YAMAHA

SNOWMOBILE

EX440E

SUPPLEMENTARY SERVICE MANUAL

LIT-12618-00-34

8L5-28197-10

FOREWORD

This supplementary service manual for EX440E has been published to supplement the EX440D supplementary service manual (8J7-28197-10). For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with the following manuals.

EX340/440A	Service Manual (8E7-28197-10)
EX340/440B	Supplementary Service Manual (8G6-28197-10)
EX440C	Supplementary Service Manual (8H6-28197-10)
EX440D	Supplementary Service Manual (8J7-28197-10)

NOTE:
The Research and Engineering Departments of Yamaha are continually sriving to further perfect all models. Improvements are modificatons are terefore inevitable.
In light of this fact, all specifications within this manual are subject to change without notice. Information regarding changes is forwarded to all Authorized Yamaha Dealers as soon as available.

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

Particularly important information is distinguished in this manual by the following notations:

NOTE: A NOTE provides key information to make procedures easier or clearer.
CAUTION: A CAUTION indicates special procedures that must be followed to avoid damage to the machine.
WARNING: A WARNING indicates special procedures that must be followed to avoid injury to a machine operator or person inspecting or repairing the machine.

YAMAHA EX440E
SUPPLEMENTARY SERVICE MANUAL
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1. NEW SERVICE PROCEDURE

In servicing the EX440E, there is no particular service procedure to be aded to that for the EX440D.

2. SPECIFICATIONS

NOTE: * ..... New specification
(Compared with 1980 EX440D)

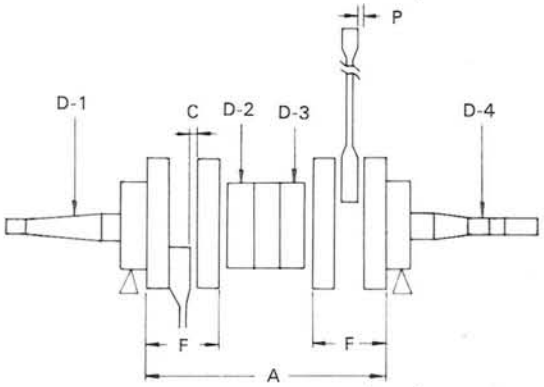
General

Model:	
Model (I.B.M. No.)	* EX440E (8L5)
Frame I.D. & starting number	* 8L5-051101
Engine I.D. & starting number	* SS433-051101
Dimension:	
Overall length	2,520 'mm (99.2 in)
Overall width (std)	980 mm (38.6 in)
Overall height (w/windshield)	995 mm (39.2 in)

Engine

Description:	
Engine type	Fan cooled two-stroke 7-port torque induction, twin cylinders
Engine model	SS433
Displacement	433 cc (26.42 cu.in)
Bore × Stroke	68 × 59.6 mm (2.68 × 2.35 in)
Effective compression ratio	7.0 : 1
Starting system	Recoil hand starter
Ignition system	C.D.I.
Lubrication system	"Autolube" oil injection
Cylinder head:	
Combustion chamber volume (with spark plug)	24.6 cc (1.50 cu.in)
Compression chamber type	Dome + Squish
Head gasket thickness	0.5 mm (0.02 in)
Cylinder:	
Material	Cast iron sleeves aluminum
Bore size	68 mm (2.677 in)
Taper limit	0.05 mm (0.0020 in)
Out of round limit	0.01 mm (0.0004 in)
Piston:	
Piston skirt clearance (Measuring point)	0.045 ~ 0.050 mm (0.0018 ~ 0.0020 in) (20 mm from piston skirt end)
Piston oversize	1st 68.25 mm (2.687 in) 2nd 68.50 mm (2.697 in) 3rd 68.75 mm (2.707 in) 4th 69.00 mm (2.717 in)
Piston pin outside diameter × length	ϕ18 × 55 mm (ϕ0.709 × 2.17 in)
Piston ring:	
Piston ring design (Top)	Keystone
(2nd)	Keystone
Ring end gap (installed) (Top)	0.35 ~ 0.55 mm (0.014 ~ 0.022 in)
(installed) (2nd)	0.35 ~ 0.55 mm (0.014 ~ 0.022 in)
Small end bearing:	
Type	Needle bearing
Big end bearing:	
Type	Needle bearing
Crankshaft:	
Crankshaft assembly width (A)	174 ± 0.1 mm (6.85 ± 0.004 in)
(F)	$56\ ^{+0}_{-0.05}$ mm ($2.205\ ^{+0}_{-0.002}$ in)
Crankshaft deflection (D)	0.03 mm (D-1) 0.04 mm (D-2) 0.04 mm (D-3) 0.05 mm (D-4)

