CONTENTS

SPECIFICATIONS ——— 1
DIMENSIONS ——— 5
WIRING DIAGRAM ——— 6

M. MECHANISM

F. FEATURE ——— M-1
[1] ENGINE BODY M-1
(1) Cross Section M-1
(2) Mechanical Decompression System M-1
[2] OIL WATCHING SYSTEM M-2
[3] AUTO IDLER SYSTEM M-2
[4] AUTO CHOKE M-3

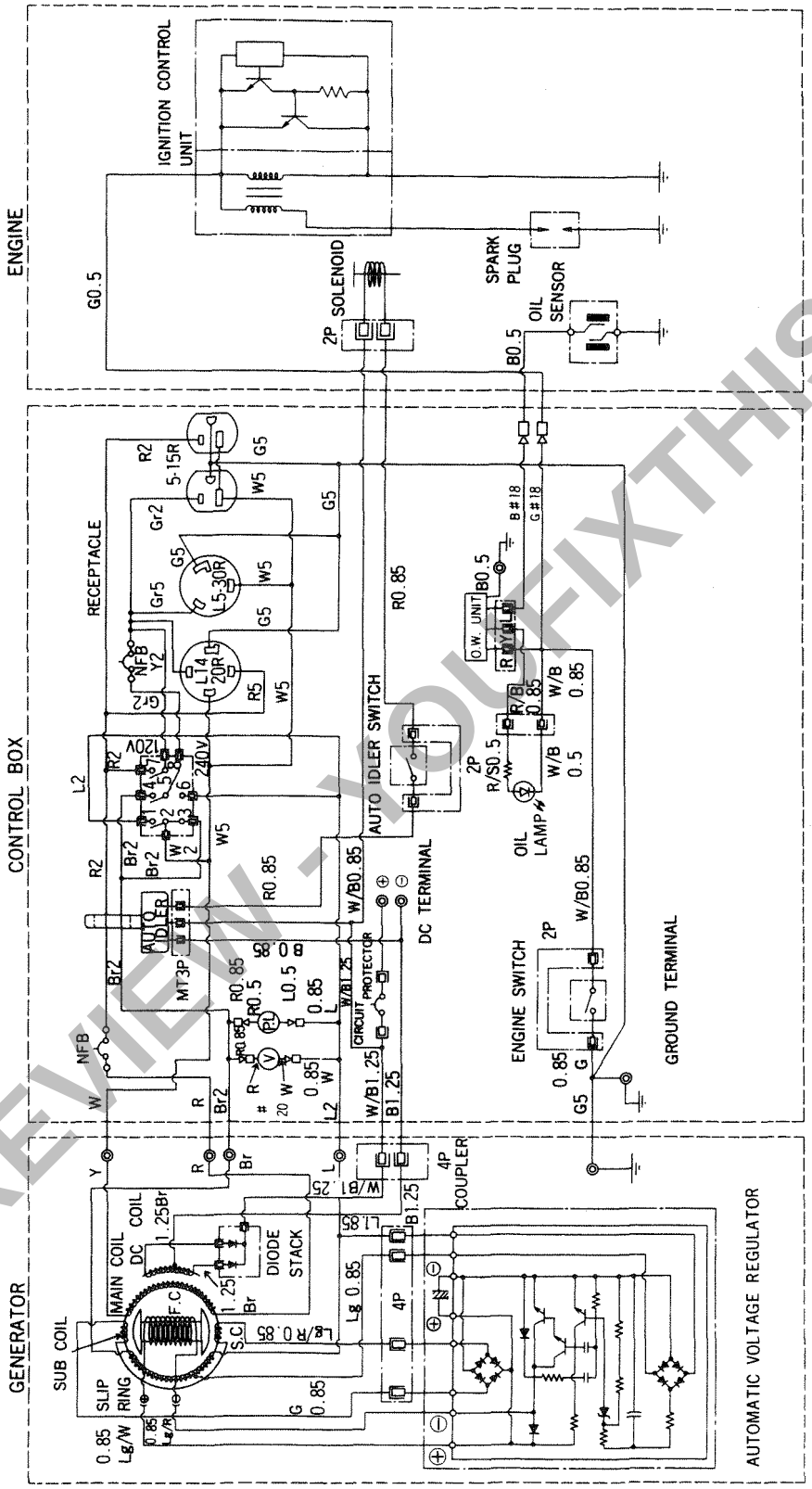
S. DISASSEMBLING AND SERVICING

G. GENERAL ——— S-1
[1] GENERATOR IDENTIFICATION S-1
[2] GENERAL SAFETY AND PRECAUTION S-1
(1) General Safety S-1
(2) General Precaution S-1
(3) Caution Label Location S-2
[3] LUBRICANTS AND FUEL S-2
[4] TROUBLESHOOTING S-3
(1) Generator S-3
(2) Engine S-6
[5] TIGHTENING TORQUES S-7
[6] MAINTENANCE CHECK LIST S-8
[7] CHECK AND MAINTENANCE S-9
(1) Daily Check Point before Use S-9
(2) Check Points of Initial 20 Hours S-9
(3) Check Points of Every 50 Hours S-10
(4) Check Points of Every 100 Hours S-10
(5) Check Points of Every 200 Hours S-10
(6) Check Points of Every 500 Hours S-11
(7) Check Points of Every 1000 Hours S-12
(8) Check Points of Every Year S-12
[8] SPECIAL TOOLS S-13
1. EXTERNAL COMPONENT ——— S-14
DISASSEMBLING AND ASSEMBLING S-14
2. GENERATOR ——— S-15
CHECKING S-15
DISASSEMBLING AND ASSEMBLING S-18
SERVICING S-19
3. ENGINE ——— S-21
CHECKING AND ADJUSTING S-21
DISASSEMBLING AND ASSEMBLING S-24
[1] CYLINDER HEAD GROUP AND CYLINDER COWLING S-24
[2] SPIRAL CASE, ROTOR AND IGNITION UNIT S-25
[3] CRANKCASE COVER, CRANKSHAFT, CAMSHAFT, CONNECTING ROD, PISTON AND OIL PUMP S-26
[4] CARBURETOR S-27
[5] RECOIL STARTER S-28
SERVICING S-29
[1] ENGINE BODY S-29
[2] LUBRICATING SYSTEM (GH400) S-37
[3] IGNITION SYSTEM S-38
[4] STARTING SYSTEM (GH400) S-39
[5] AUTO CHOKE S-40

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FOR USA, AV3800·AV4500 DUAL VOLTAGE TYPE



NFB capacity	
AV3800	14.5 (A)
AV4500	16.5 (A)

Color of wiring

B ..... Black	Y ..... Yellow	W/B ..... White / Black
L ..... Blue	W ..... White	R/B ..... Red / Black
R ..... Red	Br ..... Brown	Lg/R ..... Light-green / Red
