DETRUM 3GS 3 AXIS GYRO INSTRUCTION MANUAL
introduction

The multi-function al flybarless 3GS high performance 3-axis gyro system made by DETRUM is the lightest flybarless system. It is compatible withall 250-600 nitro or electric helicopters, and support 90, 120, 135, and 140 degrees CCPM swash plate systems. Furthermore, it is compatible with all servos, and support firmware update. The setup procedure is quite simple, and can be completed in ten minutes.

3GS 3-axis gyro system provides two operational flying modes, which can suit pilots from beginners to professionals. 3GS 3-axis gyro system has several setting options; pilots can adjust the parameter of swash plate and rudder servo, which give pilots the impressive experience of the flybarless helicopter.

3GS high performa nce 3-gyro system uses MEMS gyro sensor which can bear bad weather condition and pilots can control helicopter precisely. With built-in pirouette flip optimization function , the speed of pirouette is really stable. The helicopter will keep at one point without shifting in pirouettes flip.

1.Specifications

Dimensions:37.6mm*25.3mm*13mm
Weight: 10g
Operating voltage: DC 3.5V-9V
Operating current drain: 60mA
Operating temperature:-15℃~65℃
Maximal angular velocity : 800 degrees/sec
Tail servo compatibility:1.52ms analog servo, 1.52ms digital servo, 760us digital servo, 960us digital servo
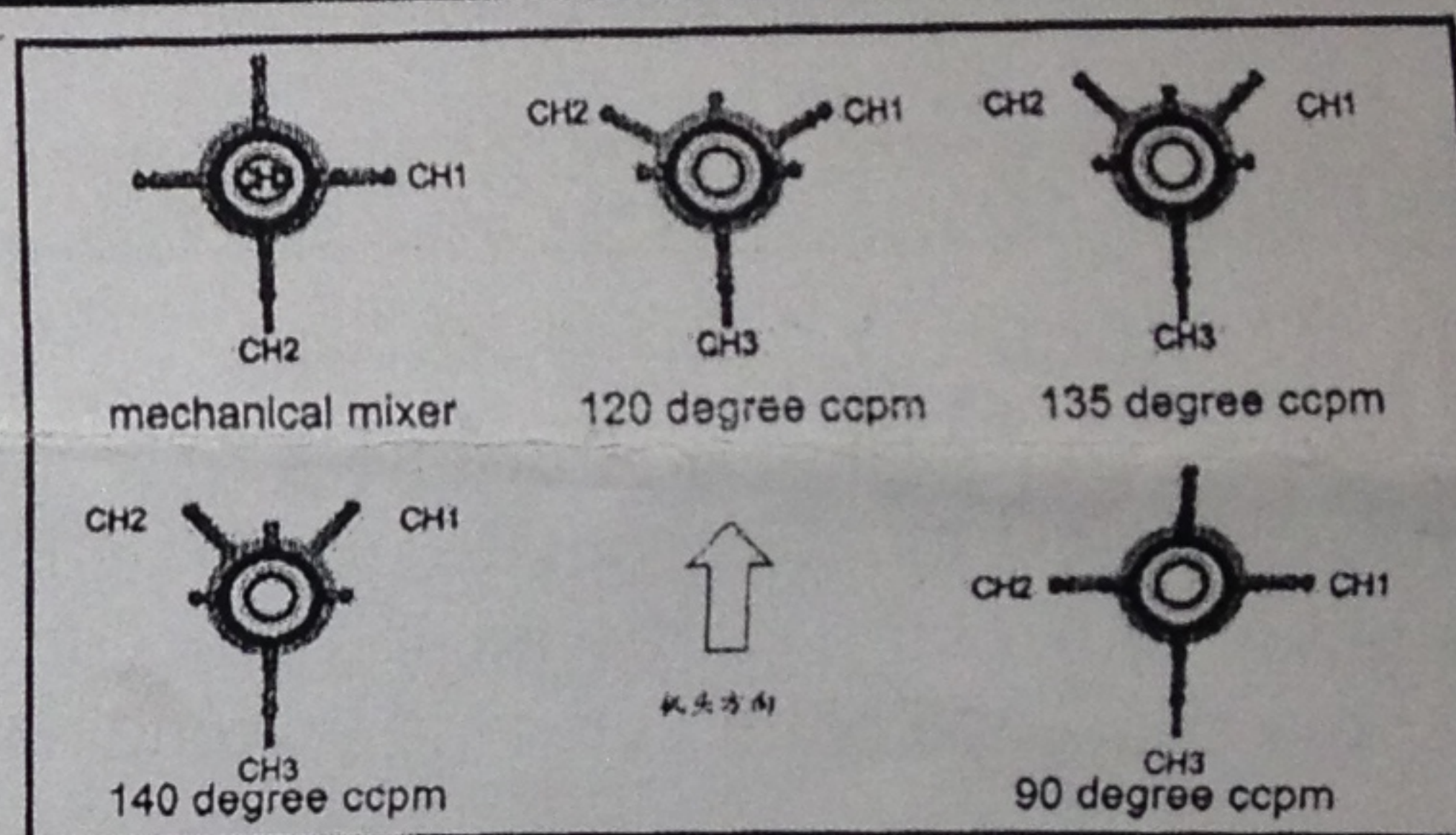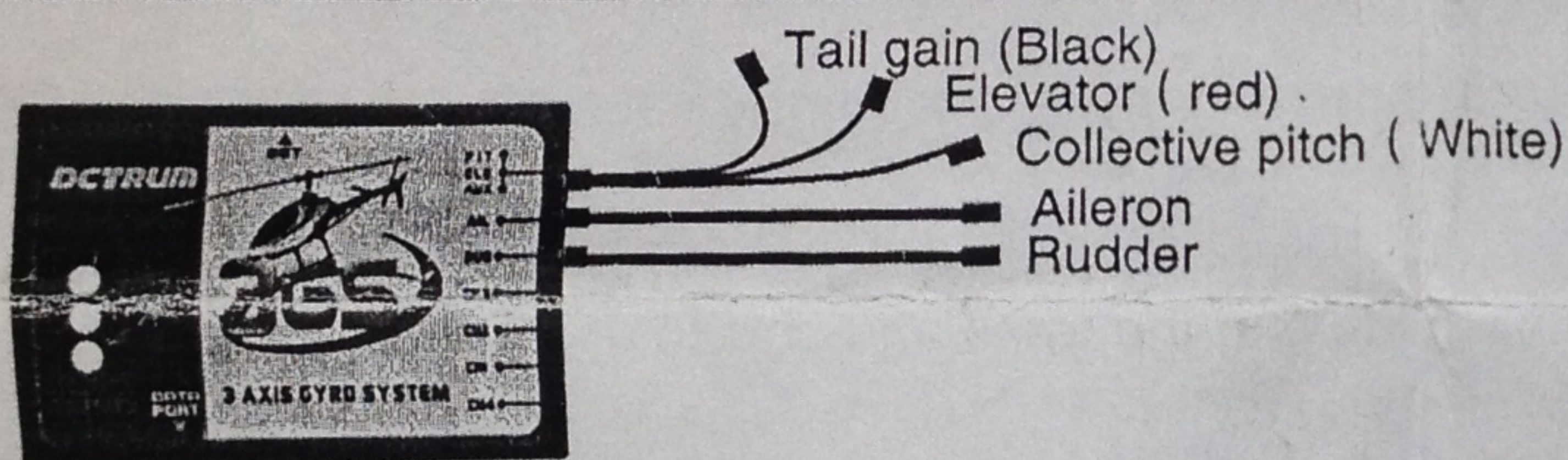Cyclic servo compatibility: 1.52ms analog servo, 1.52ms digital servo
Radio compatibility: PPM, PCM, 2.4G
Supporting firmware upgrade
Supporting Multi-Blade Rotor Head

