. Place an M4 nut 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 onto the studs.

Place the assembly into the large pulley (1) and

secure with M4 star washers and M4 nuts. 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.

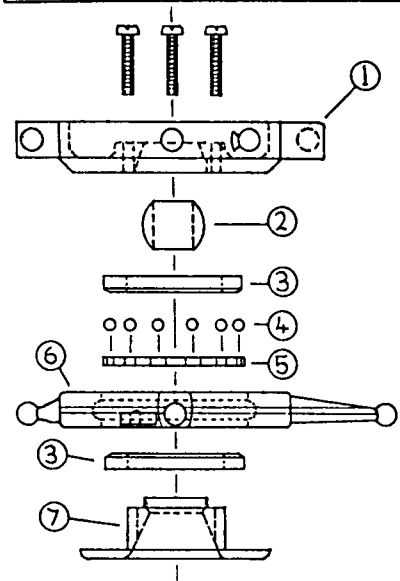
Place the 3/16 washer over the input shaft, then fit the drive belt (3) round the engine pulley and slide the clutch assembly onto the input shaft, positioning the drive belt over the 32T pulley followed by the drum. Tighten the clutch drum M4x6 socket set screw against the flat of the input shaft.

PACK 5

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

☛ 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 6

STOCK	Diagram	
CODE	key	
MXB/STRAY	1	servo mounting tray
OCON/SSSM	2	singleside servo mounts (2)
MXB/CCA	3	collective cradle arms (2)
OCON/SH100	4	pivot shaft, 100mm
OCON/BRKT	5	right angled bracket (2)
OCON/BELL	6	bellcranks (4)
ACC/BJ		ball ends (40)
ACC/WRAP		Tie wraps (10)

Fit brass balls to the bellcranks (6) as shown (DIAG B) using M2x12 screws and M2 nuts (securing with loctite). Attach a cradle arm (3) to each side frame using an M4x30 plain shank screw, M4 nut and an M4 nyloc nut on the inside (position the nuts to remove freeplay but allow the arms to pivot without friction). Push the 100mm pivot shaft (4) through one of the cradle arms then fit the bellcranks as shown placing an M4 flat washer between each crank, finally passing through the other cradle arm. Clamp the cradle arms to the shaft with M3x10 socket cap screws, M3 star washers and M3 nuts (do up lightly and adjust for friction and slop free movement then tighten fully). Cut a 12mm length of stud from the 50mm pushrod (Pack 10) and fit a ball end back to back to make a link with an overall length of 41mm then fit between the collective bellcrank and the folded tab on the g/b channel.

CONTROLS

Fasteners from :-

Pack 11

14xM2x12
15xM2 nuts
14xbrass balls
2x2x1/4 s/tap

Pack 12

2xM3x10 SC
8xM3x8 SC
2xM3 nuts
4xM3 NLN
2xM3 SW
8xM3 FW

Pack 13

2xM4x30 PS
2xM4 NLN
2xM4 nuts
5xM4 FW

☛ All servos are attached to their relative mounts via the screws provided with the radio system.

Before screwing your servos to the mounts, mark each one with its function i.e.:-

throttle (T)

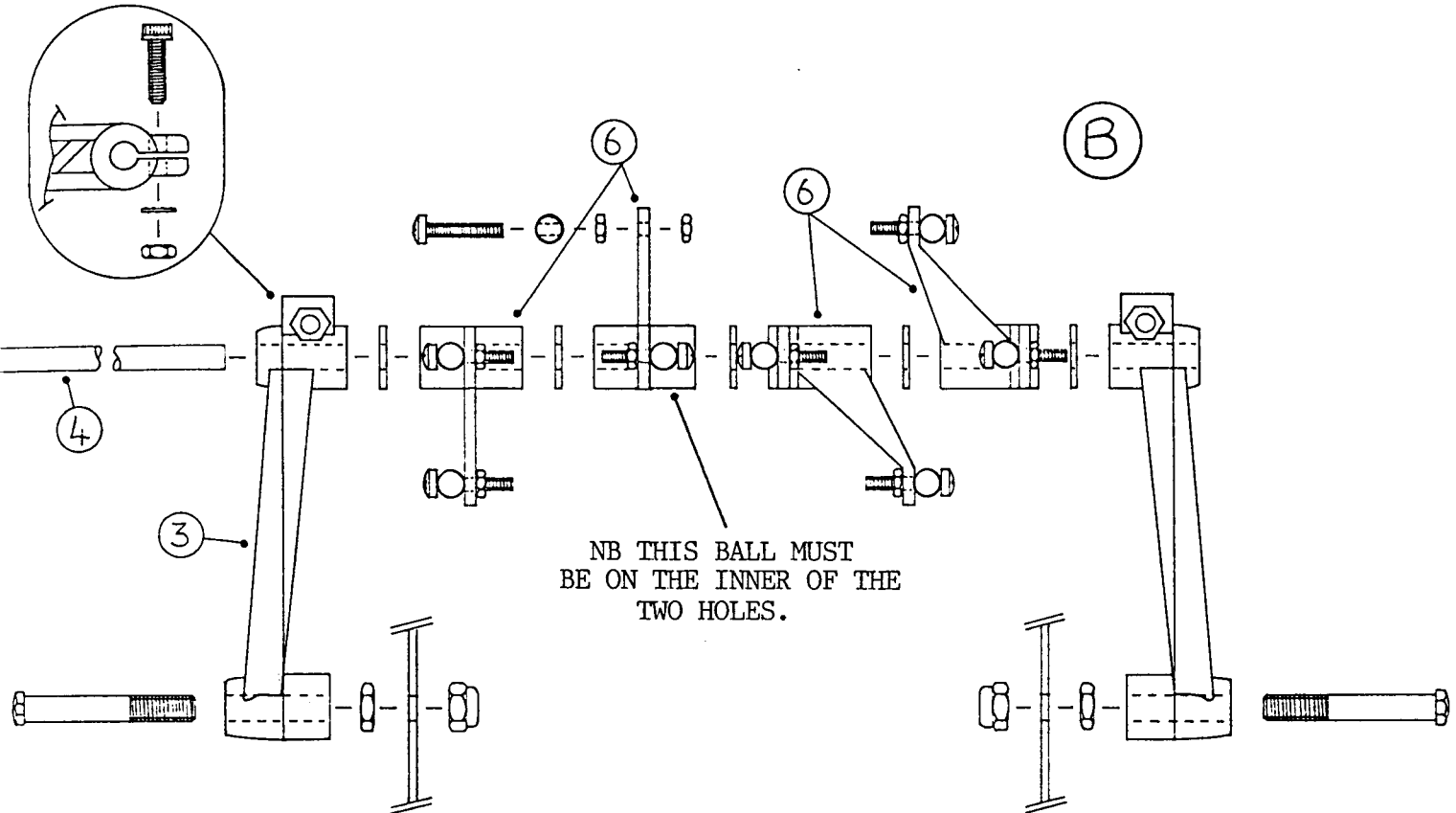
collective pitch (CP)

for/aft cyclic, left/right cyclic (FA) & (LR)

tail rotor (TR)

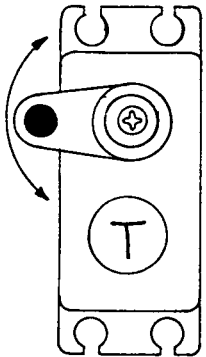
Then fit the required output arms and brass balls at the positions shown (DIAG A) using M2x12 screws and M2 nuts secured with loctite. Plug each servo into the receiver and set up with the transmitter sticks and trims in the neutral positions.