G ..... Green	Lg ..... Light-green	Lg/W ..... Light-green / White
Gr ..... Grey		

A100F007

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SPECIFICATIONS

Model			AV1600		AV2500		AV3800	
Generator	AC	Frequency (Hz)	60	50	60	50	60	50
		Max. output (W)	1600	1400	2500	2100	3800	3200
		Rated output (W)	1400	1200	2200	1800	3300	2800
		Voltage (V)	Standard voltage of each country (See page 3, 4)					
		Amps (A)	Standard ampere of each country (See page 3, 4)					
		Power factor (%)	100					
	DC	Output (W)	120					
		Voltage / Amps (V/A)	12 / 10					
	Generating system		Rotating field type					
	Excitation		Self-excited type					
	Voltage compensation		Condenser Compensation				AVR	
	Insulation class		B					
	Over current protection		AC-circuit breaker, DC-circuit protector					
	No. of phase		Single					
Engine	Type		Air-cooled 4-cycle OHV gasoline engine					
	Model		GH120		GH170		GH250	
	Rated output / Revolution HP/rpm		2.8/3600		4.3/3600		6.0/3600	
	Displacement cc. (cu.in.)		121 (7.4)		169 (10.3)		247 (15.1)	
	Fuel tank capacity ℓ (gal)		14 (3.7)				18 (4.8)	
	Fuel type		Unleaded gasoline					
	Lubricating system		Splash Lubrication					
	Engine oil type		Class SE, SF (API) 10W–30, 10W–40 (5W–20, 5W–30 for cold weather)					
	Engine oil capacity	ℓ U.S. qts. Imp. qts.	0.55 0.58 0.484		0.6 0.63 0.528		0.9 0.95 0.792	
	Compression ratio		8		8.3		8.1	
	Spark plug		BPR6HS (NGK)					
Others	Total dry weight kg (lbs)		40 (88.2)		46 (101.43)		65 (143)	
	AC receptacles		Refer to "RECEPTACLE" column of the chart on page 3, 4					
	Pilot lamp		Std					
	Oil watch		Std					
	Noise elimination		Resistor plug					
	Auto idler		None				Std	
	Auto choke		None					
	Voltage meter		Std					
	Hour meter		None					

NOTE: The letter B in parenthes at the end of model number indicates the model is equipped with Electric starter and Recoil starter. Other models indicate Recoil starter only.