2. Connections

Tail gain (Black)
Elevator (red)
Collective pitch (White)
Aileron
Rudder

mechanical mixer   120 degree ccpm   135 degree ccpm
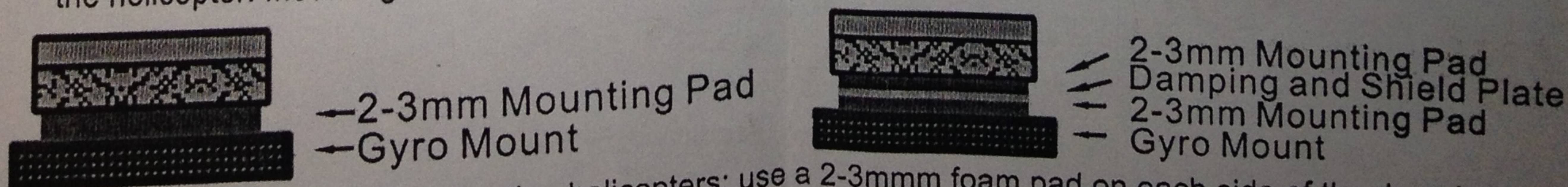140 degree ccpm   90 degree ccpm

◆ **Servo connections**
Tail servo: CH4. Cyclic servos: CH1, CH2, CH3 according to the type of swashplate.

3. LED indication

| Steady red	Gyro is in Head-lock mode
Steady blue	Gyro is in Normal mode
Steady red, yellow and blue	Gyro is waiting for receiver's signal
Blue, yellow and red LED are flashing simultaneously	Gyro is initializing, keep the heli/gyro steady, and rudder stick centered during the initialization.
Red LED is flashing	Error occur during Initialization, need to restart the gyro

4. Gyro mounting

◆ The gyro should be mounted at a flat position which is perpendicular to the main shaft and far away from the engine and other electric devices.

◆ Mount the gyro to the flat position by using a sponge double sided tape,arrange the cable of gyro loosely to reduce transmission of vibrations through the cable. Do not allow the gyro case to touch other parts of the helicopter. Mounting on a small electric helicopter: use a 2-3mmm foam pad.


2-3mm Mounting Pad
Gyro Mount

2-3mm Mounting Pad
Damping and Shield Plate
2-3mm Mounting Pad
Gyro Mount

Mounting on a large or a High vibration helicopters: use a 2-3mmm foam pad on each side of the damping shield plate.

◆ There are three directions to be selected for mounting the gyro(the gyro need to be configured accordingly later)