CONTROLS

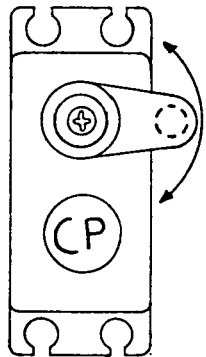


A

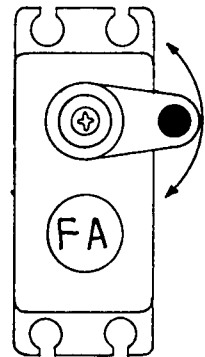
ALL DIMENSIONS ARE MEASURED FROM SERVO CENTRE TO BALL CENTRE



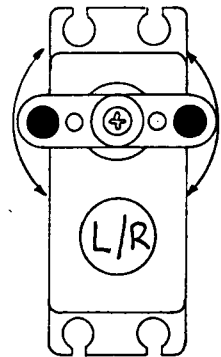
THROTTLE
10-12 mm



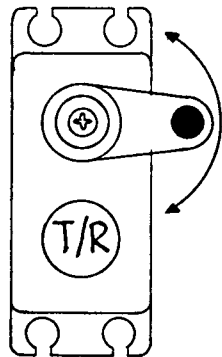
COLLECTIVE PITCH
12mm (BALL ON INSIDE)



FORE/AFT CYCLIC
12 mm

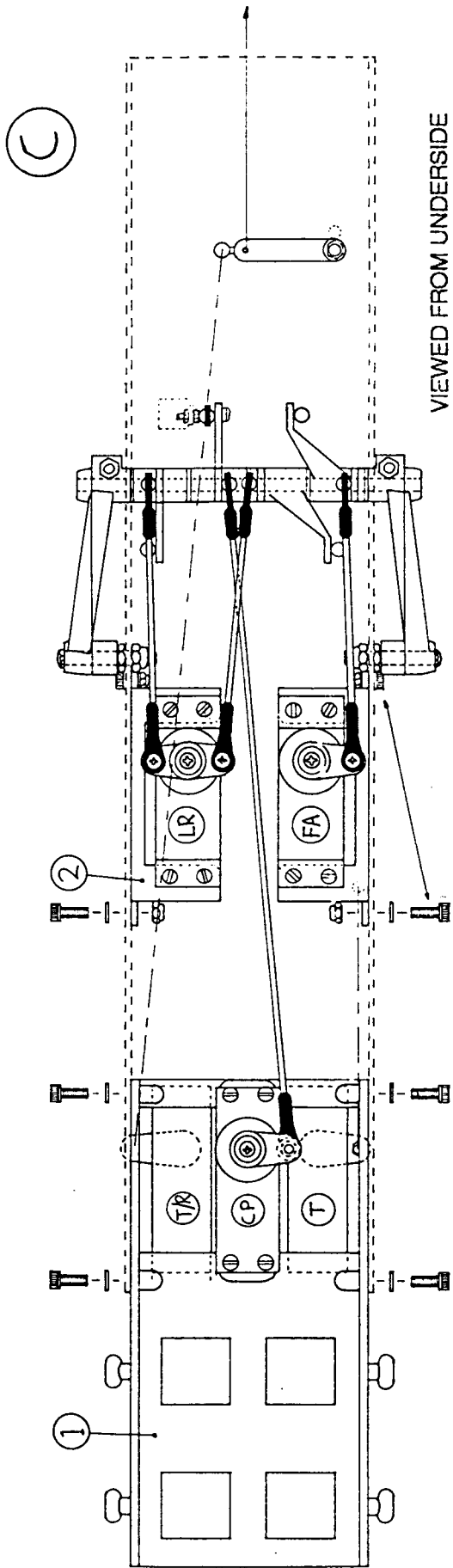


LEFT/RIGHT CYCLIC
10 mm EACH SIDE

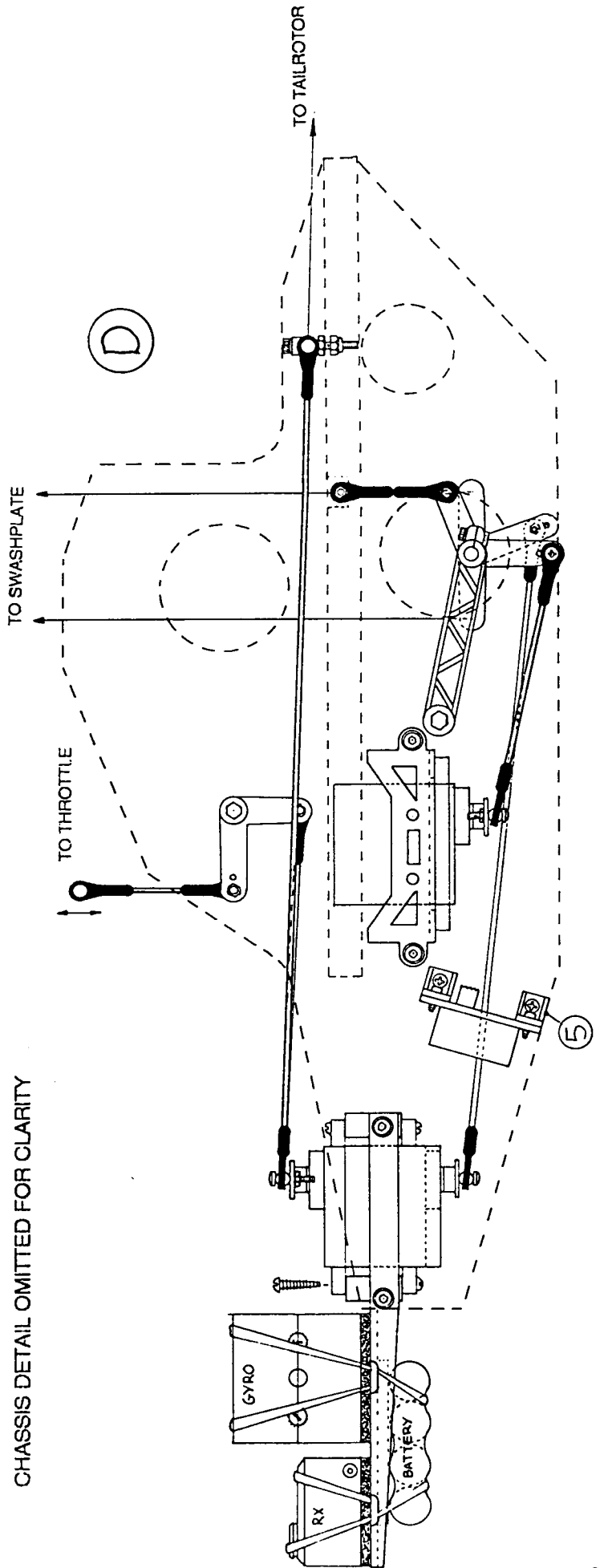


TAIL ROTOR
14mm

CONTROLS



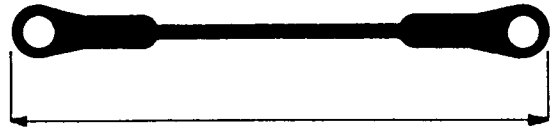
VIEWED FROM UNDERSIDE



CHASSIS DETAIL OMITTED FOR CLARITY

CONTROLS

☛ NB. This model requires 5 servos. If a heli radio is not being used it will be necessary to couple the collective servo to the throttle servo via a Y lead suited to your make of radio.