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(2) Engine

Symptom	Connection	Probable Cause	Solution	Reference Page
Engine does not start	Starter System	Malfunctioning	Repair or Replace	S-39
	Engine	Increased resistance moving-parts	Repair or Replace	–
		Compression pressure too low		–
		Piston ring and cylinder worn		S-36
Hard vibration		Improper valve sealing		S-21, 29
		Loosen engine mounting screw or external components		–
		Improper valve clearance	Adjust	S-12
		Incorrect governor adjustment		S-23
		Clogged air cleaner	Clean or Replace	S-10
Deficient out-put	Carbu-retor	Incorrect adjustment	Adjust	S-23
		Incorrect idle adjustment		S-23
		Over choking	Repair and clean spark plug	–
		Flooding fuel		–
		Auto choke		–
Engine revolution is not smooth	Ignition unit	Defective ignition unit	Adjust or Replace	S-38
		Defective spark plug		S-10
	Fuel oil	No fuel	Replenish	S-2
		Excessively high viscosity at low temperature	Use specified fuel	S-2
		Spark knock due to low-octane fuel or carbon		S-2
Engine is noisy	Engine oil	Excessively high viscosity of engine oil at low temperature	Use specified engine oil	S-2

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[5] TIGHTENING TORQUES

Screws, bolts and nut must be tightened to the specified torque. Several screws, bolts and nut such as those used on the cylinder head must be tightened in proper sequence and at the proper torque.

(1) Tightening Torques for Special Use Screws, Bolts and Nuts (Engine)

Item		Size x Pitch	N·m	kgf·m	ft-lbs
Spark Plug		M14 x 1.25	9.8 to 24.5	1.0 to 2.5	7.2 to 18.1
Flywheel Mounting Nut					
	GH120	M12 x 1.25	29.4 to 44.1	3.0 to 4.5	21.7 to 32.5
	GH170	M14 x 1.5	58.8 to 68.6	6.0 to 7.0	43.4 to 50.6
	GH250,GH280	M14 x 1.5	63.7 to 73.6	6.5 to 7.5	47.0 to 54.2
	GH400	M18 x 1.5	98.1 to 117.7	10 to 12	72.3 to 86.8
*Cylinder Head Screws					
	GH120,GH170	M8 x 1.25	24.5 to 32.4	2.5 to 3.3	18.1 to 23.9
	GH250,GH280	M8 x 1.25	21.6 to 27.5	2.2 to 2.8	15.9 to 20.3
		M10 x 1.5	41.2 to 50.0	4.2 to 5.1	30.4 to 36.9
	GH400	M10 x 1.5	41.2 to 50.0	4.2 to 5.1	30.4 to 36.9
Crankcase 2 Screws					
	GH120	M6 x 1.0	9.8 to 14.7	1.0 to 1.5	7.2 to 10.8
	GH170,GH250	M8 x 1.25	13.7 to 19.6	1.4 to 2.0	10.1 to 14.5
	GH280,GH400				
*Connecting Rod Screws					
	GH120,GH170	M7 x 1.0	13.7 to 19.6	1.4 to 2.0	10.1 to 14.5
	GH250,GH280				
	GH400	M8 x 1.25	23.5 to 29.4	2.4 to 3.0	17.4 to 21.7
Rocker Arm Rock Nut					
	GH120,GH170	M6 x 0.5	7.8 to 12.7	0.8 to 1.3	5.8 to 9.4
	GH250,GH280	M7 x 0.75	10.8 to 16.7	1.1 to 1.7	8.0 to 12.3
Governor Lever Screw					
	GH120,GH170	M6 x 1.0	6.9 to 11.8	0.7 to 1.2	5.1 to 8.7
	GH250,GH280	M8 x 1.25	10.8 to 19.6	1.1 to 2.0	8.0 to 14.5
	GH400	M8 x 1.25	13.7 to 17.6	1.4 to 1.8	10.1 to 13.0
Speed control lever mounting nut		M8 x 1.25	5.88 to 6.76	0.6 to 0.9	4.34 to 4.99