Direction 1:   **Direction 2:**   **Direction 3:**
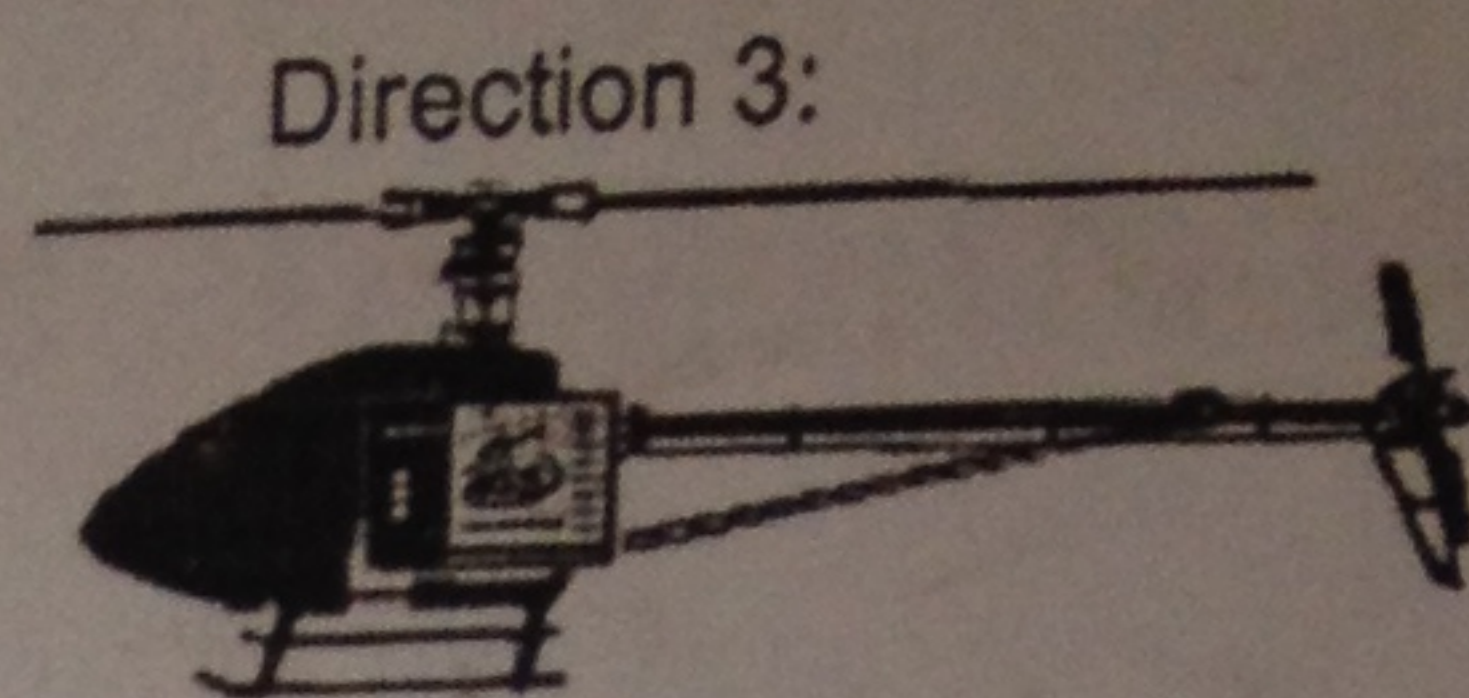