OVERALL ROD LENGTHS ARE MEASURED TIP-TIP.

The servo mounts are made to accommodate most popular sizes of servos. If you have the larger type you must trim the mounts so that the servo will not touch the mount (except on its grommets). Try to leave about 1mm clearance either end to avoid transmitting any vibration to the delicate servo electronics.

Mount the cyclic servos to the single side servo mounts (2), then fix to the sideframes using M3x8 socket cap screws and M3 nyloc nuts with M3 flat washers under the screw head. Ensure these are fitted so that the plug leads exit towards the rear, thus putting the output arms to the rear also.

Place the servo mounting tray (1) between the side frames and hold in place with M3x8 socket cap screws and M3 flat washers. Screw in the remaining three servos (note the centre one is inverted) again with all the leads exiting towards the rear see (DIAG C). Mount the receiver, gyro and nicad as shown (DIAG D) using high quality double sided tape minimum thickness 3mm (optional extra ACC/TAPE3) with rubber bands around the nicad for added security. Fix the on/off switch to the side frame using the right angled brackets (5) and No2x1/4 self tapping screws. Connect all plugs to sockets and secure all leads safe and tidy using the tie wraps provided.

Throttle

Throttle rods already connected during chassis assembly. Adjust the length of the long rod so that with the servo arm at 90 degrees to the side frame the bellcrank arm is vertical. Ensure that full travel of the servo matches the full travel of the throttle (adjust position of ball on servo arm if not achieved).

Tailrotor

Take the 240mm pushrod (Pack 10) and screw a ball end to each end to an overall length of 274mm. Connect between the tailrotor servo and the tail rotor idler, adjust to make servo arm and idler at 90 degrees to the side frame.

Collective Pitch

Take the 190mm pushrod (Pack 10) and screw on two ball ends to an overall length of 210mm. Connect between the collective pitch servo and the bellcrank which is anchored to the g/b channel. Adjust so that the servo arm is at 90 degrees to the side frame..

Cyclic Servos

Take three 65mm pushrods (Pack 10) and screw a ball end on each end to an overall length of 90mm, use these to link the cyclic servos to the bellcranks (adjust so that at half throttle & collective the long arms of the bellcranks are vertical). Now operate the collective and cyclic servos to ensure they clear each other at all stick positions (note the brass ball on the collective pitch servo is fitted to the under side of the disc), it may be necessary to adjust the ball height to achieve clearance.

Next take three 135 pushrods (Pack 10) with ball ends fitted to an overall length of 162mm, one of these should be formed (DIAG E) then fitted between the swashplate and the short arms of the bellcranks, adjust so that the swashplate sits level.

(E)



PACK 7

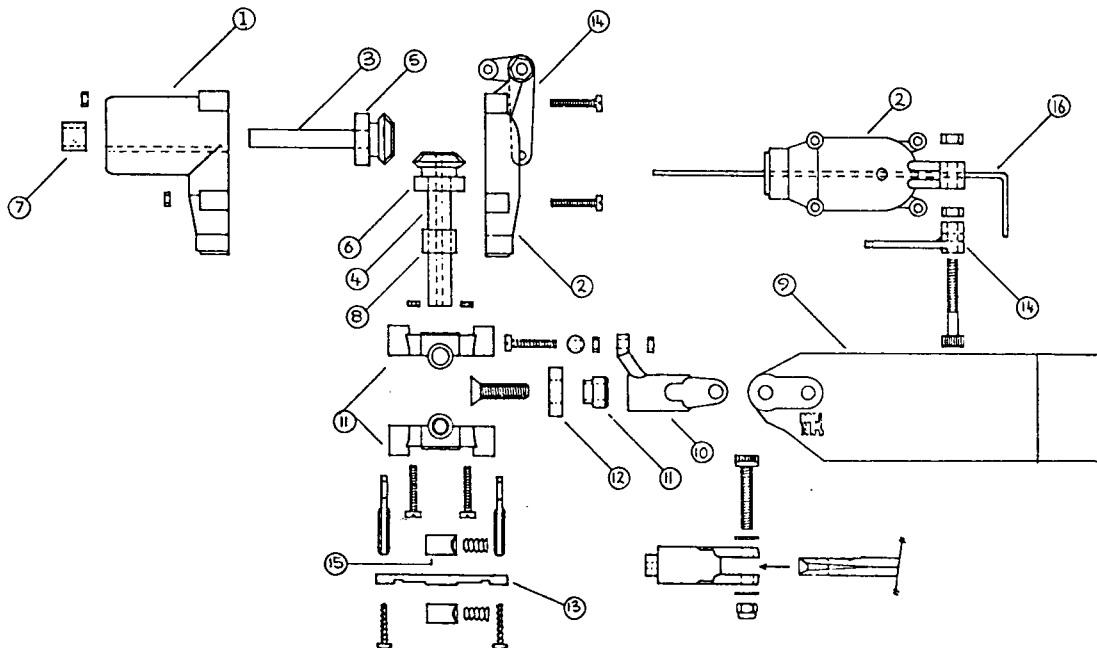
TAIL ROTOR

STOCK	Diagram	
C ODE	key	
0TR/C1	1	main gearcase
0TR/C2	2	gearcase back
0TR/GIN	3	input gear and shaft
0TR/GOUT	4	output gear and shaft
0TR/BB1	5	3/16 ballrace
0TR/BB2	6	6mm ballrace
0TR/OIL1	7	3/16 oilite bearing
0TR/OIL2	8	6mm oilite bearing
0TR/SYMBL	9	tail rotor blades (2)
0TR/BM	10	blade mount (2)
0TR/HUB	11	1/2 hub and spacer (2)
0TR/BB2	12	6 mm ballrace (2)
0TR/YOKE	13	pitch control yoke
0TR/CRANK	14	tailrotor bellcrank
0TR/CLR	15	control rod collars (2)
0TR/WIRE	16	pitch control wire ball end (2)
ACC/BJ		

Fasteners from :-

Pack 11	Pack 12	Pack 13
2xM2x12	1xM3x20 SCP	2xM4x6 SS
4xM2 nuts	2xM3 nuts	
2x2x3/8 s/tap	2xM3x16 SC	
2xbrass balls	4xM3 FW	
	2xM3 NLN	

➤ Gearbox and hub are pre-assembled.



➤ During assembly, check with the diagram to ensure correct positioning of the components :-

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

Push the pitch control wire (16) 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 and M3 nuts. Adjust the position of these nuts to get a friction and slop free movement.

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

Push one of the control rod collars (15) onto the pitch control wire 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, then move the inner collar out to sandwich the yoke assembly between both collars and secure inner collar in the same manner. The yoke (13) should not be trapped but should spin freely when the ball ends are popped over the brass balls.

The tail rotor blades (9) are fitted to the blade mounts (10) using M3x16 socket cap screws, M3 flat washers and M3 nyloc nuts. 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.