■ **NOTE**

- **For * marked screws, bolts and nuts on the table, apply engine oil to their threads and seats before tightening.**
- **The letter "M" in Size x Pitch means that the screw, bolt or nut dimension stands for metric. The size is the nominal outside diameter in mm of the threads. The pitch is the nominal distance in mm between two threads.**

(2) Tightening Torques for Special Use Screws, Bolts and Nuts (Generator)

Item	Size x Pitch	N·m	kgf·m	ft-lbs
Cushion rubber mounting nut	M10 x 1.25	39.2 to 45.1	4.0 to 4.6	28.7 to 33.3
	M8 x 1.25	17.7 to 20.6	1.8 to 2.1	13.0 to 15.2
Main coil terminal nut	M5 x 0.9	1.86 to 2.45	0.19 to 0.25	1.37 to 1.81
Stator mounting screw	M6 x 1.0	5.9 to 8.8	0.6 to 0.9	4.3 to 6.5
Rotor mounting screw	M8 x 1.25	15.6 to 20.6	1.6 to 2.1	11.6 to 15.1
	M10 x 1.25	31.4 to 43.2	3.2 to 4.4	22.9 to 31.5
Front bracket	M8 x 1.25	17.7 to 21.6	1.8 to 2.2	13.0 to 15.9
Fuel tank mounting screw	M6 x 1.0	9.81 to 11.28	1.0 to 1.15	7.23 to 8.32
Control box mounting screw	M6 x 1.0	9.81 to 11.28	1.0 to 1.15	7.23 to 8.32

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(3) Tightening Torques for General Use Screws, Bolts and Nuts

When the tightening torques are not specified, tighten the screws, bolts and nuts according to the table below.

Grade / Nominal Diameter / Unit	No-grade or 4 T			7T		
	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M 6	4.42 to 8.15	0.45 to 0.80	3.25 to 5.79	9.81 to 11.28	1.00 to 1.15	7.23 to 8.32
M 8	10.79 to 19.62	1.1 to 2.0	7.96 to 14.46	23.54 to 27.46	2.40 to 2.80	17.36 to 20.25
M10 x 1.25	22.57 to 41.22	2.3 to 4.2	16.64 to 30.38	48.05 to 55.90	4.90 to 5.70	35.44 to 41.23
M12 x 1.25	40.23 to 58.88	4.1 to 6.0	29.66 to 43.4	77.47 to 90.22	7.90 to 9.20	57.14 to 66.54

[6] MAINTENANCE CHECK LIST

To maintain long-lasting and safe engine performance, make it a rule to carry out regular inspections by following the table below.

Service Interval	Check Points	Reference Page
Daily check	Clean each part and tighten Check the engine oil level	— S-9
Initial 20 hours	Change the engine oil Clean the oil strainer (GH400 only)	S-9 S-9
Every 50 hours	Change the engine oil Clean the air cleaner element	S-9, 10
Every 100 hours	Check the spark plug Check the spark plug gap Check the spark arrestor	S-10 S-10
Every 200 hours	Clean the fuel filter Clean the oil strainer (GH400 only)	S-10 S-9
Every 500 hours	Clean the carburetor and fuel tank Check the cylinder head (removal of deposited carbon) Check the carbon brush and slip-ring Check the valve seat and valve clearance	S-11, 27 S-11 S-11, 20 S-29
Every 1000 hours	Check generator side bearing	S-18
Every year or every 6 times of cleaning	Replace the air cleaner element	S-10
Every year	Replace the fuel hose and clamps	S-12

■ **NOTE**

- **Use only Kubota genuine parts for replacement.**
- **Use only specified engine oil.**
  Select viscosity according to ambient temperature. (See page S-9)

Care before Prolonged Storage

1. Drain off gasoline from the fuel tank and float chamber in the carburetor.
2. Change the engine oil with new oil and clean all the engine parts.
3. Clean the air cleaner element thoroughly.
4. So that the engine will not become difficult to start due to moisture in the cylinder, set the cylinder in the compression position.
5. Place the cover and keep the machine in a dry, dust-free place.

⚠ CAUTION

- **Before placing the cover, make sure the engine is cold.**

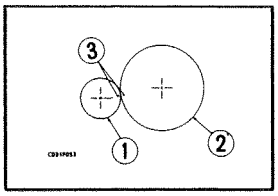
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[3] CRANKCASE COVER, CRANKSHAFT, CAMSHAFT, CONNECTING ROD, PISTON AND OIL PUMP

NOTE
- Assemble the piston ring with the manufacturer's mark (4) facing up (As shown in the figure).
- When installing the piston pin, immerse the piston in 100°C (212°F) oil for 10 to 15 minutes and insert the piston pin to the piston.