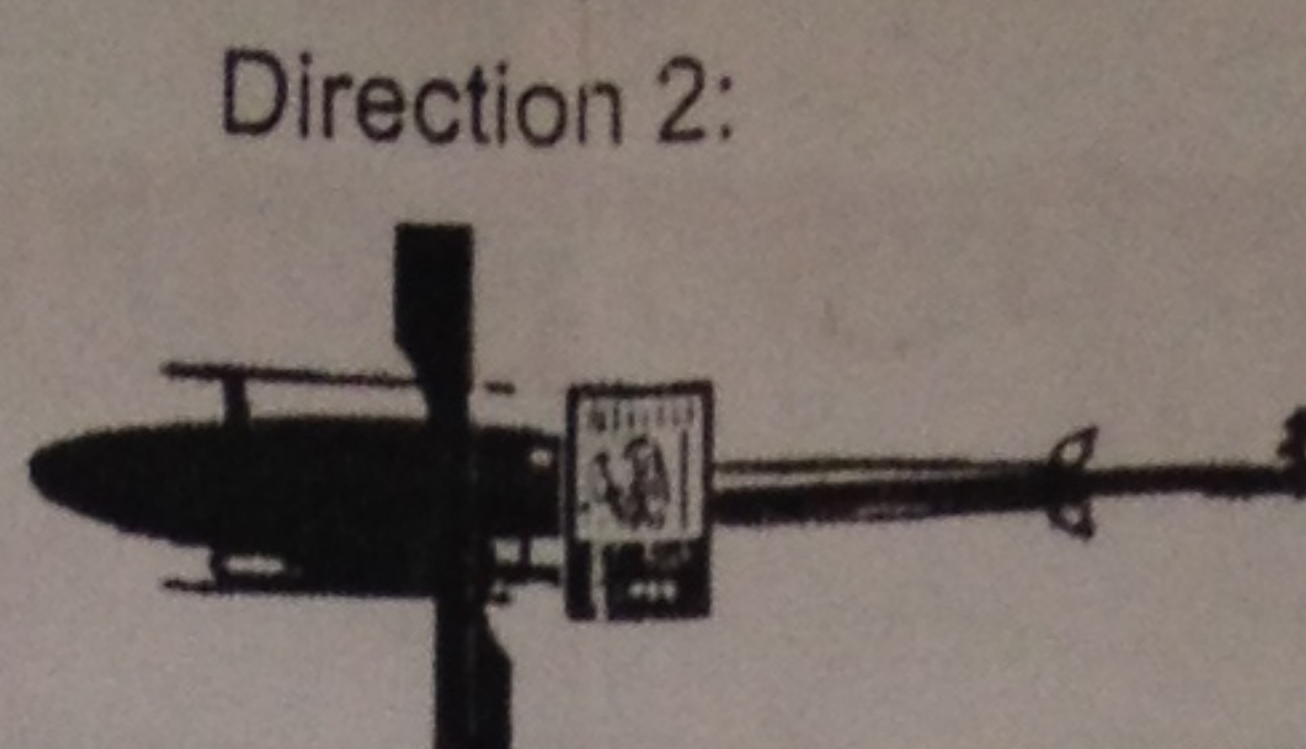