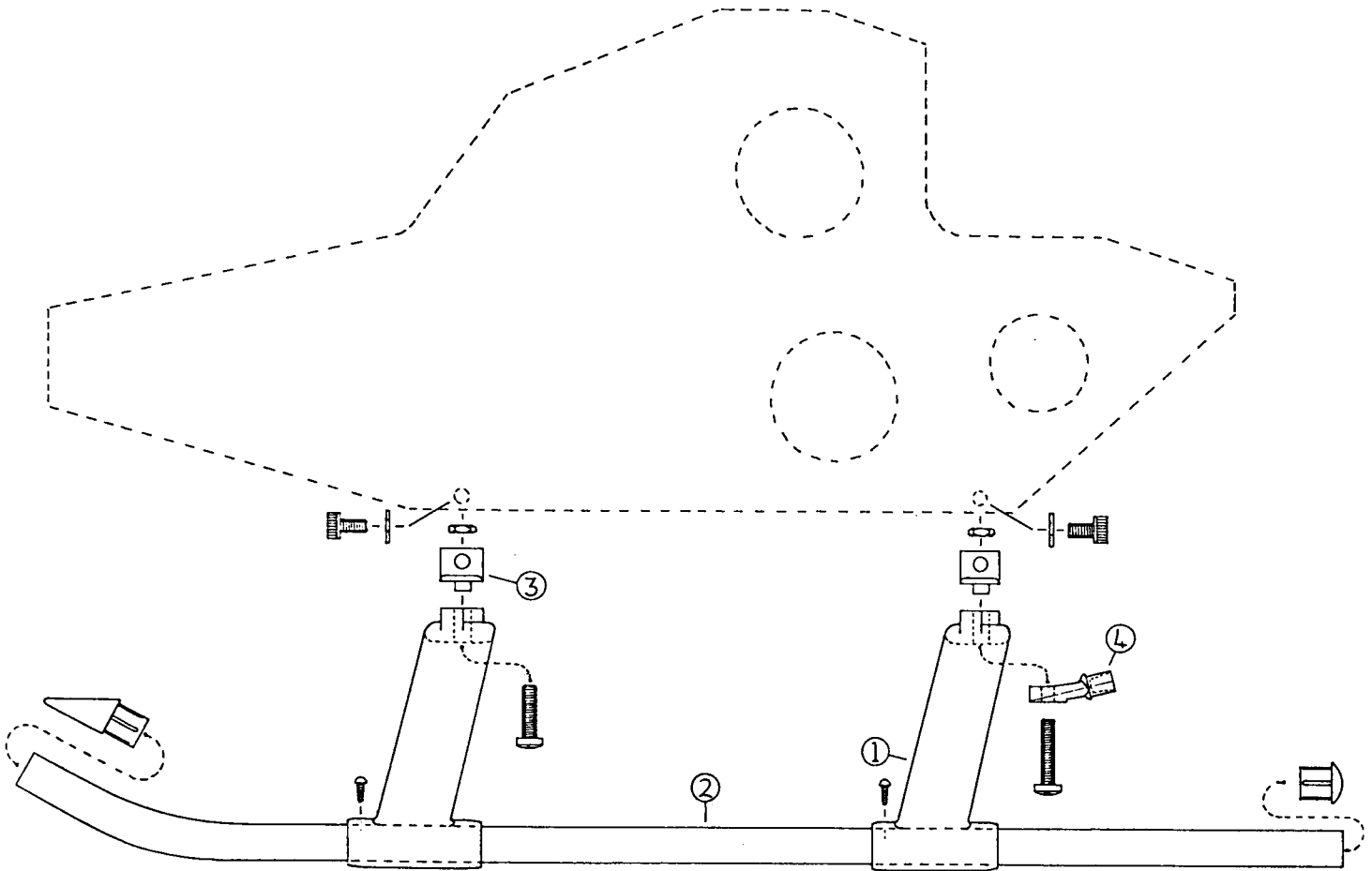
UNDERCARRIAGE

STOCK	Diagram
CODE	key
MXBUC/STRUT	1 protec strut (2)
MXBUC/SKIDS	2 protec skids (2)
MXBUC/BRKTS	3 fixing brackets (Pack 3) (2)
MXBTB/STKIT	4 stay ends (Pack 8) (2)

Fasteners from :-

Pack11
4x2x1/4 s/tap

Pack 13
4xM4x8 SC
2xM4x16
2xM4x20
4xM4 nuts
4xM4 FW



Attach the fixing brackets (3) between the side frames using M4x8 socket cap screws and M4 flat washers. Mount the front protec strut (1) to the front fixing bracket using the M4x16 screws and M4 nuts, and the rear strut via the M4x20 screws and M4 nuts with the stay ends (4) fitted underneath and angled

upwards.

Slide the protec skids (2) through the struts then push on the skid end plugs. The skids can be secured to the struts drilling 2mm holes and fitting No2x1/4 self tapping screws.

PACK 8

TAILBOOM

STOCK	Diagram	
CODE	key	
MXBTB/ATUBE	1	alloy boom tube
MXBTB/END	2	end moulding
MXBTB/ACL	3	centre clamp
MXBTB/ACL	4	inner tube support
MXBST/KIT	5	under support stays (2)
MXBST/KIT	6	stay ends (4)
MXBTB/CL	7	fin & plane clamp (3)
MXBTB/PLANE	8	tail plane
MXBTB/FIN	9	tail fin
MXBTB/CPL	10	tail drive couplings (2)
MXBTB/A500	11	alloy control tube 500mm
MXBTB/B430	12	brass drive tube 430mm
16GWIRE	13	16g drive wire - (1.6mm)
18GWIRE	14	18g control wire - (1.2mm)

Push the 500mm alloy control tube (11) into the end moulding (2) upper hole and the 430mm brass drive tube (12) into the lower hole, then push the inner tube support over these tubes with the long tube going through the outer hole, short tube through the centre hole, keep pushing to leave the support 6mm from the end of the short tube, at the front the tubes should be flush with the outside of the end moulding. Viewing from behind twist this assembly anti-clockwise until both tubes just make contact (positioning the control tube below and to the left of the drive tube). Without disturbing this assembly glue the tubes to the end and inner tube support mouldings, also place some epoxy where the tube touch.

☞ Place to one side to dry.

When the above assembly is dry, temporarily fit the tail fin (9) to the boom with one of the clamps (7). Apply epoxy to the end moulding then push assembly into the boom positioning the mount flange at 90 degrees to the tail fin. Dry fit the boom stays (5) into the rear stay ends (6) and the front stay ends (6) already mounted in the rear u/c fixing bracket. Dismantle and epoxy together ensuring the rear stay ends are vertical (place an M3 screw through both as a check). These can be secured more firmly by drilling 2mm holes and fitting No2x1/4 self tapping screws. Push the 16G wire (13) through the lower hole in the end moulding and the 18G wire (14) through the upper until they both exit from the rear. Place one of the male drive couplings (10) over the rear of the 16G wire, then place a 2mm bend in the wire and pull the coupling back until the bend sits in the recess and secure with M4x6 socket set screws. Also put a bend in the rear of the 18G wire 6mm long.