Connecting rod large end side clearance (C)	0.25 ~ 0.75 mm (0.010 ~ 0.030 in)
Connecting rod small end deflection (P)	2.0 mm (0.079 in)



Crank pin outside diameter × length	24 × 55 mm (0.945 × 2.165 in)
Crank pin type	Solid shaft assembly type with serration
Crank bearing type (Left) × q'ty	#6306 special × 2 pcs.
(Center) × q'ty	#6206 special × 2 pcs.
(Right) × q'ty	#6206 special × 1 pc.
Crank oil seal type (Left) × q'ty	FWJ-32 78 9.5 × 1 pc.
(Center) × q'ty	Labyrinth seal × 1 pc.
(Right) × q'ty	FWJ-32 48 10 × 1 pc.

Carburetor:		
Type & manufacturer/quantity		BD44 × 38 KEIHIN × 1 pc.
I.D. Mark		8H600
Main jet	(M.J.)	#145
Main air jet	(M.A.J.)	#180
Power jet	(Pw.J.)	#150
Power air jet	(Pw.A.J.)	#200
Slow jet	(S.J.)	#90
Slow air jet	(S.A.J.)	#100
Pilot screw	(P.S.)	1-5/8
Starter jet	(St.J.)	#160
Float height		15 $^{+2}_{-3}$ mm (0.59 $^{+0.08}_{-0.12}$ in)
Idling engine speed		1,500 r/min

Main jet setting chart:

Altitude \ Temperature	−30°C (−22°F)	−20°C (−4°F)	−10°C (14°F)	0°C (32°F)	10°C (50°F)	20°C (68°F)
Sea level	#145					#140
~ 600m (2000 ft)	#145				#140	
~ 1200m (4000 ft)	#140				#135	
~ 1800m (6000 ft)	#135				#130	
~ 2400m (8000 ft)	#130				#125 [1]	
~ 3000m (10000 ft) or more	#125 [1]				#120 [1]	

1) Change the slow jet to #95 or #100ø

Intake reed valve:	
Type	V type
Bending limit	0.3 mm (0.012 in)
Valve lift	10.4 mm (0.409 in)
Tightening torque	8.0 cm-kg (6.9 in-lb)
Lubrication:	
Autolube pump — Color code	Blue
— Minimum stroke	0.20 ~ 0.25 mm (0.0079 ~ 0.0098 in)
— Maximum stroke	1.65 ~ 1.87 mm (0.0650 ~ 0.0736 in)
— Reduction ratio	1/44
— Output Min./200 strokes	0.95 ~ 1.19 cc (0.0321 ~ 0.0402 oz)
— Output Max./200 strokes	7.84 ~ 8.89 cc (0.2651 ~ 0.3006 oz)
Autolube pump wire free play	25 ± 1 mm (0.98 ± 0.04 in) at idle
Oil tank capacity	2.8 Liter (3 US.qt)
Oil grade	YAMALUBE 2-cycle