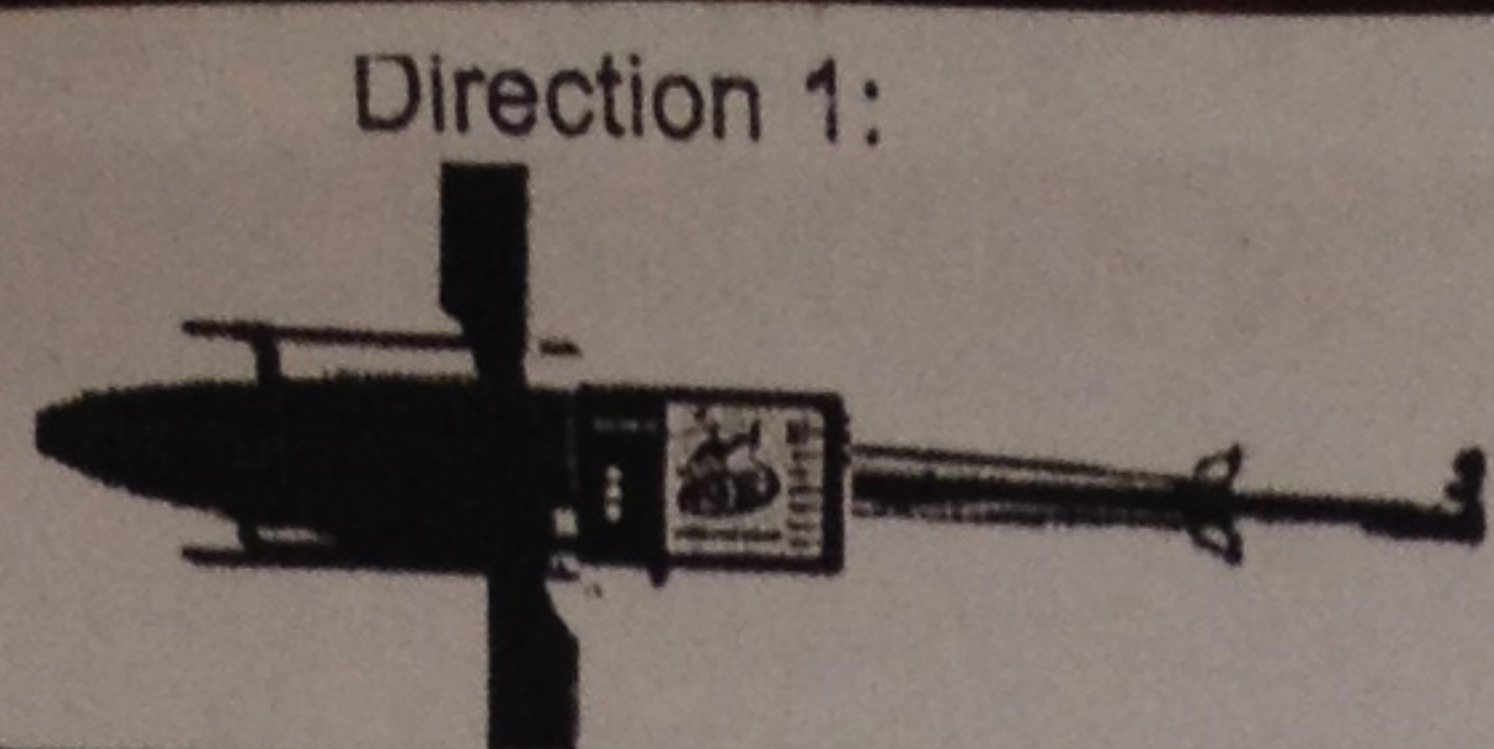
5. Installation of servo horns and linkages

