

Product: 2011 Yamaha VX 700 WaveRunner Service Repair Workshop Manual
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YAMAHA



WaveRunner

VX 700

— VX 700 (F2V)

SERVICE MANUAL

Preface

This manual has been prepared by Yamaha primarily for use by Yamaha dealers and their trained mechanics when performing maintenance procedures and repairs to Yamaha equipment. It has been written to suit the needs of persons who have a basic understanding of the mechanical and electrical concepts and procedures inherent in the work, for without such knowledge attempted repairs or service to the equipment could render it unsafe or unfit for use.

Because Yamaha has a policy of continuously improving its products, models may differ in detail from the descriptions and illustrations given in this publication. Use only the latest edition of this manual. Authorized Yamaha dealers are notified periodically of modifications and significant changes in specifications and procedures, and these are incorporated in successive editions of this manual. Also, up-to-date parts information is available on YPEC-web. Additional information and up-to-date information on Yamaha products and services are available on Yamaha Service Portal.

Important information

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

 The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

WARNING

A **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

A **NOTICE** indicates special precautions that must be taken to avoid damages to the watercraft or other property.

TIP:

A **TIP** provides key information to make procedures easier or clearer.

**WaveRunner
VX 700
SERVICE MANUAL
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Safety while working

To prevent an accident or injury and to provide quality service, observe the following safety procedures.

Rotating part

- Hands, feet, hair, jewelry, clothing, personal flotation device straps, and so on, can become entangled with internal rotating parts of the engine or jet pump unit, resulting in serious injury or death.
- Keep hands, feet, hair, jewelry, clothing, personal flotation device straps, and so on, away from any exposed moving parts when operating the engine with the seat removed.
- Keep away from intake grate while engine is on. Items such as hair, clothing, or personal flotation device straps can become entangled in moving parts resulting in severe injury.

Hot part

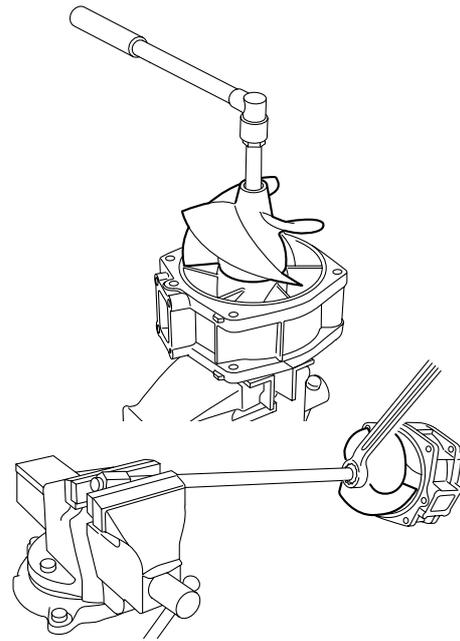
During and after operation, engine parts are hot enough to cause burns. Do not touch any parts in the engine compartment until the engine has cooled.

Electric shock

Do not touch any electrical parts while starting or operating the engine. Otherwise, shock or electrocution could result.

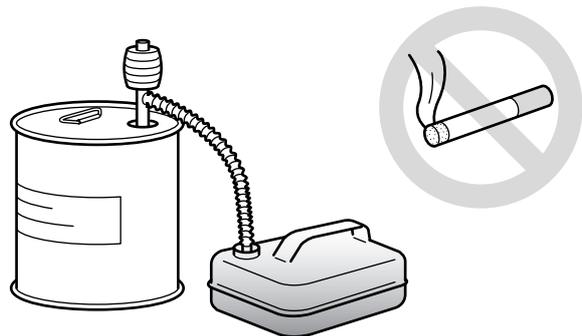
Impeller

Do not hold the impeller with your hands when loosening or tightening the impeller.



Handling of gasoline

- Gasoline is highly flammable. Keep gasoline and all flammable products away from heat, sparks, and open flames.
- Gasoline is poisonous and can cause injury or death. Handle gasoline with care. Never siphon gasoline by mouth. If you swallow some gasoline, inhale a lot of gasoline vapor, or get some gasoline in your eyes, see your doctor immediately. If gasoline spills on your skin, wash with soap and water. If gasoline spills on your clothing, change your clothes.



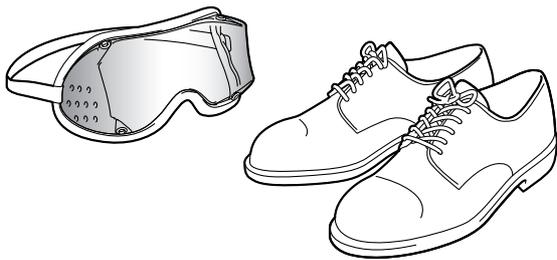
Ventilation

- Gasoline vapor and exhaust gas are heavier than air and extremely poisonous. If gasoline vapor or exhaust gas is inhaled in large quantities, it may cause loss of consciousness and death within a short time.
- When test running an engine indoors (for example, in a water tank) make sure to do so where adequate ventilation can be maintained.



