## **TABLE OF CONTENTS**

1	SAFETY		4 FUEL	
	INTRODUCTION CLEANING, WAXING, & POLISHING CONTROLLING CORROSION	1-1 1-1 1-1	INTRODUCTION GENERAL CARBURETION INFO. FUEL SYSTEM	4-1 4-1 4-4
	PROPELLERS	1-2	Leaded Gasoline & Gasohol	4_4
	LOADING	1-7	Removing Fuel From System	4-5
	HORSEPOWER	1-7	TROUBLESHOOTING	4-5
	FLOTATION	1-7	Fuel Problems	4-6
	BOATING ACCIDENT REPORTS	1-9	"Sour" Fuel	4-6
			Fuel Pump Test	4-7
2	TUNING		Rough Engine Idle	4-10
			Excessive Fuel Consumption	4-10
	INTRODUCTION	2-1	CARBURETOR MODELS	4-11
	TUNE-UP SEQUENCE	2-2		
	COMPRESSION CHECK	2-3	SIDE BOWL AND BACK DRAG	
	SPARK PLUG INSPECTION	2-3	CARBURETORS REFERENCE	
	IGNITION SYSTEM	2-4	"A" IN APPENDIX	4-11
	TIMING & SYNCHRONIZING	2-4	Removal & Disassembling	4-12
	BATTERY CHECK	2-5	Cleaning & Inspecting	4-14
	CARBURETOR ADJUSTMENT FUEL PUMPS	2-6 2-8	Assembling	4-18
	CRANKING MOTOR & SOLENOID	2-8 2-9	INTEGRAL FUEL PUMP	
	INTERNAL WIRING HARNESS	2-9	CARBURETOR REFERENCEI	`
		2-10	"B" IN APPENDIX	
		2-10 2-11	Removal & Disassembling	4-25
		<b>2</b> -11	Cleaning & Inspecting	4-25
		2-12	Assembling	4-26
3	MAINTENANCE			
			CENTER ROUND BOWL	
	INTRODUCTION	3-1	CARBURETOR REFERENCEI	
	OUTBOARD SERIAL NUMBERS	3-2	"C" IN APPENDIX	4-30
	LUBRICATION	3-2	Removal & Disassembling	4-30
	PRESEASON PREPARATION	3-3	Cleaning & Inspecting	4-32
	Units With Oil Injection	3-5	Assembling	4-32
	FIBERGLASS HULLS	3-6		
	BELOW WATERLINE SERVICE	3-7	MIZUMI DECTANCIU AD DOWI	
	SUBMERGED ENGINE SERVICE	3-7	MIKUNI RECTANGULAR BOWL	
	PROPELLER SERVICE	3-9	SIDE-DRAFT CARBURETOR REFERENCED <b>"D"</b>	
	POWER TRIM/TILT INSIDE THE BOAT	3-9 3-10	IN APPENDIX	h 27
		3-10	Removal & Disassembling	4-37 4-37
		3-10 3-11	Cleaning & Inspecting	4-37 4-40
		3-12	Assembling	4-40
	onto with our injection .	~ 1 am		7-71

FUEL (CONTINUED)		TYPE I IGNITION SYSTEM PHELON — MAGNETO	
MIKUNI ROUND BOWL		WITH POINTS	
SIDE-DRAFT CARBURETOR		Description	5-6
REFERENCED		Troubleshooting	5-7
"E" IN APPENDIX	4_44	Servicing	5-10
Removal & Disassembling	4_44	Disassembling	5-10
Cleaning & Inspecting	4-46	Cleaning & Inspecting	5-12
Assembling	4-48	Assembling	5-15
TILLOTSON "BC" RECTANGULAR		TYPE II IGNITION SYSTEM	
BOWL DOUBLE FLOAT		THUNDERBOLT FLYWHEEL	
CARBURETOR WITH INTEGRAL	-	PHASE MAKER — WITH POINTS	
FUEL PUMP REFERENCED		Description	5-18
"F" IN APPENDIX	4-51	Troubleshooting	5-18
Removal & Disassembling	4-51	Servicing	5-23
Cleaning & Inspecting	4-53	Phase Maker W/O Module	
Assembling	4-55	Disassembling	5-24
W.I. D.O. WW.I.O. D.E.O. I.O. V. I.O.		Assembling	5-26
WALBRO "WMC" RECTANGULAR		Phase Maker With Module	