◆ Make sure all the mechanical parts of the rotor head , the swashplate and the tail rotor are installed correctly, all parts can move smoothly, and all the servos are installed firmly.

◆ Install the linkage balls to cyclic servo horns. We recommend the distance from the ball to center is: 12.5- 13mm (250,450size), 14-14.5mm (500size), 14.5-15mm (600 or larger size).

12.5-13mm (250,450size)
14-14.5mm (500size)
14.5-15mm (600 or larger size)

4.5mm (250size)
7.5-10mm (450, 500size)
13.5-15mm(600 or larger size)
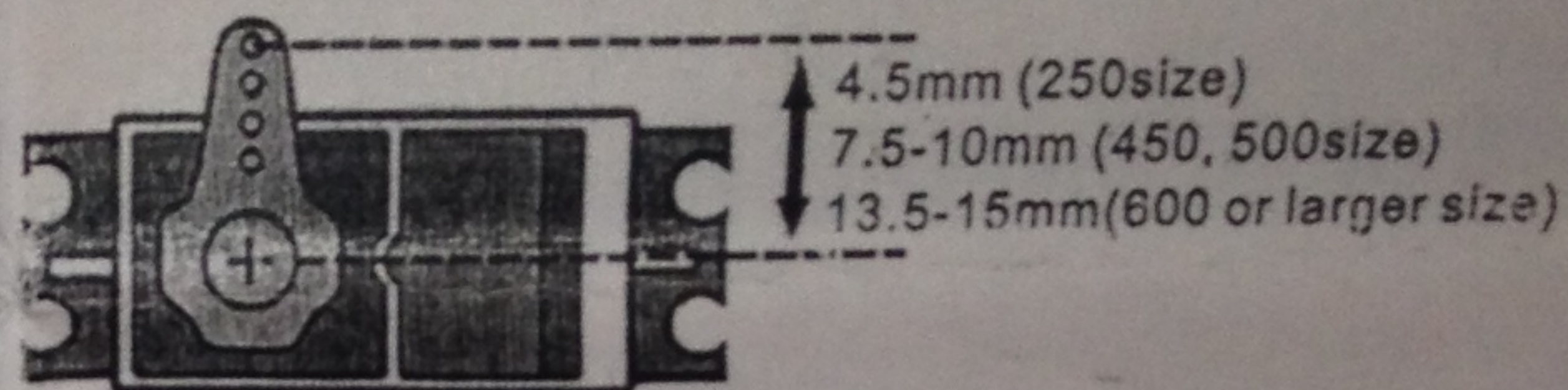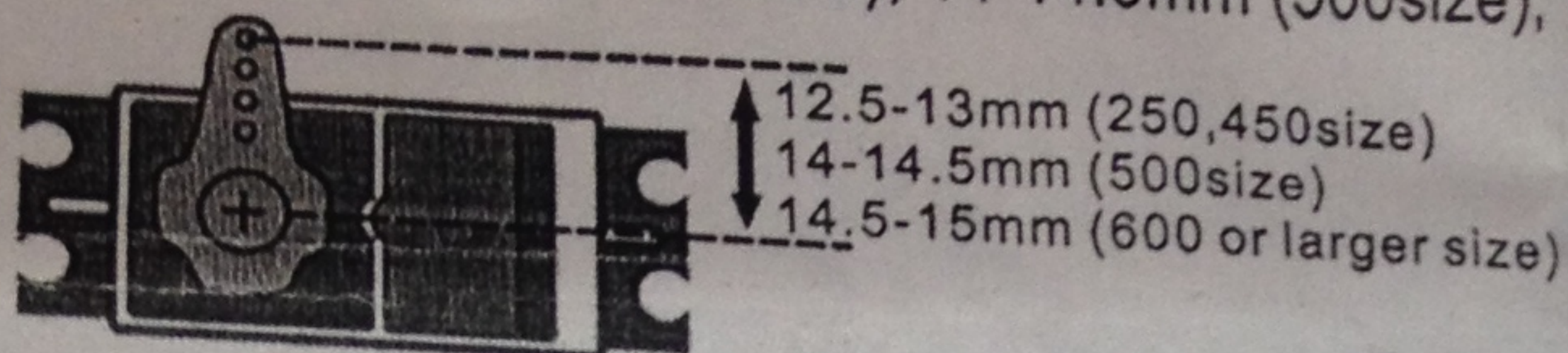
◆ Install the linkage ball to tail servo horn. We recommend the distance from the ball to center is: 4.5mm (250size), 7.5-10mm (450, 500size),13.5-15mm(600 or larger size) .