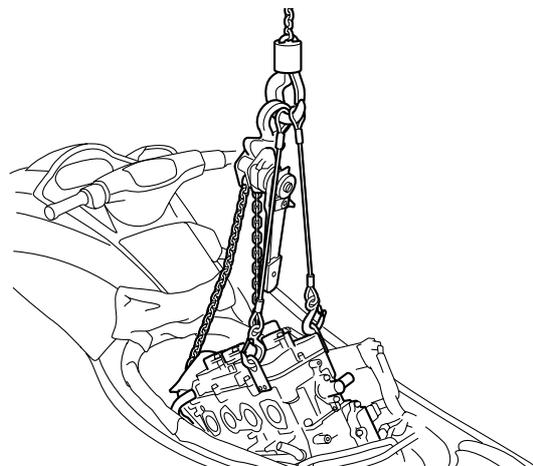
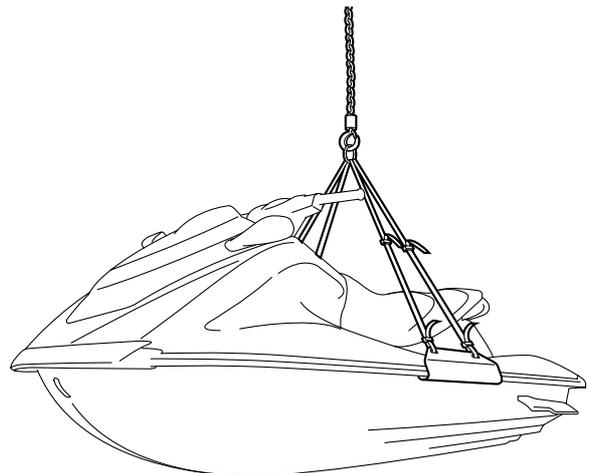
Self-protection

- Protect your eyes by wearing safety glasses or safety goggles during all operations involving drilling and grinding, or when using an air compressor.
- Protect your hands and feet by wearing protective gloves and safety shoes when necessary.



Working with crane

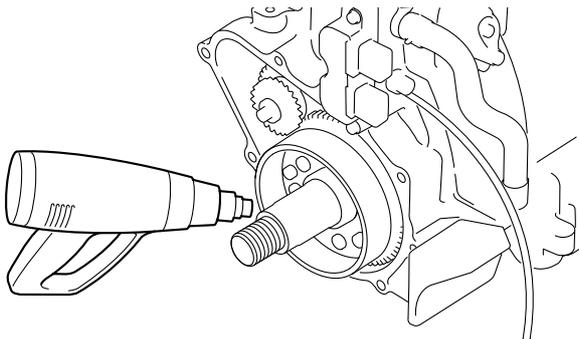
- When moving the watercraft, or when lifting the engine during removal or installation, make sure to use a crane with a lifting capacity that is equal to or more than the weight of the watercraft or engine respectively.
- When lifting the watercraft, use the watercraft lift harness and make sure that the watercraft is in a stable position when moving it.
- Use the wire ropes of adequate strength, and lift up the engine unit using the three point suspension. If the engine unit does not have three or more points to be suspended, support it using additional ropes or the like so that the engine unit can be lifted and carried in a stable manner.





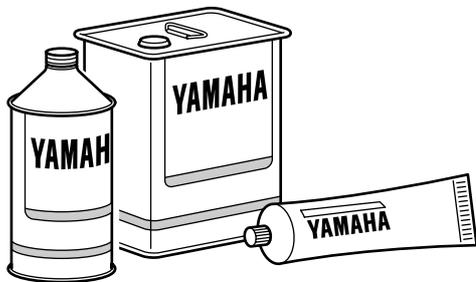
Handling of heat gun

- Improper handling of a heat gun may result in burns. For information on the proper handling of the heat gun, see the operation manual issued by the manufacturer.
- When using a heat gun, keep it away from the gasoline and oil, to prevent a fire.
- Components become hot enough to cause burns. Do not touch any hot components directly.



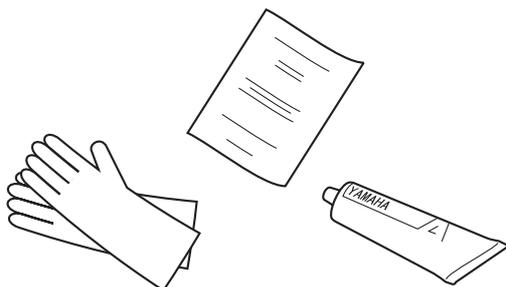
Part, lubricant, and sealant

Use only genuine Yamaha parts, lubricants, and sealants, or those recommended by Yamaha, when servicing or repairing the watercraft.



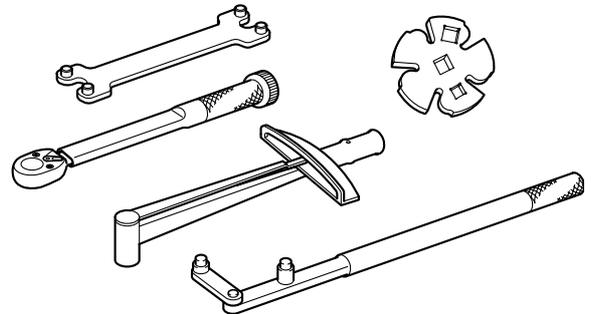
Handling of sealant

- Wear protective gloves to protect your skin, when using the sealants.
- See the material safety data sheet issued by the manufacturer. Some of the sealants may be harmful to human health.



Special service tool

Use the recommended special service tools to work safely, and to protect parts from damage.

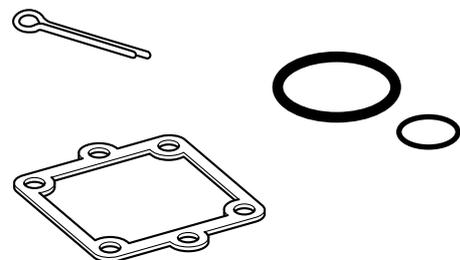


Tightening torque

Follow the tightening torque specifications provided throughout the manual. When tightening nuts, bolts, and screws, tighten the large sizes first, and tighten fasteners starting in the center and moving outward.