Drive and track suspension

Transmission:	
Type	V-belt automatic centrifugal engagement
Drive ratio	3.5 : 1 ~ 1 : 1
Engagement rpm	2,900 ~ 3,300 r/min
Primary spring:	
Part No.	90501-45534
Color code	Blue/Green
Secondary spring:	
Part No.	90508-45286
Color code	Yellow
Secondary spring pre-load (twist)	150° (Hole No. 1)
Sheave distance	270 $^{+0}_{-3}$ mm (10.6 $^{+0}_{-0.12}$ in)
Sheave off-set	5.5 ± 0.5 mm (0.22 ± 0.02 in)
V-belt width and outer line length	31.6 x 1,099 mm (1.24 x 43.3 in)
V-belt wear limit	26 mm (1.02 in)
Track suspension:	
Type	Slide rail suspension
Damper type	Oil and gas damper
Spring color code	No. painted
Slide runner wear limit	10 mm (0.4 in)
Track width	380 mm (15 in)
Track deflection	25 ~ 30 mm/10 kg (0.984 ~ 1.18 in/22 lb)
Length on ground	850 mm (33.5 in)
Wheel sprocket material and number of teeth	Polyethylene 8T
Stopper band length (Front)	214 mm (8.4 in) (3rd hole from the bottom)
Secondary drive:	
Type	Chain (#35-3)
Reduction ratio	29/17 (1.706)
Chain pitch × Number of links	9.525 mm (0.375 in) × 68L
Free play	10 $^{+5}_{-2}$ mm (0.4 $^{+0.2}_{-0.08}$ in)
Chain housing oil quantity	320 cc (10.82 oz)
Chain housing oil grade	Gear oil API "GL3" (SAE #75 or 80)
Brake:	
Type	Floating pad type disc brake
Brake pad thickness	13.5 mm (0.53 in)
Brake pad wear limit	9.5 mm (0.37 in)
Gap between pad and disc	0.15 mm (0.006 in)

Chassis

Frame:	
Frame design & material	Aluminum + Steel
Steering system:	
Caster (ski column)	25°
Camber	0°
Ski length × width × thickness	980 × 136 × 2.6 mm (38.6 × 5.5 × 0.10 in)
Ski stance	800 mm (31.5 in)
Ski Toe-out	0 ~ 6 mm (0 ~ 0.23 in)
Steering linkage type	Tie-rod
Lock to lock angle (ski)	Right ski, L: 20.2° R: 27.6° Left ski, L: 27.6° R: 20.2°
Lock to lock angle (steering column)	Right: 46.5° Left: 46.5°
Front suspension:	
Type	Leaf spring
damper type	Oil damper
Fuel tank:	
Capacity	29 Liter (6.4 IMP.gal)
Fuel grade	Regular gasoline

Electrical

Ignition system:		
Type — flywheel magneto (C.D.I. Type)		
Model/manufacturer	F280-78/HITACHI	
Voltage	12V	
Pulser coil resistance	78Ω at 20°C (68°F) (White/Red — Black)	
Charging coil resistance	84Ω at 20°C (68°F) (Brown — Black) 29Ω at 20°C (68°F) (Blue — Black)	
Ignition timing:		
B.T.D.C.	1.6 ± 0.1 mm (0.060 ± 0.004 in)	
Ignition:		
Model/Manufacturer	CM62-20/HITACHI or	* YW-51/TOYO DENSO
Spark gap	9 mm (0.35 in)/300 r/min	←
	11 mm (0.43 in)/3,000 r/min	←
Primary winding resistance	0.15Ω at 20°C (68°F)	0.12Ω at 20°C (68°F)
Secondary winding resistance	3.6kΩ at 20°C (68°F)	4.0kΩ at 20°C (68°F)
Diode (Yes or No)	No	No
Spark plug:		
Type & Quantity	NGK B-9ES × 2 pcs.	
Spark plug gap	0.6 mm (0.023 in)	
Spark plug cap:		
Type	Rubber type with noise suppressor	
Noise suppressor resistance	5kΩ at 20°C (68°F)	
C.D.I. unit:		
Model/Manufacturer	TIA01-30/HITACHI	
Lighting system:		
Lighting output	12V/100W	
Lighting coil resistance	0.22Ω at 20°C (68°F) (Yellow — Black)	
Headlight type	Semi shield	
Bulb wattage/q'ty	12V 60/60W × 1 pc.	
Tail/brake light wattage	12V 8W/23W	
Meter light wattage	12V 3.4W	

A.C. regulator:	
Model/Manufacturer	TRIZ-24B/HITACHI or S8516B/TOSHIBA
Voltage	13.8 ± 0.5V