IMPORTANT
- When installing the crankshaft and camshaft, be sure to align the alignment marks on the crank gear and cam gear.

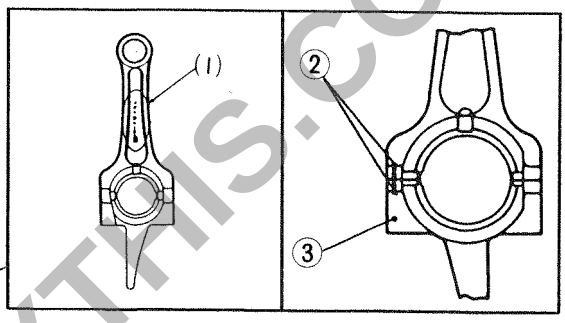


(1) Crank Gear
(2) Cam Gear
(3) Alignment Mark

Side clearance of crankshaft	Allowable limit	GH170 GH250 GH280 GH400	0.2 mm 0.008 in.
		GH120	0.1 mm 0.004 in.

- If the clearance exceeds the allowable limit, adjust with shims.

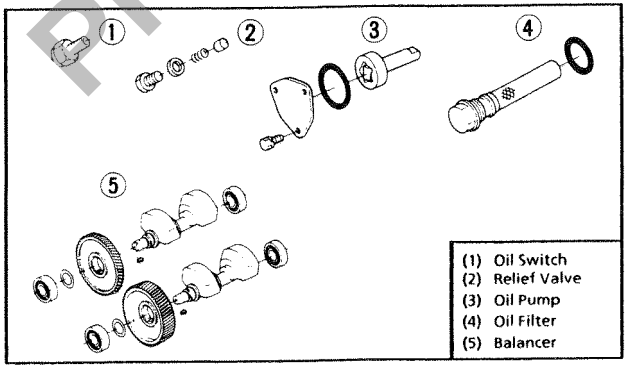
IMPORTANT
- Be sure to assemble the connecting rod so that the casting mark (1) (マグネット側) of the connecting rod faces toward the flywheel.
- Aligh the marks (2) of the cap and marks (3) of connecting rod.
- When installing the connecting rod to the piston, align the casting mark " マグネット側 " on the connecting rod to the arrow's direction of casting mark "← F" (GH120·170·250·280) or parting mark (GH400) on the piston.



Tightening torque	GH120 GH170	13.7 to 19.6 N·m 1.4 to 2.0 kgf·m 10.1 to 14.5 ft-lbs
	GH250 GH280 GH400	23.5 to 29.4 N·m 2.4 to 3.0 kgf·m 17.4 to 21.7 ft-lbs

Tightening torque	GH120	9.8 to 14.7 N·m 1.0 to 1.5 kgf·m 7.2 to 10.8 ft-lbs
	GH170 GH250 GH280 GH400	13.7 to 19.6 N·m 1.4 to 2.0 kgf·m 10.1 to 14.5 ft-lbs

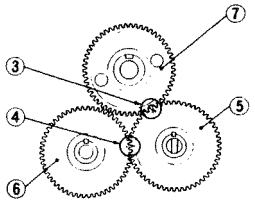
Other components for GH400



(1) Oil Switch
(2) Relief Valve
(3) Oil Pump
(4) Oil Filter
(5) Balancer

IMPORTANT
- When installing the balancer shaft 1 and 2, be sure to align the alignment marks on the gears as shown in the photograph.

Balancer gear 1 (5) and balancer gear 3 (7) [Alignment mark ·· (3)]
Balancer gear 2 (6) and balancer gear 1 (5) [Alignment mark . (4)]



Tightening torque	GH120 GH170	6.9 to 11.8 N·m 0.7 to 1.2 kgf·m 5.1 to 8.7 ft-lbs
	GH250 GH280	10.8 to 19.6 N·m 1.1 to 2.0 kgf·m 8.0 to 14.5 ft-lbs
	GH400	13.7 to 17.7 N·m 1.4 to 1.8 kgf·m 10.1 to 13.0 ft-lbs