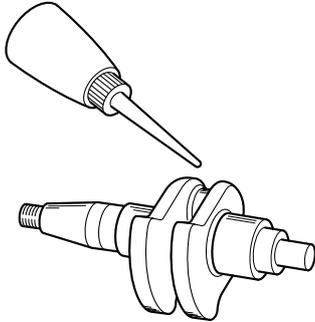
Non-reusable part

Always use new gaskets, seals, O-rings, cotter pins, and so on, when installing or assembling parts.



Disassembly and assembly

- Use compressed air to remove dust and dirt during disassembly.
- Apply engine oil to the contact surfaces of moving parts before assembly.



- Install bearings so that the bearing identification mark is facing in the direction indicated in the installation procedure. In addition, make sure to lubricate the bearings liberally.
- Apply a thin coat of water resistant grease to the lip and periphery of an oil seal before installation.
- Check that moving parts operate normally after assembly.



How to use this manual

Manual format

The format of this manual has been designed to make service procedures clear and easy to understand. Use the information below as a guide for effective and quality service.

- Parts are shown and detailed in an exploded diagram and are listed in the component list (see ① in the following figure for an example page).
- The component list consists of part names and quantities, as well as bolt and screw dimensions (see ② in the following figure). To assemble or install the components, reverse the steps indicated in the component list.
- Symbols are used to indicate important aspects of a procedure, such as the grade of lubricant and the lubrication point (see ③ in the following figure).
- Tightening torque specifications are provided in the exploded diagrams (see ④ in the following figure), and in the related detailed instructions. Some torque specifications are listed in stages as torque figures or angles in degrees.
- Separate procedures and illustrations are used to explain the details of removal, checking, and installation where necessary (see ⑤ in the following figure for an example page).

TIP:

For troubleshooting procedures, see Chapter 9, "Troubleshooting."

Jet thrust nozzle, impeller duct, and impeller housing / Impeller duct and drive shaft

Impeller duct and drive shaft

No.	Part name	Q'ty	Remarks
1	Bolt	3	M6 20 mm
2	Cap	1	
3	O-ring	1	Not reusable
4	Cap	1	
5	Impeller	1	
6	Drive shaft	1	
7	Oil seal	1	Not reusable
8	Oil seal	1	Not reusable
9	Rear bearing	1	Not reusable
10	Spacer	1	
11	Front bearing	1	Not reusable
12	Impeller duct	1	

75 N.m (7.5 kgf-m, 55.3 ft.lb)

8 N.m (0.8 kgf-m, 5.9 ft.lb)

①

②

③

④

⑤

6-6

JET PUMP Jet pump unit

Drive shaft removal

- Remove the impeller.

Stopper guide plate: 90890-06501
Bearing puller assembly: 90890-06535
Stopper guide stand: 90890-06538
- Remove the oil seals.

TIP: Remove the oil seals using a flat head screwdriver.
- Remove the drive shaft ①.

TIP: Hold the impeller duct assy. in a vise between two aluminum plates ③.
Remove the drive shaft using a press.
- Remove the rear bearing.

Driver rod L3: 90890-06652
Needle bearing attachment: 90890-06614

TIP: Remove the front bearing using a press.
- Remove the front bearing.

TIP: Remove the front bearing using a press.

Impeller check

- Check the impeller. Replace if damaged.

6-7

Abbreviation

The following abbreviations are used in this service manual.

Abbreviation	Description
BOW	Bow end
CDI	Capacitor discharge ignition
EX	Exhaust
IN	Intake
NMMA	National Marine Manufacturers Association
PON	Pump Octane Number
PORT	Port side
RON	Research Octane Number
STBD	Starboard side
STERN	Stern end
TDC	Top Dead Center



Adhesive, lubricant, sealant, and thread locking agent

Symbol

Symbols in an exploded diagram or illustration indicate the grade of lubricant and the lubrication points.

Symbol	Name	Application
	Yamaha 2-stroke motor oil	Lubricant
	Water resistant grease (Yamaha grease A)	Lubricant
	Molybdenum disulfide grease	Lubricant
	Epnoc grease AP#0	Lubricant

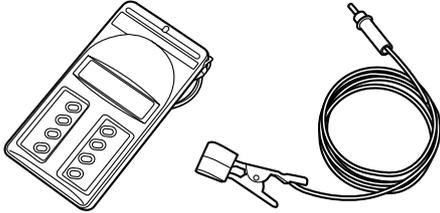
Symbols in an exploded diagram or illustration indicate the type of adhesive, sealant, or thread locking agent and the application points.

Symbol	Name	Application
	Gasket Maker	Sealant
	LOCTITE 271 (red)	Thread locking agent
	LOCTITE 242 (blue)	Thread locking agent
	LOCTITE 572 (white)	Sealant
	Silicone sealant	Sealant
	ThreeBond 1207B	Sealant
	ThreeBond 1207D	Sealant
	ThreeBond 1322	Thread locking agent

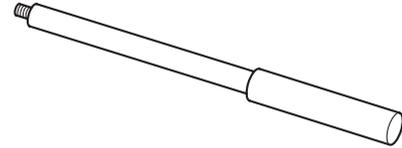
Special service tool

Special service tools with Yamaha part numbers (90890-*****) are distributed by the Parts Division.