BOWL DOUBLE FLOAT		Disassembling Assembling	5-27
CARBURETOR WITH INTEGRAL	-	Assembling	5-29
FUEL PUMP REFERENCED	L 50	TYPE III IGNITION SYSTEM	
"G" IN APPENDIX	4-58 4-59	THUNDERBOLT FLYWHEEL	
Removal & Disassembling Cleaning & Inspecting	4-33 4-61	CD POINTLESS	
Assembling	4-63	Description	5-31
Assembling	4-07	Troubleshooting	5-32
ROUND BOWL SINGLE FLOAT		Servicing	5-34
CARBURETOR — STAMPED "F"		Removal	5-34
WITH "KEIKHIN" INTEGRAL		Installation	5-35
FUEL PUMP REFERENCED			
"H" IN APPENDIX	4-68	TYPE IV IGNITION SYSTEM	
Removal & Disassembling	4-68	THUNDERBOLT FLYWHEEL	
Cleaning & Inspecting	4-72	CD — COIL PER CYLINDER	
Assembling & Installation	4-72	Description	5-36
-		Troubleshooting	5-37
		Disassembling	5-41
FUEL PUMP	4-76	Assembling	5-44
Theory of Operation	4-76	4 #11 #16 1 1 10 6 1 11 6 1 1 1 1 1 1 1 1 1 1 1	
Pressure Check	4-79	6 TIMING AND SYNCHRONIZING	
Removal	4-79	INTRODUCTION - PREDAR ATION	
Cleaning & Inspecting	4-80	INTRODUCTION & PREPARATION	6-1
Assembling	4-80	MODEL 39, 40, 60, 75, & 110	, ,
OIL INITECTION		1965-1969 MODEL 200 1965-1966	6-2 6-3
OIL INJECTION	4-81	MODEL 200 1965-1966 MODEL 350 1965-1969	6-4
Operation	4-82	MODEL 330 1983-1989 MODEL 200 1967-1969	6-6
Troubleshooting Preparation For Use	4-82 4-84	MODEL 40 1970	6-7
rieparation roi Use	4-04	MODEL 40 1970 MODEL 200 1970-1977 TO SERIAL	U~/
		NO. 4709592 OF 1978	6-8
		MODEL 75 & 110 1970	<del>-</del> -0
<b>IGNITION</b>		MODEL 40, 75 & 110 1971-1974	
A		MODEL 45 1975-1979	
INTRODUCTION	5-1	MODEL 4.5 1979-1985	
SPARK PLUG EVALUATION	5-2	MODEL 4.0 1986 — Mid '87	
WIRING HARNESS	5.5		6-10

6	TIMING AND SYNCHRONIZING (CONT)		POWERHEAD "A"	
			SPLIT BLOCK WITHOUT HEAD	)
	MODEL 400 1970-1971	6-11	INTERNAL REED BOX AROUN	1D
	MODEL 402 1972-1979		THE CRANKSHAFT	
	MODEL 40 1979-1983		(See Tune-up Specs. Last Col.)	
	MODEL 35 1984-89	6-13	Removal & Disassembling	8-5
	MODEL 40 1976-1981	6-14	Assembling	8-11
	MODEL 75 & 110 1975-1979		Installation	8-21
	MODEL 7.5 & 9.8 1979-1985	6-16		
	MODEL 200 1978-1981		POWERHEAD "B"	
	SERIAL NO. 4709592 & UP	6-17	SPLIT BLOCK WIHOUT HEAD	
	MODEL 3.5 & 3.6 1980-1985	6-18	EXTERNAL REED BLOCK	
		010	(See Tune-up Specs. Last Col.)	
	MODEL 18 & 25 1980-1983		Removal & Disassembling	8-24
	MODEL 18XD & 25XD 1984-198	8.5	Assembling	8-34
	MODEL 20 1979-80 & 1986 & O		Installation	8-43
	MODEL 25 1986 & ON	6-19	1110 001100 01011	.,
	Model 2.2 1984-89 and	0-17	POWERHEAD "C"	
	Model 3.0 — 1990 & on	6-21	SPLIT BLOCK WITH HEAD	
	MODEL 6.0, 8.0, 9.9, 15, & 210cc	0-21	REEDS INSTALLED UNDER	
	1986 & ON	6-21	THE CRANKSHAFT	
	MODEL 4.0 Mid 1987 & ON	0-21	(See Tune-up Specs, Last Col.)	
