

# ENYA 35-4C, 40-4C

Al-Chrome Ring

## 4 Stroke Cycle Engines

### OPERATING INSTRUCTIONS

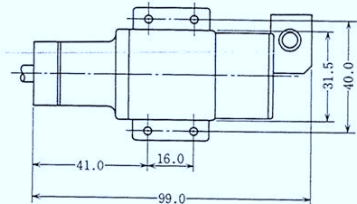
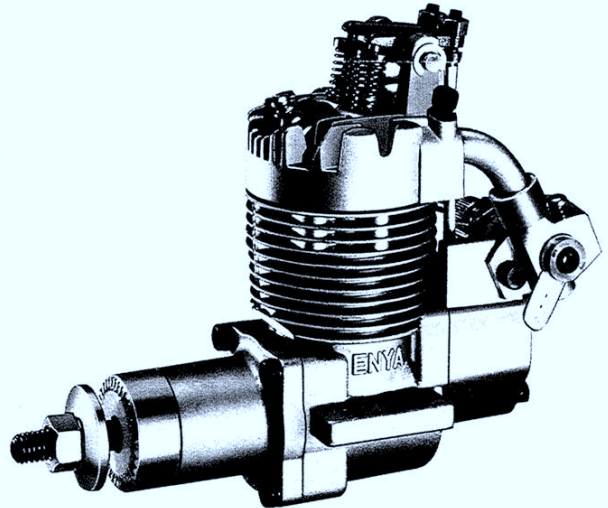
#### ★DISTINCTIVE FEATURES

1. Suitable for medium size model R/C planes
2. Sturdy and dependable construction, light weight
3. High torque and nice speed controlling
4. Low Exhaust sound
5. Easy handling

#### ★TECHNICAL DATA

[Type] 4 stroke cycle, glow plug ignition, with over head valves driven by push rods.

	ENYA 35-4C	ENYA 40-4C
Cylinder bore x stroke mm	20.95 x 17.0	22.3 x 17.0
Cylinder displacement cc	5.86	6.64
Weight g	345	365
Max. power HP	0.4 ~ 0.45	0.4 ~ 0.5
Practical speed range r.p.m.	2,500 ~ 11,000	2,500 ~ 11,000
Critical speed r.p.m.	12,000	12,000
Carburetor	ENYA G-4.5 mm	ENYA G-4.5 mm
Cylinder liner and piston	Al-Chrome	Steel, Aluminum alloy with ring
Size of propeller in.	12 x 4, 11 x 7, 11 x 6, 11 x 5, 11 x 4, 10.5 x 6, 10 x 6	
Glow plug	ENYA No. 3	ENYA No. 3
Suitable weight of plane kg	1.6 ~ 2.8	1.8 ~ 3.0



#### ★FUEL

To obtain good results with ENYA 35-4C and 40-4C, it is recommended to use high quality fuel for glow plug engine which contains 10 ~ 15% of nitro-methane.

STANDARD VOLUMETRIC RATIO OF FUEL COMPONENTS	
Castor oil or high quality synthetic oil	18 ~ 20%
Nitro-methane	5 ~ 15%
Methyl-alcohol	77 ~ 65%

#### ★GLOW PLUG

ENYA glow plug No. 3 is the best.

#### ★PROPELLER

At first choose a well balanced 11" x 6" propeller of high quality for your 35-4C or 40-4C. You can get smooth running and good idling with the propellers made of glassfibre or nylon as they perform as an adequate fly-wheel. When you use a wooden propeller of rather light weight, it is recommended to use a spinner as fly-wheel. It is important to screw up the prop. nut tightly.

#### ★FUEL TANK

The fuel consumption is about 10cc per minute. Then, 150 ~ 200cc fuel tank is recommended for usual flight. To make the engine start easy, set the fuel tank at nearly same level as the carburetor.

#### ★PREPERATIONS BEFORE STARTING

1. Connect a piece of vinyl pipe of about 10 cm length on the breather-nipple, to lead the excess oil in the crank-case out of the fuselage.
2. Attach the exhaust pipe, and set the engine on the test stand or plane securely
3. Set the glow plug and propeller tightly. Choose the best setting angle of propeller at the compression stroke to flip it with your finger.
4. Drop a small amount of mineral oil on the valves, lockers, the both ends of push rods, and the front ball bearing.