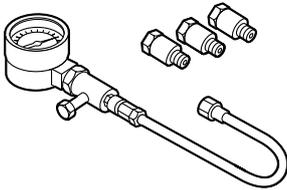
Digital tachometer
90890-06760



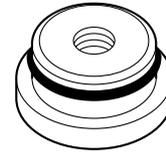
Driver rod L3
90890-06652



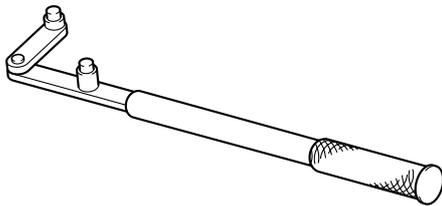
Compression gauge
90890-03160



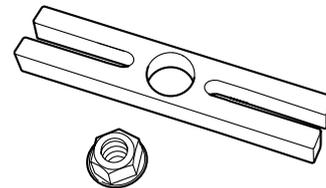
Needle bearing attachment
90890-06614
Ball bearing attachment
90890-06634



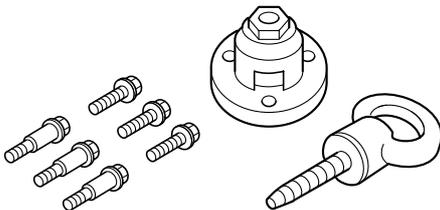
Flywheel holder
90890-06522



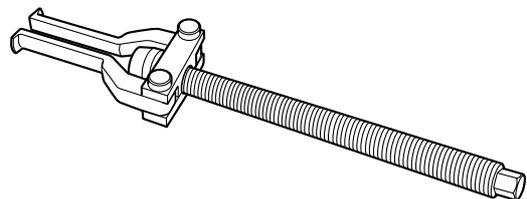
Stopper guide plate
90890-06501



Flywheel puller
90890-06521



Bearing puller assembly
90890-06535

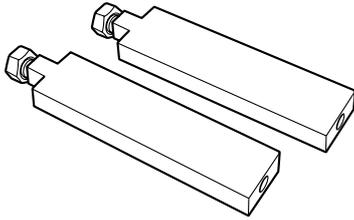


Coupler wrench
90890-06425

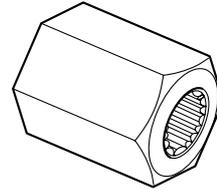




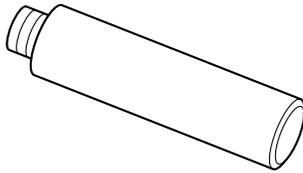
Stopper guide stand
90890-06538



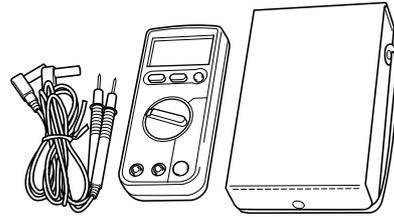
Drive shaft holder 5
90890-06519



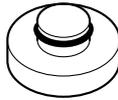
Driver rod LS
90890-06606



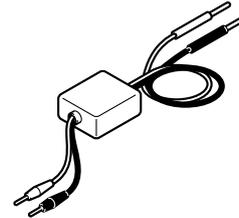
Digital circuit tester
90890-03174



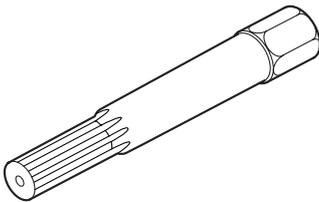
Ball bearing attachment
90890-06631



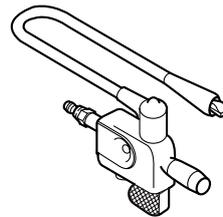
Peak voltage adapter B
90890-03172



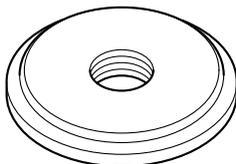
Crankshaft holder 20
90890-06552



Ignition tester (Spark gap tester)
90890-06754



Bearing outer race attachment
90890-06628

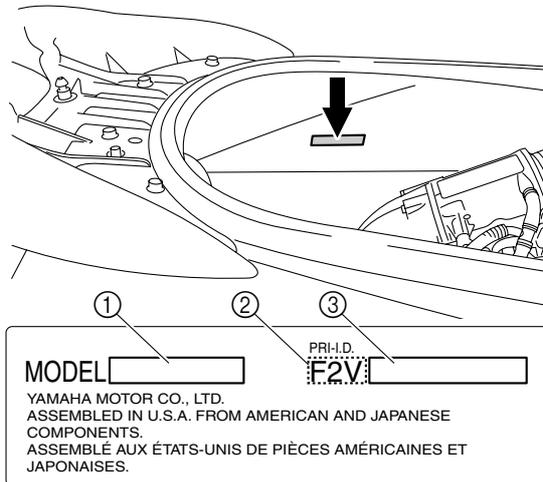


Model feature

Identification number

Primary I.D. number

The primary I.D. number is stamped on a label attached to the inside of the engine compartment.

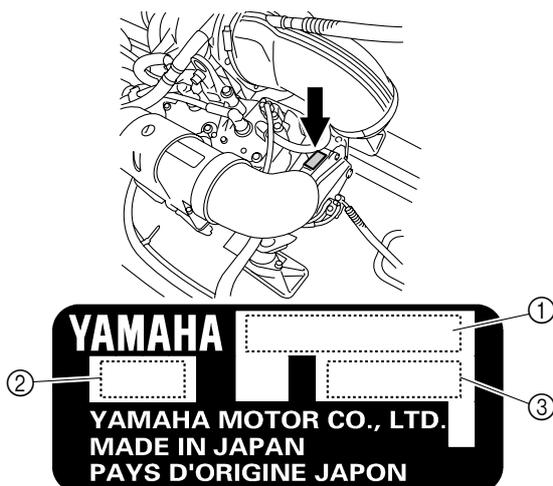


- ① Model name
- ② Hull type
- ③ Primary I.D. number

Starting primary I.D. number:
F2V: 800101

Engine serial number

The engine serial number is stamped on a label attached to the engine unit.