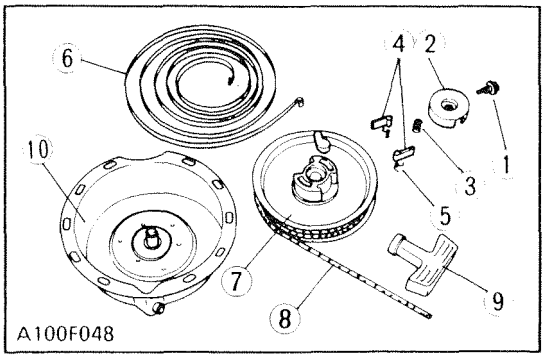
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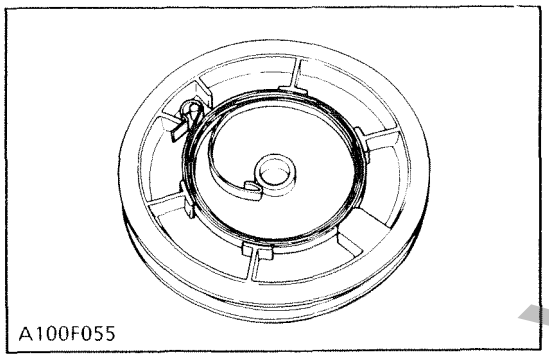
[5] RECOIL STARTER

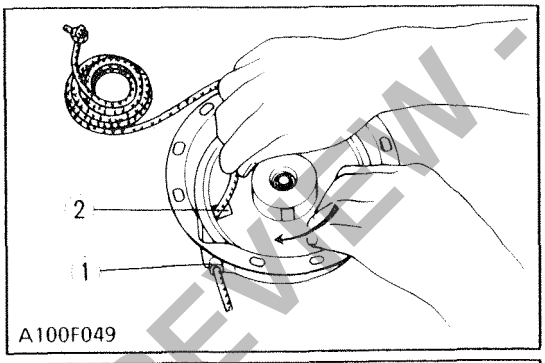
This section explains the procedures for disassembling and assembling the recoil starter. When replacing the rope, pull it out and remove it, holding the reel by hand, then start with Step (5) for Fitting. When repairing a reel with the rope broken, start with Step (4) for Fitting.



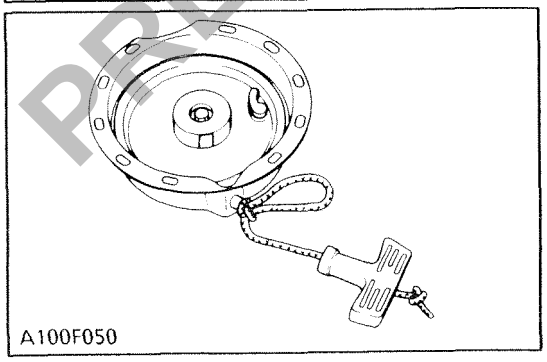
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(1) Center Screw
(2) Retainer
(3) Brake Spring
(4) Dog
(5) Dog Spring
(6) Spiral Spring
(7) Reel
(8) Rope
(9) Handle
(10) Recoil Starter Case


A100F055



A100F049


A100F050

Rewinding Spiral Spring

- Remove the rope from the handle, and rewind the spiral spring, braking the reel by hand as shown in the figure.

Reel

- Remove the center screw (1), retainer (2), brake spring (3), dog (4), and dog spring (5).
- Slowly lift the reel and spring (6) and remove it, turning the reel in the clockwise direction.

⚠ CAUTION

- **When removing the reel, take your time. Hasty action will cause the spiral spring to pop out of the reel, which is very dangerous. Wear gloves and eye protection.**

(When reassembling)

1. When fitting a spiral spring to the reel, set the spiral spring on the boss of the reel with its hook outside facing to the left as shown in the figure.
2. Apply grease to the moving parts of the spiral spring. Center screw and retainer.
3. Apply a locking agent to the center screw.
4. Turn the reel in the rope-pulling direction (counterclockwise) until it stops and then return it until the rope guide (1) of the recoil starter case comes to stop at the ropes knot storage (2) of the reel (1/4 to 1 revolution). (Set so that the reel can afford 1/4 to 1-1/4 more revolution with the rope strained).
5. Pass the rope with a knot on one end through the part for storing the knot of the reel and the rope guide (1) of the recoil starter case.
6. Make a loose knot so that the rope can't be caught in the recoil starter.
7. Pass the rope through the handle and tie a knot in the rope.
8. Untie the loose knot and return the rope slowly inside the recoil starter.

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