#### ★STARTING AND RUNNING

1. Fill the fuel tank with fuel, and open the throttle valve fully, and needle valve 2 ~ 3 turns. Choke the carburetor with your finger and turn the propeller counter-clockwise 3 ~ 5 turns until a small amount of fuel is sucked into the cylinder.  
Another method of priming is to inject several drops of fuel into the exhaust pipe and turn the propeller clockwise 2 ~ 3 turns.
2. After priming the engine, flip the propeller 2 ~ 3 turns and be sure that the priming is normal. When the priming quantity is too much, the compression becomes very high, and you cannot start the engine. In such case, turn the propeller counter-clockwise slowly until the excess fuel leaks out of the combustion chamber and the compression becomes normal.
3. Connect the battery to glow plug and flip the propeller counter-clockwise smartly at the compression stroke. In case of 4 stroke cycle model engine, the clockwise flipping is also effective for starting. It is recommended to try the both methods.  
When the priming and other conditions are proper, the engine starts easily.
4. After your engine starts, open the throttle valve fully, and adjust the needle valve slowly to the best running position. It is recommended to run the engine with a slightly rich mixture while it is new and not broken in.
5. Close the throttle valve slowly and check the idling. The reasonable idling speed of 35-4C and 40-4C is 2,700 ~ 3,000 r.p.m.. Usually, 35-4C and 40-4C prefer rather rich mixture at idling. Control the idling mixture with the idling mixture adjusting screw. When you want richer mixture, close this screw 1/2 or 1 turn at one time, seeing the result carefully.
6. Try hi-lo and lo-hi operation several times, and make sure that the engine has no tendency to stop.
7. In the medium speed range between full throttle and idling, the engine runs steadily with the slightly rich mixture fed by the G type carburetor.
8. You can start ENYA 35-4C and 40-4C most easily by an electric starter. But, do not use it when the engine is over primed.

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## ★BREAK IN

Break in your 35-4C or 40-4C about 1 hour. During this period the engine running is sometimes unsmooth and unsteady. But as you continue the breaking in, the engine running will become smoother and more powerful. Usually, it will take 2 ~ 4 hours for the engine to reach its peak in power and smoothness.

## ★ADJUSTMENT OF THE VALVE CLEARANCES

The normal valve clearances of ENYA 35-4C and 40-4C are 0.05 ~ 0.10 mm when the engine is cold. It is recommended to make the first adjustment of valve clearances after first 1/2 ~ 1 hour of running with the special wrench and driver enclosed in the box. And it is also recommended to check the clearances sometimes after every 1 ~ 2 hours of running. It is important that the adjustment is to be made when the engine is cold. (The valve clearances become wider when the engine is hot because of the expansion of cylinder block.)

## ★MATTERS THAT DEMANDS SPECIAL ATTENTION

1. The disassembling and assembling of ENYA 35-4C and 40-4C is not so difficult. But do it carefully.
2. They have inlet and exhaust cam-shafts of different shape. (See the drawing of details.) Then, when you disassemble the timing gear box, it is important to remember the right positions of each cam shaft.

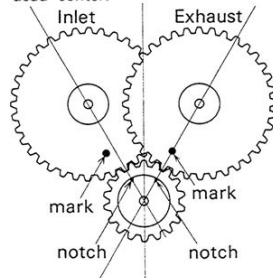
3. When you assemble the timing gear box, put the piston at the top dead center, and then combine the notches of gear shafts and the marks of cam shafts as shown in the sketch.

The standard timing of valves are as follows.

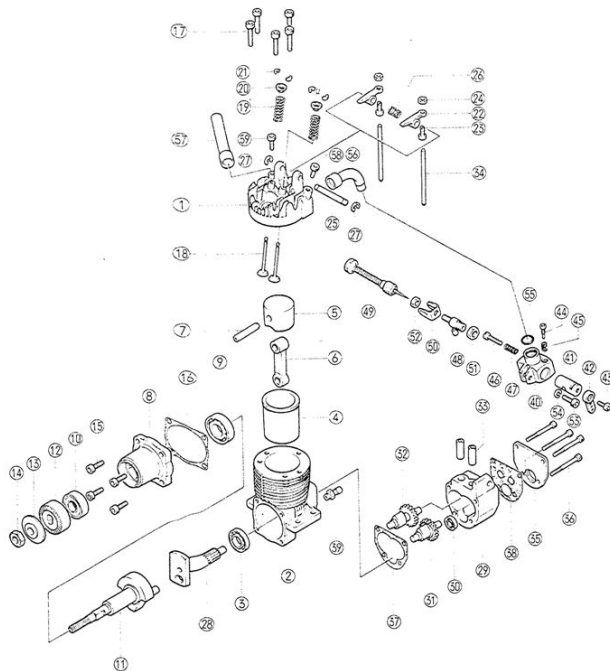
Inlet valve open	20° BTDC
" close	60° ABDC
Exhaust valve open	40° BTDC
" close	40° ATDC

4. When you assemble the engine, proper lubrications on all the parts are recommended.

The following figure shows the correct positions of timing gears when the piston is at the top dead center.