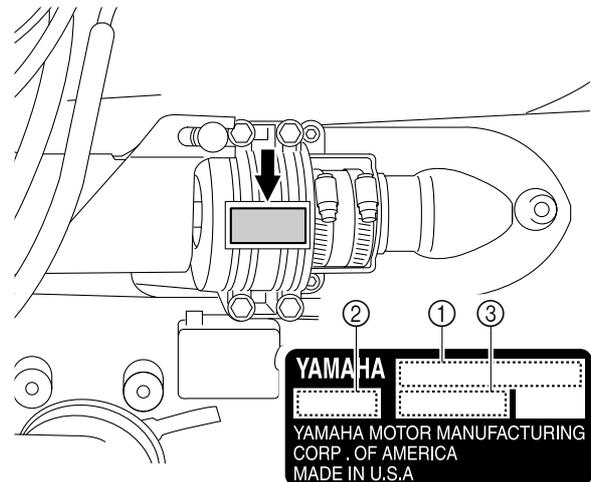


- ① Engine name
- ② Engine type
- ③ Engine serial number

Starting engine serial number:
6CP: 1000001

Jet pump unit serial number

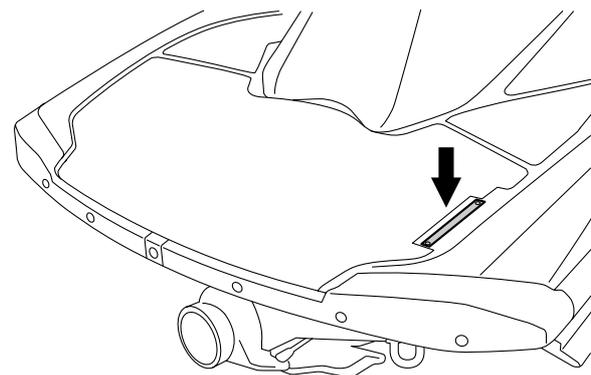
The jet pump unit serial number is stamped on a label attached to the intermediate housing.



- ① Jet pump unit name
- ② Jet pump unit type
- ③ Jet pump unit serial number

Hull identification number (H.I.N.)

The H.I.N. is stamped on a plate attached to the boarding platform.



US-YAM

**GEN
INFO**



General information

— MEMO —



Specification

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Model data

Model code

Item	Unit	Model
		VX 700
Hull		F2V
Engine/jet		6CP/6CP

Dimension and weight

Item	Unit	Model
		VX 700
Length	mm (in)	3220 (126.8)
Width	mm (in)	1170 (46.1)
Height	mm (in)	1160 (45.7)
Dry weight	kg (lb)	283 (624)
Maximum capacity	Person/ kg (lb)	3/240 (530)

Performance

Item	Unit	Model
		VX 700
Full throttle operating range	r/min	7200
Trolling speed	r/min	1250–1350
Maximum fuel consumption	L/h (US gal/ h, Imp.gal/h)	34.0 (9.0, 7.5)
Cruising range	h	1.47

Power unit

Item	Unit	Model
		VX 700
Type		2-stroke L2
Cylinder quantity		2
Total displacement	cm ³ (cu. in)	701 (42.8)
Bore × stroke	mm (in)	81.0 × 68.0 (3.19 × 2.68)
Compression ratio		7.2 : 1
Intake system		Reed valve
Starting enrichment		Choke valve
Scavenging system		Loop charge
Exhaust system		Wet exhaust
Lubrication system		Oil injection
Cooling system		Water cooled
Starting system		Electric starter
Ignition system		CDI
Maximum ignition timing advance	Degree	BTDC 21°
Spark plug		BR8HS (NGK)
Spark plug gap	mm (in)	0.6–0.7 (0.024–0.038)
Firing order		1–2

Drive unit

Item	Unit	Model
		VX 700
Jet pump type		Axial flow, single stage
Impeller rotation		Counterclockwise (viewed from rear)
Transmission		Constant mesh 1-speed
Jet thrust nozzle horizontal angle	Degree	24 + 24
Trim system		—
Jet thrust nozzle trim angle	Degree	3

Fuel and oil requirement

Item	Unit	Model
		VX 700
Fuel type		Regular unleaded gasoline
Fuel minimum rating	PON	86
	RON	90
Fuel tank capacity		
Total	L (US gal, Imp.gal)	50 (13.2, 11.0)
Reserve	L (US gal, Imp.gal)	12 (3.2, 2.6)
Engine oil type		YAMALUBE 2-W
Fuel and oil mixing ratio (Wide open throttle)		50:1
Engine oil grade	NMMA-certified	TC-W3
Oil tank capacity	L (US gal, Imp.gal)	3.8 (1.0, 0.8)

Battery requirement

Item	Unit	Model
		VX 700
Type		Fluid
Capacity	V/Ah	12/19
Specific gravity at 20 °C (68 °F)		1.265



Fuel system technical data

Fuel system

Item	Unit	Model
		VX 700
Carburetor		
Manufacturer		Mikuni
Model × quantity		BN38 × 2
Type		Floatless
ID mark		62T03F/03R
Main jet (MJ)		120 (front), 130 (rear)
Main nozzle (MN)	mm (in)	2.5 (0.10)
Pilot jet (PJ)		67.5
Low speed screw	turns out	5/8 ± 1/4
Throttle valve		190
Valve seat size	mm (in)	1.5 (0.06)
Arm height	mm (in)	0–0.2 (0–0.008)
High speed screw	turns out	5/8 ± 1/4 (front), 1 1/8 ± 1/4 (rear)
Throttle lever free play	mm (in)	4.0–7.0 (0.16–0.28)

Power unit technical data

Power unit

Item	Unit	Model
		VX 700
Cylinder		
Minimum compression pressure (*1)	kPa (kgf/cm ² , psi)	590 (5.9, 84)

(*1) Measuring conditions:

Ambient temperature 20 °C (68 °F), with spark plugs removed from all cylinders.