Fasteners from :-

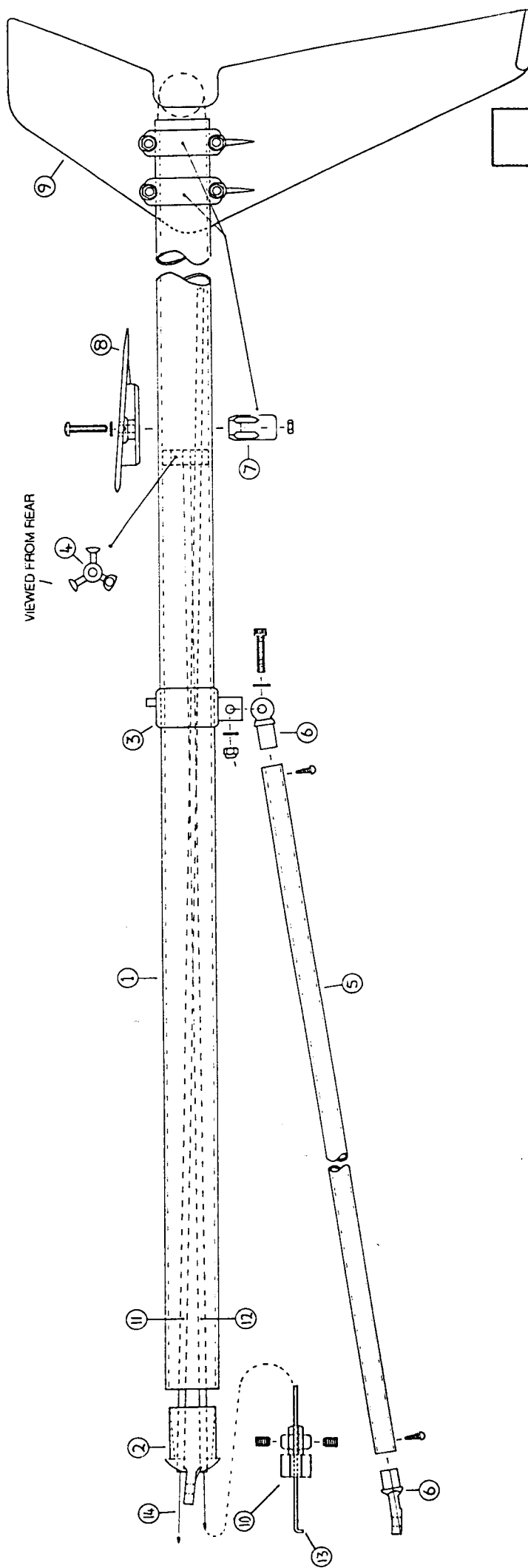
Pack11	Pack12	Pack13
4x2x1/4 s/tap	2xM3x10 SC	8xM4x6 SS
	2xM3 FW	
	3xM3 NLN	
	1xM3x20 SC	
	6xM3x16	
	6xM3 nuts	

Take the pre-assembled tailrotor and fit a female drive coupling to the input shaft with M4x6 socket set screws. Next place the bent end of the 18G wire into the hole on the long arm of the tailrotor bellcrank, then push the couplings together and insert the tailrotor gearbox into the boom (lining the hole in the boom with that in the gearbox) and secure with the tail fin (9), two clamps (7), M3x16 screws, 6BA washers and M3 nuts. Place the remaining male drive coupling onto the front of the 16G wire and place a 2mm bend in the wire 93mm from the front of the alloy boom (ensure the rear coupling is fully home) secure in same manner as before. The remaining female drive coupling is fitted to the input shaft of the main gearbox locating one of the M4x6 socket set screws onto the flat on the shaft. The 18G wire has a bend 6mm long, 60mm from the exit hole on the end moulding when the tailrotor bellcrank is square to the boom.

Slide the centre clamp (3) along the boom (bolt hole down). Bolt the end moulding to the g/b channel (locating the couplings together) with M3x10 socket cap screws and M3 nyloc nuts with M3 flat washers under the screw heads. Next bolt the support stays to the centre clamp lightly with the M3x20 socket cap screw, M3 flat washers and M3 nyloc nut, and adjust the position of the clamp to give 25mm ground clearance at the tail fin then tighten pinch screw securely. Loosen the tailrotor idler bolt in order to feed the bent end of the 18G wire into the hole then retighten (if done correctly the tailrotor idler will be square to the side frame when the tailrotor bellcrank is square to the boom). Lastly fit the tail plane (8) to the boom via the remaining clamp (7), M3x16 screws, 6BA washers and M3 nuts. Ensuring that it clears the tailrotor disc by approx 20mm.

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

 NB When fitting the tail plane and fin, insert an M3 flat washer between the clamp and fin/plane and avoid overtightening.



TAILBOOM

PACK 9

STOCK	Diagram	
CODE	key	
ORH/PLATE	1	alloy head plate
ORH/FINGS	2	fingerplates (4)
ORH/TOP	3	top moulding
ORH/MT	4	mast top moulding
ORH/RUBS	5	teeter rubbers (2)
ORH/BM	6	blade mounts (2)
ORH/BGM	7	bearing mounts (2)
ORH/CRADLE	8	flybar cradle
ORH/FBZZ	9	flybar zig-zag
ORH/FB	10	flyblades and collars (2)
ORH/FBOA	11	flybar operating arms (2)
ORH/IA	12	incidence arms (2)
ORH/FBAR	13	flybar
ORH/BB	14	6mm ballraces (4)
ORH/OIL	15	3mm oilite bearings (2)
OSP/MIX/DRI	16	s/mixer arms (2)
OSP/MIX/DRI	17	l/mix/dri arms (2)
OSP/MIX/DRI	18	mixer slide fork
ACC/BJ		ball ends (20)

Diagram A.

Insert an M3x16 socket cap screw through the pitch control hole in the incidence arms (12) and fix with an M3 nyloc nut.

- ☞ The word TOP is marked on the stub axle, trim the ends of the axles until they are flush with the ends of the ballraces. If this is not done binding will occur as the blades pivot.

Lightly grease the bearings and fit the larger bearing mount (7) to the outer ballrace. Assemble two finger plates (2) to either side of the mount (7) using M3x20 socket cap screws, M3 star washers and M3 nuts. Fit the inner bearing mount (7) over the inner ballrace, between the fingerplates then slide the incidence arms over the fingerplates and secure with M3x30 socket cap screws, M3 flat washers and M3 nyloc nuts

Diagram B.

Bolt both mix/dri arms (17) to the slide fork (18) 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).

ROTORHEAD

Fasteners from :-

Pack 11	Pack 12	Pack 13
4xM2x12	4xM3x16 SC	2xM4X10 SS
4xM2 nuts	2xM3x20 SCP	2xM4x25 SC
4xbrass balls	8xM3x20 SC	2xM4 NLN
	10xM3 nuts	
	6xM3x30 SC	
	4xM3 SW	
	16xM3 FW	
	8xM3 NLN	

Diagram C.

Slide the mast top (4) on to the mast. Remove the head fixing bolt from the top moulding (3) and place M3 nuts into the recesses in the base. Sandwich the headplate (1) between the teeter rubbers (5), then between the mast top and top moulding, holding together with M3x20 socket cap screws and M3 nuts.

- ☞ Make sure the nuts are pulled home and the rubbers are evenly and firmly clamped but not distorted.