## DRAWING OF DETAILS



## ★MAINTENANCE

1. Supply a small amount of oil sometimes around the valves and lockers.
2. Do not screw up the cylinder head of 35-4C too tightly to avoid the deformation of cylinder liner. When you find that the movement of the piston at the top dead center becomes unsmooth, loosen the screws of cylinder head, and screw them up once more alternately and carefully.
3. It is usually needless to supply any oil to the inner mechanism, because the oil contained in fuel lubricates all of the inner parts.



## PARTS LIST

No. in drawing	Name of part	ENYA 35-4C		ENYA 40-4C	
		Qty.	Part No.	Qty.	Part No.
1	Cylinder head	1	354C01	1	404C01
	Crank case	1 set	354C03	1 set	404C03
2	Crank case	1	354C03A	1	404C03A
3	Ball bearing	1	354C03B	1	354C03B
	Cylinder liner & piston	1 set	354C04	1 set	404C04
4	Cylinder liner	1	354C04A	1	404C04A
5	Piston	1	354C04B	1	404C04B
	Piston ring	—	—	1	45204C
6	Connecting rod	1	354C05	1	354C05
7	Piston pin	1	354C06	1	404C06
	Front housing (with ball bearing)	1 set	354C07	1 set	354C07
8	Front housing	1	354C07A	1	354C07A
9	Ball bearing A	1	354C07B	1	354C07B
10	Ball bearing B	1	354C07C	1	354C07C
11	Crank shaft	1	354C08	1	354C08
12	Drive washer	1	354C10	1	354C10
13	Propeller washer	1	15212	1	15212
14	Propeller nut	1	15214	1	15214
15	Front housing setting screw (3 x 10)	4	354C15A	4	354C15A
16	Gasket of front housing	1	354C16	1	354C16
17	Cylinder head setting screw (3 x 15)	5	354C19A	5	354C19A
18	Inlet & exhaust valve	2	354C71	2	354C71
19	Valve spring	2	354C72	2	354C72
20	Valve spring washer	2	354C73	2	354C73
21	Valve cotter	4	354C74	4	354C74
22	Valve locker arm	2	354C75	2	354C75
23	Valve locker screw	2	354C76	2	354C76
24	Valve locker screw locking nut	2	354C77	2	354C77
25	Locker shaft	1	354C78	1	354C78
26	Locker arm spacing spring	1	354C79	1	354C79
27	Locker shaft setting E ring	2	354C80	2	354C80
28	Timing gear shaft	1	354C81	1	354C81
	Timing gear box (with ball bearing)	1 set	354C82	1 set	354C82
29	Timing gear box	1	354C83A	1	354C83A
30	Gear box bearing	1	354C83B	1	354C83B
31	Inlet cam shaft	1	354C84	1	354C84
32	Exhaust cam shaft	1	354C85	1	354C85
33	Tappet	2	354C86	2	354C86
34	Push rod	2	354C87	2	354C87
35	Back plate	1	354C88	1	404C88
36	Gear box setting screw (2.6 x 25)	4	354C89	4	354C89
37	Gasket of gear box	1	354C90	1	354C90
38	Gasket of back plate	1	354C91	1	354C91
39	Breathing nipple	1	354C92	1	354C92
	Carburetor assembly	1 set	354C40	1 set	354C40
40	Carburetor body	1	354C40A	1	354C40A
41	Throttle valve	1	354C40B	1	354C40B
42	Throttle lever	1	354C40C	1	354C40C
43	Throttle lever setting screw (3 x 7)	1	60330E	1	60330E
44	Idling speed adjusting screw	1	354C40H	1	354C40H
45	Spring	1	354C40I	1	354C40I
46	Idling mixture adjusting screw (2.6 x 12)	1	19X40J	1	19X40J
47	Spring	1	19X40K	1	19X40K
	Needle valve assembly	1 set	354C40F	1 set	354C40F
48	Spray bar	1	354C40F2	1	354C40F2
49	Needle	1	354C40F1	1	354C40F1
50	Needle stop spring	1	15220C	1	15220C
51	Spray bar locking nut	1	29430F4	1	29430F4
52	4 mm nut	1	09230Fs	1	09230Fs
53	Carburetor setting screw (3 x 10)	1	354C15A	1	354C15A
54	3 mm spring washer	1	354C40P	1	354C40P
55	9.5φ O ring	1	354C40M	1	354C40M
56	Inlet manifold	1	354C41	1	354C41
57	Exhaust pipe	1	354C45	1	354C45
58	Inlet manifold setting screw (3 x 6)	1	354C46	1	354C46
59	Exhaust pipe setting screw (3 x 6)	1	354C46	1	354C46