The figures are for reference only.

Cylinder head assy.

Item	Unit	Model
		VX 700
Cylinder head		
Warpage limit	mm (in)	0.1 (0.004)

Fuel system technical data / Power unit technical data

2

Crank case assy.

Item	Unit	Model
		VX 700
Cylinder		
Bore	mm (in)	81.000–81.020 (3.1890–3.1898)
Bore wear limit	mm (in)	81.100 (3.1929)
Taper limit	mm (in)	0.080 (0.0031)
Out-of-round limit	mm (in)	0.050 (0.0020)
Piston		
Diameter	mm (in)	80.922–80.941 (3.1859–3.1866)
Measuring point	mm (in)	10.0 (0.39)
Ring groove (Top)	mm (in)	1.210–1.240 (0.0476–0.0488)
Ring groove (2nd)	mm (in)	1.210–1.240 (0.0476–0.0488)
Pin boss bore diameter	mm (in)	20.008–20.020 (0.7877–0.7882)
Pin outside diameter	mm (in)	19.995–20.000 (0.7872–0.7874)
Piston-to-cylinder clearance	mm (in)	0.080–0.085 (0.0031–0.0033)
Piston ring		
End gap measuring point	mm (in)	10.0 (0.39)
Top ring		
Type		Keystone
Dimension height (B)	mm (in)	1.170–1.190 (0.0461–0.0469)
Dimension width (T)	mm (in)	2.750–2.950 (0.1083–0.1161)
End gap (*1)	mm (in)	0.20–0.40 (0.008–0.015)
Side clearance	mm (in)	0.03–0.05 (0.001–0.002)
2nd ring		
Type		Keystone
Dimension height (B)	mm (in)	1.170–1.190 (0.0461–0.0469)
Dimension width (T)	mm (in)	2.750–2.950 (0.1083–0.1161)
End gap (*1)	mm (in)	0.20–0.40 (0.008–0.015)
Side clearance	mm (in)	0.03–0.05 (0.001–0.002)
Connecting rod		
Small end inside diameter	mm (in)	24.995–25.008 (0.9841–0.9846)
Maximum small end axial play	mm (in)	2.000 (0.0787)
Crankshaft		
Width	mm (in)	61.950–62.000 (2.4390–2.4409)
Deflection limit	mm (in)	0.050 (0.0020)
Big end side clearance	mm (in)	0.250–0.750 (0.0098–0.0295)
Reed valve		
Thickness	mm (in)	0.2 (0.01)
Stopper height	mm (in)	8.8–9.2 (0.35–0.36)
Warpage limit	mm (in)	0.2 (0.01)

(*1) The figures are for reference only.



Jet pump unit technical data

Jet pump unit

Item	Unit	Model
		VX 700
Impeller housing		
Inside diameter	mm (in)	155.35–155.45 (6.116–6.120)
Impeller-to-housing clearance	mm (in)	0.35–0.45 (0.014–0.018)
Clearance limit	mm (in)	0.60 (0.024)
Impeller		
Material		Stainless steel
Blades number		3
Pitch angle	Degree	13.2
Drive shaft		
Runout limit	mm (in)	0.01 (0.0004)
Intermediate drive shaft		
Runout limit	mm (in)	0.30 (0.012)
Nozzle		
Diameter	mm (in)	86.80–87.40 (3.417–3.441)
maximum difference of jet thrust nozzle distances	mm (in)	5 (0.2)

Electrical technical data

Ignition system

Item	Unit	Model
		VX 700
CDI unit		
Output peak voltage		
at cranking (loaded)	V	10
at 1500 r/min (loaded)	V	200
at 3500 r/min (loaded)	V	130
Pickup coil		
Output peak voltage		
at cranking (unloaded)	V	5.2
at cranking (loaded)	V	5.1
at 1500 r/min (loaded)	V	14.1
at 3500 r/min (loaded)	V	29.3
Resistance (*1)		
at 20 °C (68 °F)	Ω	12.6–15.4

(*1) The figures are for reference only.

Charging system

Item	Unit	Model
		VX 700
Charge coil		
Output peak voltage		
at cranking (unloaded)	V	180
at cranking (loaded)	V	20
at 1500 r/min (loaded)	V	210
at 3500 r/min (loaded)	V	150
Resistance (*1)		
at 20 °C (68 °F)	Ω	497.7–608.3
Lighting coil		
Output peak voltage		
at cranking (unloaded)	V	8.7
at 1500 r/min (unloaded)	V	25.6
at 3500 r/min (unloaded)	V	47.3
Resistance (*1)		
at 20 °C (68 °F)	Ω	1.143–1.397
Minimum charging current	A at r/min	14 at 6000
Rectifier regulator		
Output peak voltage		
at 3500 r/min (loaded)	V	13.0

(*1) The figures are for reference only.

Control system

Item	Unit	Model
		VX 700
Ignition coil		
Primary coil resistance		
at 20 °C (68 °F)	Ω	0.078–0.106
Secondary coil resistance		
at 20 °C (68 °F)	kΩ	14.336–30.464
Thermoswitch (engine)		
Input voltage (*1)	V	11.0–12.0
Continuity temperature	°C (°F)	77–83 (171–181)
No continuity temperature	°C (°F)	63–77 (145–171)

(*1) The figures are for reference only.