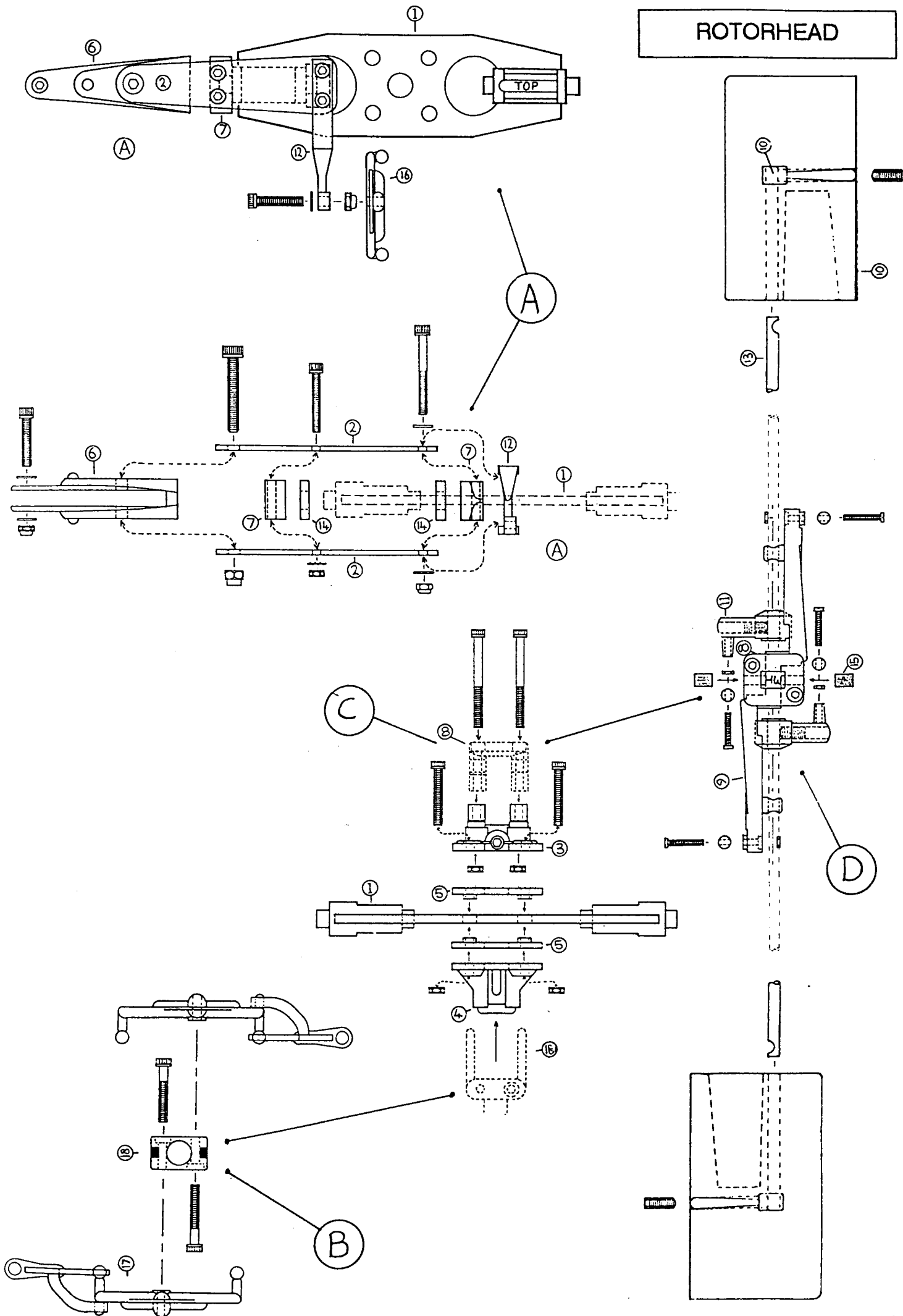
Fit the assembly on the mast and replace the fixing screw in the top moulding through the hole in the mast.

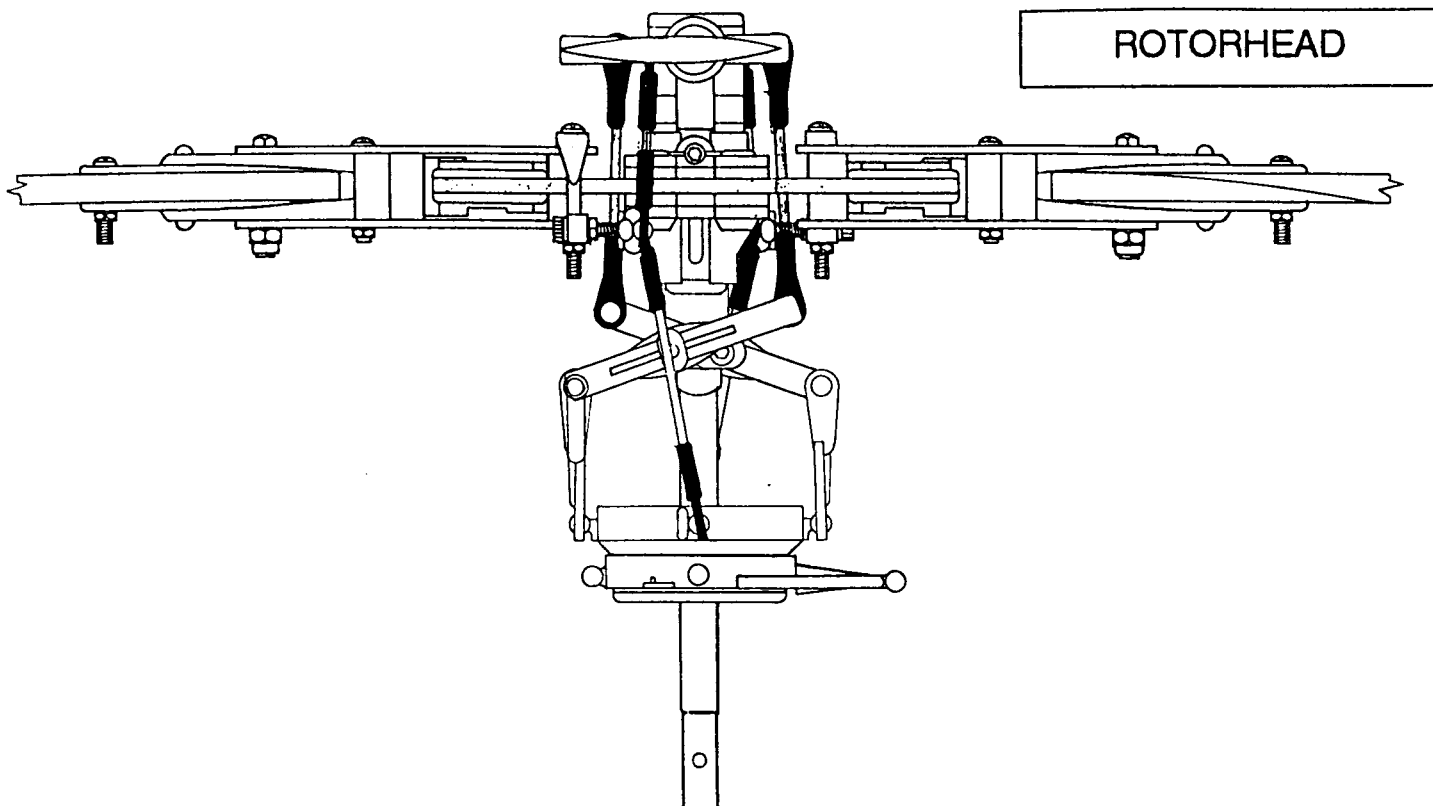
Diagram D.

Fit a brass ball to each end of the zig-zag (9) using M2x12 screws and M2 nuts, also to the stub on each flybar operating arm (making sure the M2 nut goes under the brass ball - see DIAG). Snap the zig-zag into the cradle (8) then push in the 3mm oilite bearings (15) over the small pivot shaft. Pass the flybar (13) through the zig-zag threading on the flybar operating arms as shown. The flyblades (10) are fitted to the flybar with M4x10 socket set screws passing through the rear into the square collars (10) onto the preground flats.

This unit can now be fitted to the top moulding via M3x30 socket cap screws through the cradle and into the M3 nuts in the base of the top moulding.

ROTORHEAD





Fit a ball end to each end of two 37mm pushrods (Pack 10) and use them to connect the flybar operating arms (11) to the free ball on the l/mix/dri arms (17) (overall length 60mm). Next line up the operating arms with the flyblades (10) and tighten the moulded in grub screw (ensuring the flybar is centrally placed in the zig-zag). Thread the mixer arms (16) onto the M3 screw on each incidence arm (12) and connect the long arms to the zig-zag (9)

with connecting rods made from 12mm lengths of threaded stud (Pack 10) with a ball end fitted to each end to an overall length of 41mm. The remaining 37mm pushrods with ball ends on each end are connected to the short arms and the two balls on the stand off lugs on the swashplate upper ring with an overall length of 65mm.