◆ Install the horn to tail servo temporarily, adjust the horn position to make it perpendicular to the linkage, then set the tail pitch to be approximately 8°in the direction that compensates the main rotor torque by adjusting the linkage length.
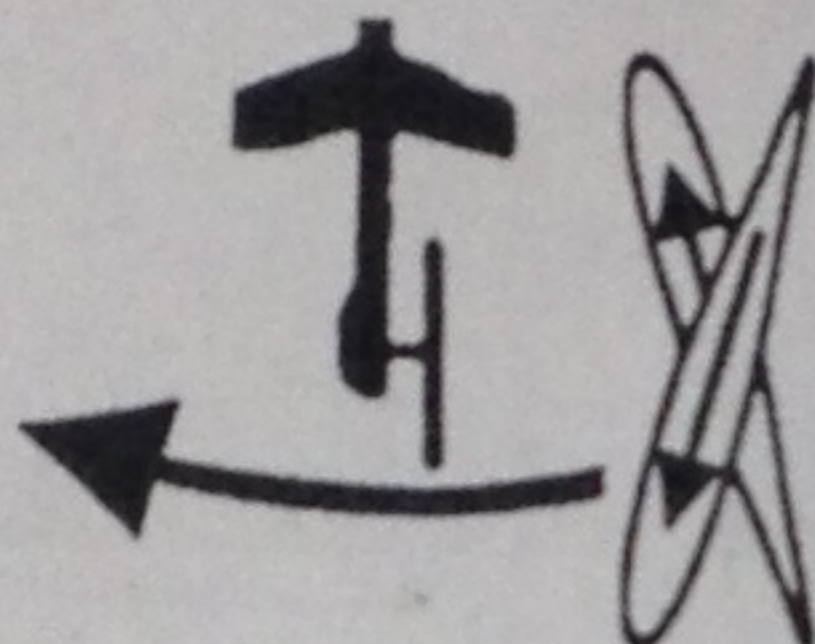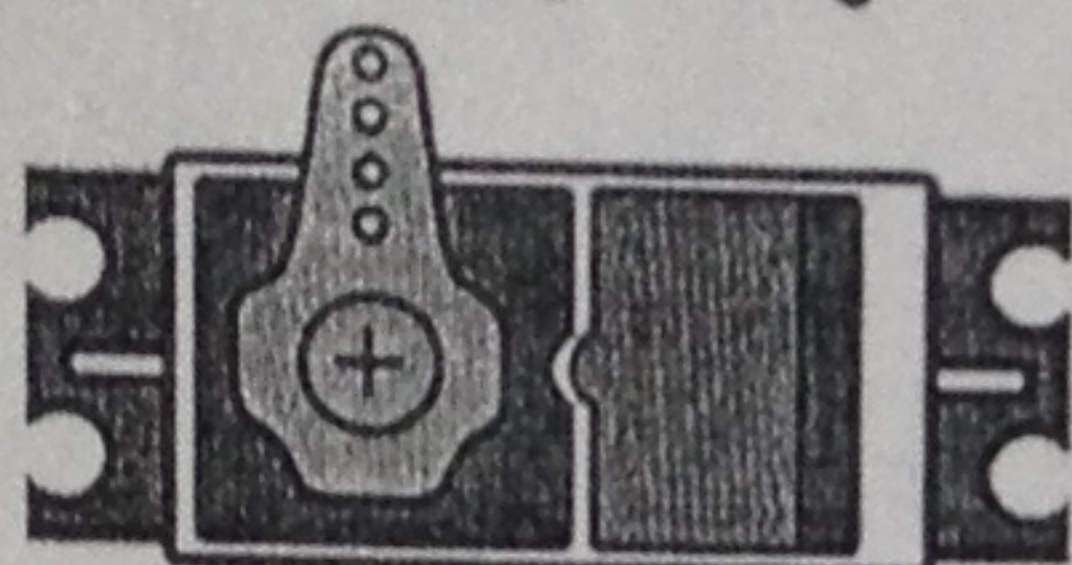
Note: Don't connect servos to the gyro in this stage

6.Gyro setup through transmitter

6.1. Transmitter configuration

Power on the transmitter and create a new helicopter mode, set the trims and sub-trims of all the channels to be zero. Select the swashplate type as a non-mixing mode(Futaba： H1;JR :1 servo NORM) in your transmitter. Make sure all the mixing functions related to swashplate and tail are disable (turned off). Do not adjust the collective pitch curve now, remain it as a straight line.

Take DX7 and 8FG for example,the initial configurations are shown below.

DX7		
Parameter	Name	Value
Type of gyro sensitivity adjustment	GYRO SENS	RUDD D/R
Tail sensitivity adjustment	GYRO SENS->RATE	0: 28% 1: 71%
Tail sensitivity switch	INPUT SELECT->GEAR	GYRO SYS
All the channel travel adjust	TRAVEL ADJUST	100%
All the channel sub trim	SUB TRIM	0
All the channel dual rate	D/R&EXP->D/R	100%
Aileron elevator exp	D/R&EXP->EXP	+40%

8FG		
Parameter	Path	Value
Gyro sensitivity in each condition and mode	Model->Gyro Rate in each condition and mode	35%
All channel end point	Linkage->End Point	100
All the channel sub trim	Linkage->Sub Trim	0
All the channel dual rate	Model->Dual Rate	100
Aileron elevator exp	Model->Dual Rate-EXP	-40

For the specific parameter adjustment , please refer GYRO setting software.

Hold the helicopter and power on it. If the red LED is ON steady, connect 3GS gyro with computer by data cable.

Click the CONNECT button, when the green light is ON steady, then you can adjust the 3GS parameter.