	MODEL 5.0 1988 & ON	6-23	Removal & Disassembling	8-47
	MOBEL 213 1708 & ON	U-L)	Assembling	8-55
7	ELECTRICAL		Installation	8-58
,	ELECTRICAL		CLEANING & INSPECTING	0-76
	INTRODUCTION	7-1	ALL POWERHEADS	8-62
	INTRODUCTION		Reed Block Service	8-62
	BATTERIES	7-1		
	Construction	7-2	Crankshaft & End Cap Bearings	8-65
	Ratings	7-2	Connecting Rods Piston Service	8-67
	Jumper Cables	7-5		
	Storage	7-6	Honing Procedures	8-69
	THERMOMELT STICKS	7-6	Cylinder Block Service	<b>8</b> –70
	TACHOMETER	7-7	O LOWED HAPT	
	ELECTRICAL SYSTEM		9 LOWER UNIT	
	GENERAL INFORMATION	7-7	DESCRIPTION	
	CHARGING CIRCUIT SERVICE	7-8	DESCRIPTION	9-1
			CHAPTER ORGANIZATION	9-1
	CRANKING MOTOR		TROUBLESHOOTING	9-2
	CIRCUIT SERVICE	7-9	PROPELLER REMOVAL	9-4
	Troubleshooting	7-10	TAWER CLUW TURE HAR	
	CRANKING MOTOR SERVICE	7-13	LOWER UNIT TYPE "A"	
	Disassembling Large Motor	7-14	NO REVERSE GEAR	\
	Disassembling Small Motor	7-15	(See Lower Unit Table in Appen	
	Cleaning & Inspecting	7-17	Description	9-6
			Removal & Disassembling	9-6
	TESTING CRANKING MOTOR	7-18	Cleaning & Inspecting	<del>9</del> -12
	ASSEMBLING		Assembling	9-15
	Large Motor	7-20	Installation	9-23
	Small Motor	7-23	LOWER UNIT TYPE "B"	
			REVERSE CAPABILITY	
			(See Lower Unit Table in Appen	
			Description	9-25
8	POWERHEAD		Removal & Disassembling	9-25
			Cleaning & Inspecting	9-33
	INTRODUCTION	8-1	Assembling	9-37
	Chapter Organization	8-3	Installation	9-49
	and the state of t			

9	LOWER UNIT (CONTINUED)		Cleaning & Inspecting Assembling & Installation	12-6 12-8
	LOWER UNIT TYPE "C"			
	REVERSE CAPABILITY		TYPE "B" (See Introduction)	
	UNIQUE SHIFT ARRANGEMEN	1T	Removal & Disassembling	12-15
	(See Lower Unit Table in Apper	idix)	Cleaning & Inspecting	12-16
	Description	<b>9-</b> 51	Assembling & Installation	12-17
	Removal & Disassembling	<b>9</b> -51		
	Cleaning & Inspecting	<b>9</b> -53	TYPE "C" (See Introduction)	
	Assembling	<b>9</b> -55	Removal & Disassembling	12-19
	Installation	9-58	Cleaning & Inspecting	12-22
	LOWER UNIT TYPE "D"		Assembling & Installation	12-22
	NO REVERSE CAPABILITY		4-	
	WATER PUMP INSTALLED		TYPE "D" (See Introduction)	
	ON PROPELLER SHAFT		Removal & Disassembling	12-25
	(See Lower Unit Table in Apper	idix)	Cleaning & Inspecting	12-28
	Disassembling	9-59	Assembling & Installation	12-29
	Cleaning & Inspecting	9-64		
	Assembling	9-66	TYPE <b>"E"</b> (See Introduction)	
	C		Removal & Disassembling	12-34
			Cleaning & Inspecting	12-36
10	TRIM/TILT		Assembling & Installation	12-36
	INTRODUCTION	10-1	TYPE "F" (See Introduction)	
	CHAPTER ORGANIZATION	10-1	Removal & Disassembling	12-37
	MECHANICAL TILT PIN	10-1	Cleaning & Inspecting	12-40
	ALL UNITS	10-2	Assembling & Installation	12-40
	DESCRIPTION AND OPERATION	10-2	Acoemoting & Historia	12-10
		10-3	TYPE "G" (See Introduction)	
	TRIM/TILT SYSTEM SPECIAL INSTRUCTIONS	10-5	Removal & Disassembling	12-44
	SPECIAL INSTRUCTIONS	10-5	Cleaning & Inspecting	12-47
	SERVICING TRIM TILT SYSTEM		Assembling & Installation	12-47
		10-6	Assembling & Installation	12-77
	Hydraulic Bleeding	10-8	TYPE "H" (See Introduction)	
	Troubleshooting	10-8	Removal & Disassembling	12-52
	Testing Components		Cleaning & Inspecting	12-56
	Cleaning & Inspecting	10-9	Assembling & Installation	12-56
	Installation	10-9	Assembling & Installation	12-70
	Solenoid Testing	10-10	APPENDIX	
	Hydraulic Trim Service	10-12	AFFLINDIA	
	Hydraulic Pump Service	10-14	METRIC CONVERSION CHART	A-1
	Electric Motor Service	10-17	ENGINE SPECIFICATIONS AND	77-1
			TUNE-UP ADJUSTMENTS	A-2
11	REMOTE CONTROLS		CARBURETOR JET SIZE/	Λ-2
11	REMOTE CONTROLS			A 12
	INTRODUCTION	11-1	ELEVATION CHART	A-13 A-14
	INTRODUCTION		PISTON & CYLINDER SPECS.	