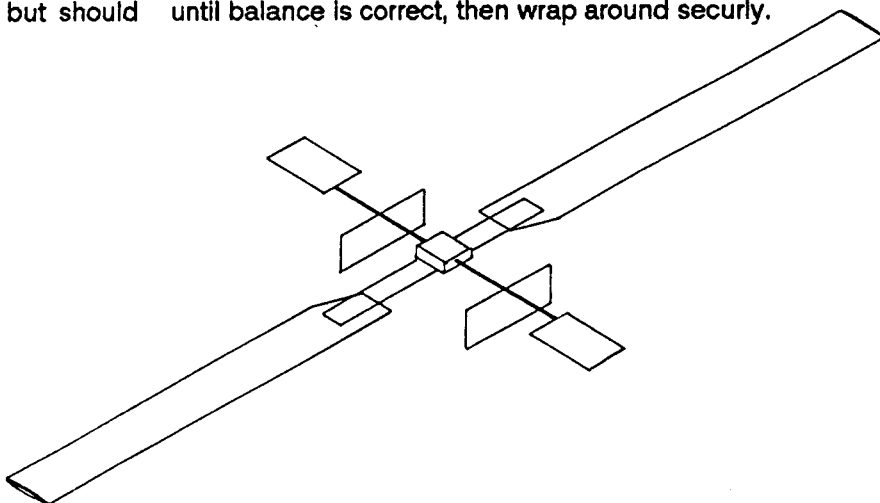
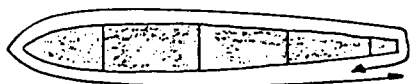
MAIN BLADES

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 fit the blade mounts (6) using M3x16 socket cap screws, M3 flat washers and M3 nyloc nuts, then fit to the rotor head via M4x25 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 tumblers 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 securely.



CABIN

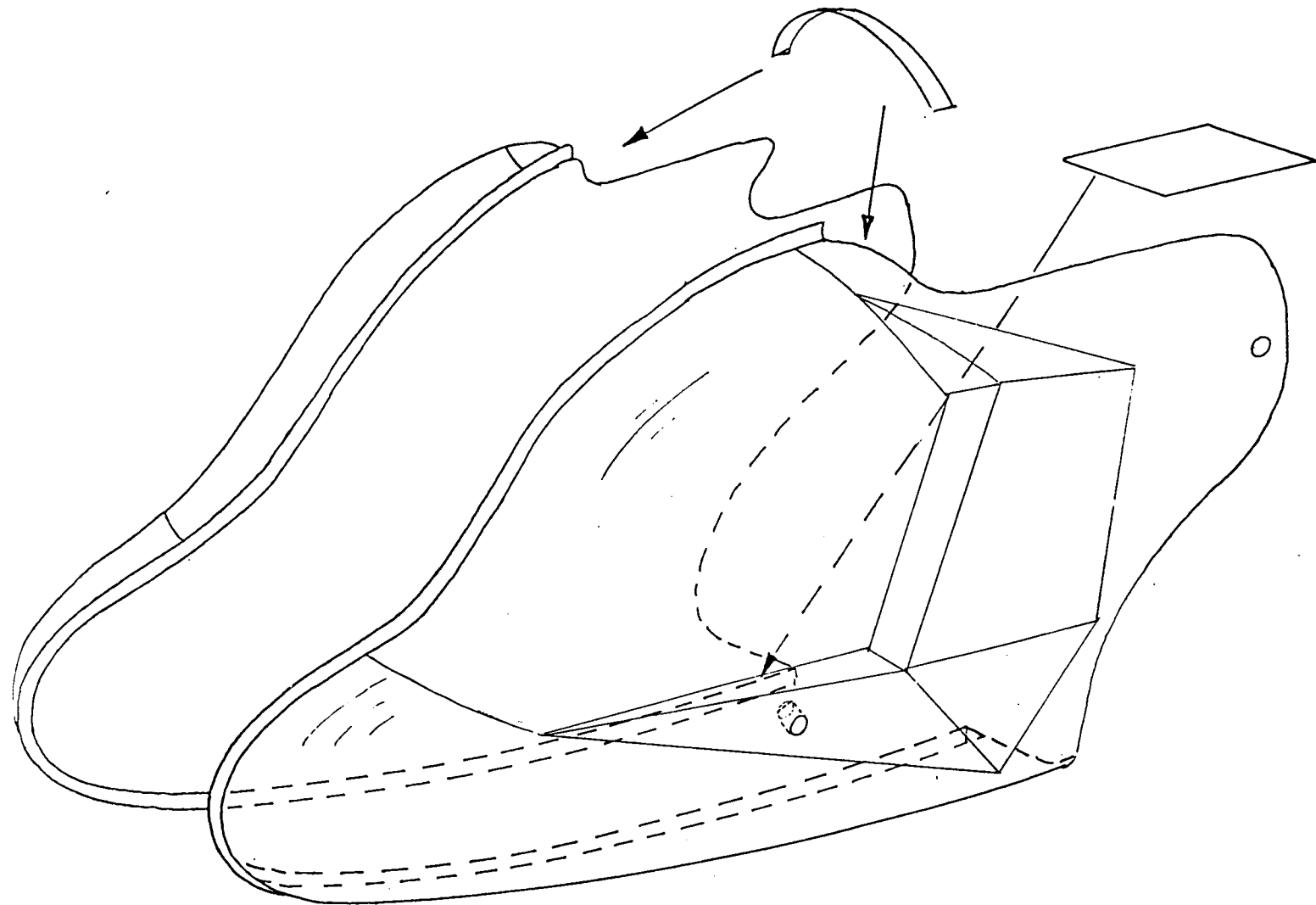
STOCK	Diagram	
CODE	key	
MXB/CABC	1	clear PVC cabin sheet
MXB/DECALS	2	MXB decals

Fasteners from :-

Pack 12

4xM3x8 SC

4xM3 FW



Trim the cabin sheet (1) as shown leaving a 4mm flange for the glue joint then glue together using contact adhesive or cyano (hold together with clips until dry). Glue two pieces of scrap to the inside as shown to reinforce the joint line.

Cut out the reinforcing cap then cover sparingly with epoxy and fit to the lower fixing lugs, then drill 3mm holes to take the mounting screws.

Rub down the areas to be painted on the cabin with a fine abrasive paper then spray with a fuel proof paint (to tint the canopy spray the inside with a suitable lacquer). When dry carefully cut out the decals (2) and apply as per box label.

Drill a 2mm hole in the floor of the cabin to pass the aerial through then pass it through the u/c struts.

Finally fit the cabin using M3x8 socket cap screws and M3 flat washers.