Starting system

Item	Unit	Model
		VX 700
Fuse Rating Main	V/A	12/10
Starter motor Type		Constant mesh
Output	kW	0.8
Cranking time limit	Seconds	30
Commutator diameter	mm (in)	27.0–28.0 (1.06–1.10)
Commutator undercut (*1)	mm (in)	0.2–0.7 (0.008–0.028)
Brush length	mm (in)	6.5–12.5 (0.26–0.49)

(*1) The figures are for reference only.

Meter system

Item	Unit	Model
		VX 700
Fuel level sensor Resistance at 20 °C (68 °F)		
Empty position	Ω	757.0–803.0
Full position	Ω	0–8.0
Oil level sensor Float distance (for continuity)	mm	37.0–41.0 (1.46–1.61)

Specified tightening torque**Fuel system**

Part to tightened	Screw size	Tightening torque			See page
		N·m	kgf·m	ft·lb	
Fuel cock knob screw	ø4	2	0.2	1.5	4-1
Fuel cock assy./washer nut	—	5	0.5	3.7	4-1
Choke knob screw	ø3	2	0.2	1.5	4-3
Choke knob nut	—	2	0.2	1.5	4-3
Oil filler neck/rubber seal nut	—	6	0.6	4.4	4-4
Oil filler hose clamp	—	3.7	0.37	2.7	4-4
Fuel filler neck/rubber seal nut	—	6	0.6	4.4	4-6
Fuel filler hose clamp	—	3.7	0.37	2.7	4-6
Fuel level sensor assy. clamp	—	1	0.1	0.7	4-6
Carburetor cover 1 bolt	M5	1	0.1	0.7	4-8
Flame arrester holder bolt	M6	8	0.8	5.9	4-8
Throttle cable locknut	—	8	0.8	5.9	4-8
Choke cable locknut	—	8	0.8	5.9	4-8
Carburetor assy. nut	—	18	1.8	13.3	4-8
Needle valve assy. plate screw	ø3	1	0.1	0.7	4-11
Float arm screw	ø3	1	0.1	0.7	4-11
Cover (carburetor 1) screw	ø5	4.4	0.44	3.2	4-11
Cover (carburetor 2) screw	ø5	3.4	0.34	2.5	4-11
Diaphragm cover screw	ø5	3.4	0.34	2.5	4-11
Body assy. screw	ø4	2	0.2	1.5	4-11
Main jet	—	1.8	0.18	1.3	4-11
Pilot jet	—	0.7	0.07	0.5	4-11
Air bleed screw	ø6	5	0.5	3.7	4-17
Oil pump bolt	M6	8	0.8	5.9	4-17

Power unit

Part to tightened	Screw size	Tightening torque			See page	
		N·m	kgf·m	ft·lb		
Coupling cover bolt	M6	8	0.8	5.9	5-1	
Engine mounting bolt	M8	17	1.7	12.5	5-1	
Engine mount bolt	M8	17	1.7	12.5	5-3	
Exhaust joint clamp	—	5	0.5	3.7	5-10	
Exhaust ring joint clamp	—	2	0.2	1.5	5-10	
Exhaust ring bolt	M8	29	2.9	21.4	5-10	
Muffler stay bolt	1st	M10	2	0.2	1.5	5-11
	2nd		2	0.2	1.5	5-11
	3rd		2	0.2	1.5	5-11
	4th		39	3.9	28.8	5-11
	5th		46	4.6	33.9	5-11
	6th		39	3.9	28.8	5-11
Exhaust outer cover 1	M6	8	0.8	5.9	5-12	
Exhaust outer cover 2	M6	8	0.8	5.9	5-12	
Muffler bolt	1st	M10	21	2.1	15.5	5-13
	2nd		39	3.9	28.8	5-13
Reed valve/valve stopper screw	ø3	1	0.1	0.7	5-14	



Part to tightened		Screw size	Tightening torque			See page
			N·m	kgf·m	ft·lb	
Reed valve assy. bolt		M5	4	0.4	3.0	5-14
Intake manifold bolt		M6	8	0.8	5.9	5-14
Thermoswitch bolt		M6	8	0.8	5.9	5-16
Spark plug		—	25	2.5	18.4	5-16
Cylinder head bolt	1st	M8	15	1.5	11.1	5-16
	2nd		29	2.9	21.4	5-16
Cylinder bolt	1st	M10	22	2.2	16.2	5-18
	2nd		39	3.9	28.8	5-18
Anode screw		ø4	3	0.3	2.2	5-18
Starter motor bolt		M8	18	1.8	13.3	5-25
Starter motor positive lead nut		—	5	0.5	3.7	5-25
Flywheel cover bolt		M6	8	0.8	5.9	5-25
Flywheel magneto bolt		M10	74	7.4	54.6	5-25
Drive coupling		—	36	3.6	26.6	5-25
Base assy. screw		ø6	8	0.8	5.9	5-25
Engine bracket/lower crankcase bolt	1st	M10	23	2.3	17.0	5-30
	2nd		52	5.2	38.4	5-30
Upper crankcase/lower crankcase bolt	1st	M8	15	1.5	11.1	5-30
	2nd		27	2.7	19.9	5-30