	COMMANDER CONTROL SHIFT B		REED STOP OPENING	A-15
	Removal & Disassembling	11-2	LOWER UNIT OIL CAPACITY	
	Cleaning & Inspecting	11-9	AND GEAR CHART	A-16
	Assembling & Installation	11-11	LOWER UNIT TYPE	
	ITALIS SPRINGS COLUMN		AND GEAR BACKLASH TABL	
12	HAND REWIND STARTER		STATOR AND COIL CHECKS	A-18
	THE OPTICAL .	10.1	TORQUE VALUES - COMPLETE U	
	INTRODUCTION	12-1	ALL MODELS	A-24
	TYPE "A" (See Introduction)		WIRING DIAGRAMS	
	Removal & Disassembling	12-3	Model 350 Elec. 1965-69	A-34

Model 402 Manual 1976-78;		Model 402 Manual 1976-78;	
Model 40 Manual 1979-81	A-34	Model 40 Manual 1979-81	A-44
Model 60 Elec. 1965-68;		Model 18 Manual 1981-83;	
Model 110 Elec. 1965-69;		Model 18XD Manual 1984-85	•
Model 200 Elec. 1965-71	A-35	Model 25 Manual 1980-83;	,
Model 400 Elec. 1970-71	A-36	Model 25XD Manual 1984-85	•
Model 200 Elec. 1972	A-37	Model 6.0, 8.0, 9.9, 15, 20, 2	
Model 402 Elec. 1972-74	A-38	210cc Manual 1986 & On	
Model 200 Elec. 1973-75	A-39	Model 18 Elec. 1981-83;	11.15
Model 200 w/Alternator 1973-78	A-39	Model 18XD Elec. 1984-85;	
Model 200 Elec. 1976-78;		Model 25 Elec. 1980-83;	
Model 20 (20hp) 1979-80	A_40	Model 25XD Elec. 1984-85;	
Model 75 & 110 Manual 1975;		Model 6.0, 8.0, 9.9, 15, 20, 2.	5.
Model 40 Manual 1976-80	A-41	& 210cc Elec. 1986 & On	•
		All w/o Remote Control	A-46
Model 75 & 110 Manual		Model 18 Elec. 1981-83;	
w/Alternator 1976-78		Model 18XD Elec. 1984-85;	
Model 7.5 and Model 9.8		Model 25 Elec. 1980-83;	
w/Alternator 1979-85	A-41	Model 25XD Elec. 1984-85;	
Model 75 & 110 1976-78;		Model 6.0, 8.0, 9.9, 15, 20, 25	5.
Model 7.5 & 9.8		& 210cc Elec. 1986 & On	,
w/o Alternator 1979-85	A-42	All w/Remote Control	A-47
		Model 35 Manual 1984-89 and	
Model 40 Manual 1970-74;		Model 40 Manual 1982-83	A-48
Model 4.5 1979-85;		Model 35 Elec 1984-89;	
Model 4.0 1986-Mid 1987	A-42	Model 40 Elec 1982-83	A-49
Model 4.0 Mid 1987 & On;		Model 3.5 1983-85;	
Model 5.0 1988 & On and		Model 3.6 1980-82	A-50
Model 90cc 1986-87	A-43	Model 2.2 1984-89 and	
Model 402 Elec. 1975;		Model 3.0 - 1990 & On	A-50
Model 40 1979-81	A-44	Commander Remote Control	A-51