Diagram 1

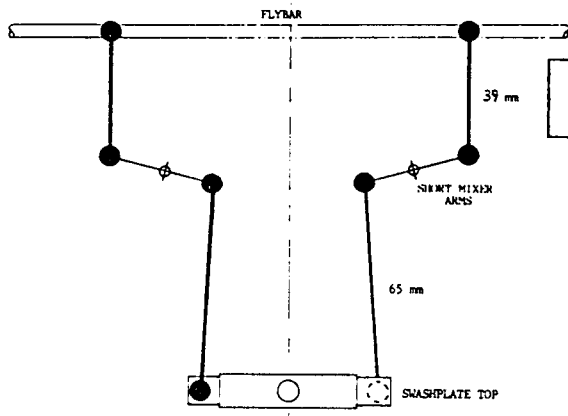
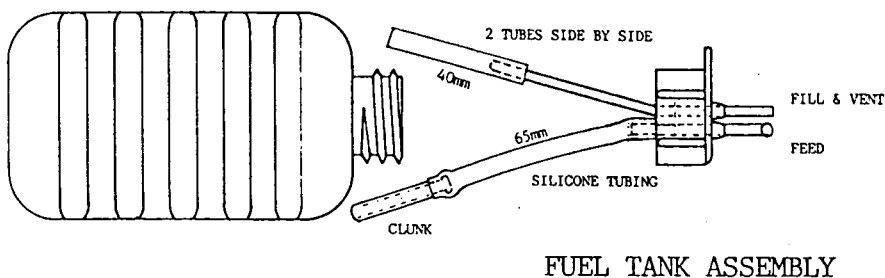
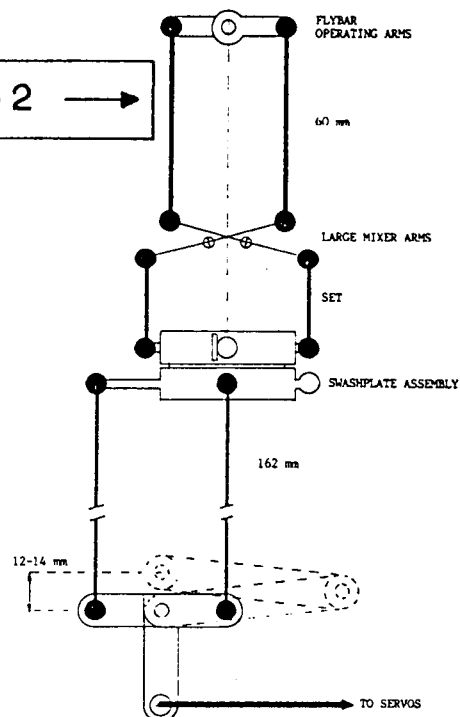


Diagram 2



FUEL TANK ASSEMBLY

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 and check that the servo arm is at 90 degrees. 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).

Cyclic Servos

First select centre stick & trim on the 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 check the swashplate to mixer arm rods are 65mm and the short mixer arms to the flybar zig-zag are 39mm (DIAG 1), also the rods from the long mixer arms to the flybar operating arms are 60mm (DIAG 2).

Tailrotor

When the tailrotor stick and trim are at neutral the servo arm should be at 90 degrees and the idler assembly should be straight across the chassis.

Gyro Check

Holding the model by the rotorhead in one hand and supporting the tail with the other (one finger on the bellcrank), swing the model 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.

Final Check

Left cyclic tilts the swashplate to the left

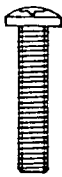
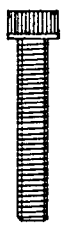
Back cyclic tilts the swashplate backwards

Pushing the throttle/collective forward raises the s/p

Left tail pulls the tailrotor idler forward to increase pitch

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.



M4X30 PLAIN SHANK

M4X25 SOCKET CAP

M4X20 PAN HEAD

M4X16 PAN HEAD

M4X10 SOCKET CAP

M4X8 SOCKET CAP



M4X18 GRUB SCREW

M4X10 SOCKET SET

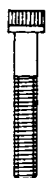
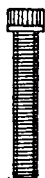
M4X6 SOCKET SET

M4 NYLOC NUT

M4 LOCK NUT

M4 FLAT WASHER

M4 STAR WASHER



M3X30 SOCKET CAP

M3X20 SOCKET CAP

M3X20 PLAIN SHANK CAP

M3X16 SOCKET CAP

M3X16 PAN HEAD



M3X10 SOCKET CAP

M3X8 SOCKET CAP

M3 NYLOC NUT

M3 FULL NUT

M3 FLAT WASHER

M3 STAR WASHER



M2X12 PAN HEAD

M2 FULL NUT

BRASS CONTROL BALL

NO 2x $\frac{1}{4}$ " SELF TAPPER



2BAx 5/8" COUNTER SINK

NO 2x3/8" SELF TAPPER

3/16" I/D WASHER

$\frac{1}{4}$ " I/D SHAKE PROOF WASHER

AUTOROTATION UNIT.

This all metal unit fits in place of the standard gearbox/mast coupling, and allows the main rotor to freewheel in the event of an engine failure, allowing an autorotational landing to be attempted. Not suited to the complete beginner, but a useful accessory for those flying circuits.

R. R. P. £29.75 inc VAT Stock Code ACC/AUTO

BALLRACED BELLCRANK KIT.

A set comprising of four modified control bellcranks, eight sealed ballraces and a pivot shaft. A direct replacement for the four standard plastic control bellcranks which will reduce 'control play' considerably and allow smoother operation.

R. R. P. £32.95 inc VAT Stock Code BRC/KIT

ROTOR MAST BALLRACE KIT.

A kit comprising of one sealed ballrace, modified bearing holder and a replacement mast. A direct replacement for the original 5/16" oilite plain bearing and holder, giving both smoother running and longer life.

R. R. P. £7.95 inc VAT Stock Code MB/KIT

FLOURESCENT TIP TAPE.

Two sheets, one orange, one green of flourescent self adhesive tape. When applied to the tips of the main rotor blades it gives a visual check to ensure your blades are tracking correctly (important to ensure vibration free running).

R. R. P. £1.25 inc VAT Stock Code ACC/GLOW

BALL LINK PLIERS.

These all metal plated pliers are designed for the fitting and removal of plastic control ball links easily and without damage. A must for your toolbox.

R. R. P. £4.95 inc VAT Stock Code ACC/PLIERS

BLADE CADDY.

A durable blade storage caddy made from high density blue foam. Attached to the tailboom, it holds the folded main rotors safely and protects the tips.

R. R. P. £1.80 inc VAT Stock Code ACC/CADDY

STARTER BELT.

A durable 500mm nylon reinforced V-belt designed for use with all electric starter motors. Ideal for any helicopter using a belt start.

R. R. P £3.50 inc VAT Stock Code ACC/B5

30N1 BEACON.

A compact electronic unit which monitors battery and fuel level whilst providing a visual scale flashing light. Very low current drain and easily installed in any model. Very useful for enclosed bodied helicopters.

R. R. P. £19.95 inc VAT Stock Code 30N1

DOUBLE BALLRACED OUTPUT GEAR.

As standard, the tailrotor gearbox output gear and shaft is supported by one ballrace and one plain oilite bearing.

The gearbox casing does have a recess for a second ballrace which will give smoother running and more precise control.

Available as a complete gear/shaft and twin ballrace set or a single 6mm ballrace to be fitted to your existing shaft.

R. R. P. £12.00 inc VAT Stock Code OTR/DGOUT

R. R. P. £4.20 inc VAT Stock Code OTR/BB2

TUNED SILENCER.

A tuned engine silencer developed by Irvine engines which will improve engine power without increased noise levels. Ideal for sports and aerobatic fliers who require extra performance. To suit both O.S & Irvine engines.

R. R. P. £27.99 inc VAT Stock Code ACC/SUPER

ABS CANOPY.

Canopy for the MXB produced from very tough 1mm white ABS. Considerably stronger than the standard clear PVC material, making it ideal for 'unlucky' pilots.

R. R. P. £10.95 inc VAT Stock Code MXB/CABW