Jet pump unit

Part to tightened	Screw size	Tightening torque			See page
		N·m	kgf·m	ft·lb	
Intake grate bolt	M6	8	0.8	5.9	6-1
	M10	40	4.0	29.5	6-1
Ride plate bolt	M8	17	1.7	12.5	6-1
Cover screw	ø5	4	0.4	3.0	6-1
Steering cable joint nut	—	6.8	0.68	4.9	6-2
Jet pump unit assy. bolt	M6	8	0.8	5.9	6-2
	M10	40	4.0	29.5	6-2
Rubber plate bolt	M6	7	0.7	5.2	6-2
Rubber plate nut	—	7	0.7	5.2	6-2
Bracket bolt	M8	17	1.7	12.5	6-2
		14	1.4	10.3	6-2
Spout hose clamp	—	1	0.1	0.7	6-2
		2	0.2	1.5	6-2
Jet thrust nozzle bolt	M8	15	1.5	11.1	6-5
Nozzle/bracket bolt	M10	40	4.0	29.5	6-5
Water inlet cover/water inlet strainer bolt	M6	7	0.7	5.2	6-5
Cap bolt	M6	8	0.8	5.9	6-6
Impeller	M22	75	7.5	55.3	6-6
Transom plate nut	—	26	2.6	19.2	6-10
Flushing hose nut	—	5.5	0.55	4.1	6-10
Intermediate housing cover bolt	M8	17	1.7	12.5	6-12
Rubber hose clamp	—	4	0.4	3.0	6-12
Joint bolt	M6	7	0.7	5.2	6-12
Driven coupling	M24	36	3.6	26.6	6-13
Intermediate drive shaft extension	M24	36	3.6	26.6	6-13

Electrical system

Part to tightened	Screw size	Tightening torque			See page
		N·m	kgf·m	ft·lb	
Electrical box bracket nut	—	15	1.5	11.1	7-2
Ground lead screw	ø6	4	0.4	3.0	7-2
Starter relay bolt	M6	3	0.3	2.2	7-2
CDI unit screw	ø6	4	0.4	3.0	7-2
Rectifier regulator screw	ø6	4	0.4	3.0	7-2
Ignition coil screw	ø6	4	0.4	3.0	7-2
Electrical box case screw	ø6	4	0.4	3.0	7-2
Bracket nut	—	17	1.7	12.5	7-2
Starter motor terminal nut	—	5	0.5	3.7	7-12
Starter motor rear cover bolt	M5	6	0.6	4.4	7-12



Hull and hood

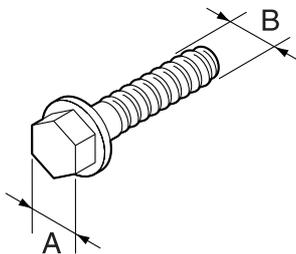
Part to tightened	Screw size	Tightening torque			See page
		N·m	kgf·m	ft·lb	
Upper handlebar cover screw	ø4	1	0.1	0.7	8-1
	ø5	1	0.1	0.7	8-1
Lower handlebar cover screw	ø6	4	0.4	3.0	8-1
Grip end bolt	M5	1	0.1	0.7	8-2
Left handlebar switch assy. screw	ø5	3	0.3	2.2	8-2
Throttle lever assy. bolt	M5	3	0.3	2.2	8-2
Handlebar holder bolt	M8	20	2	14.8	8-2
Mirror nut	—	7	0.7	5.2	8-8
Hood lock bolt	M5	4	0.4	3.0	8-8
Front hood screw	ø5	2	0.2	1.5	8-8
Hinge nut	—	7	0.7	5.2	8-8
Hinge bolt	M6	7	0.7	5.2	8-8
Engine hatch cover nut	—	5	0.5	3.7	8-11
Engine hatch cover bolt	M6	5	0.5	3.7	8-11
Multifunction meter screw	ø5	4	0.4	3.0	8-11
Steering cable stopper bolt	M6	7	0.7	5.2	8-13
Steering master assy. bolt	M8	17	1.7	12.5	8-13
Steering arm assy. bolt	M8	16	1.6	11.8	8-13
Ball joint nut	—	7	0.7	5.2	8-14
Ball joint	—	7	0.7	5.2	8-14
Buzzer bracket bolt	M5	4	0.4	3.0	8-14
Case assy. bolt	M6	7	0.7	5.2	8-14
Steering cable locknut	—	7	0.7	5.2	8-16
Packing nut	—	5.9	0.59	4.4	8-16
Seat lock assy. bolt	M6	6	0.6	4.4	8-18
Projection nut	—	26	2.6	19.2	8-18
Handgrip nut	—	5	0.5	3.7	8-18
Seat holder nut	—	15	1.5	11.1	8-19
Cooling water pilot outlet nut	—	4	0.4	3.0	8-19
Water lock/rubber hose clamp	—	5	0.5	3.7	8-23
Exhaust outlet/rubber hose clamp	—	5	0.5	3.7	8-23
Exhaust outlet/Exhaust outlet bolt	—	5	0.5	3.7	8-23
Bow eye bolt	M6	13	1.3	9.6	8-25
Front protector nut	—	7	0.7	5.2	8-25
Sponson bolt	M8	15	1.5	11.1	8-25
Ski tow nut	—	15	1.5	11.1	8-27
Spout hose clamp	—	2	0.2	1.5	8-27
Spout nut	—	5	0.5	3.7	8-27
Stern eye nut	—	15	1.5	11.1	8-27
Drain plug nut	—	2	0.2	1.5	8-27

General tightening torque

This chart indicates the tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components and assemblies are provided in the applicable sections of this manual. To prevent warpage, tighten multi-fastener assemblies in a crisscross fashion and progressive stages until the specified torque is reached. Unless otherwise indicated, torque specifications require clean, dry threads.

Components should be at room temperature.

Width across flats (A)	Screw size (B)	General torque specifications		
		N·m	kgf·m	ft·lb
8 mm	M5	5	0.5	3.7
10 mm	M6	8	0.8	5.9
12 mm	M8	18	1.8	13.3
14 mm	M10	36	3.6	26.6
17 mm	M12	43	4.3	31.7



Cooling system

