



CATALOGO RICAMBI PARTS CATALOGUE

V270

V270

V270E

**MOTORI 4 TEMPI BENZINA CON VALVOLE IN TESTA
4 STROKE ENGINES WITH OVERHEAD VALVE**

FIG.1

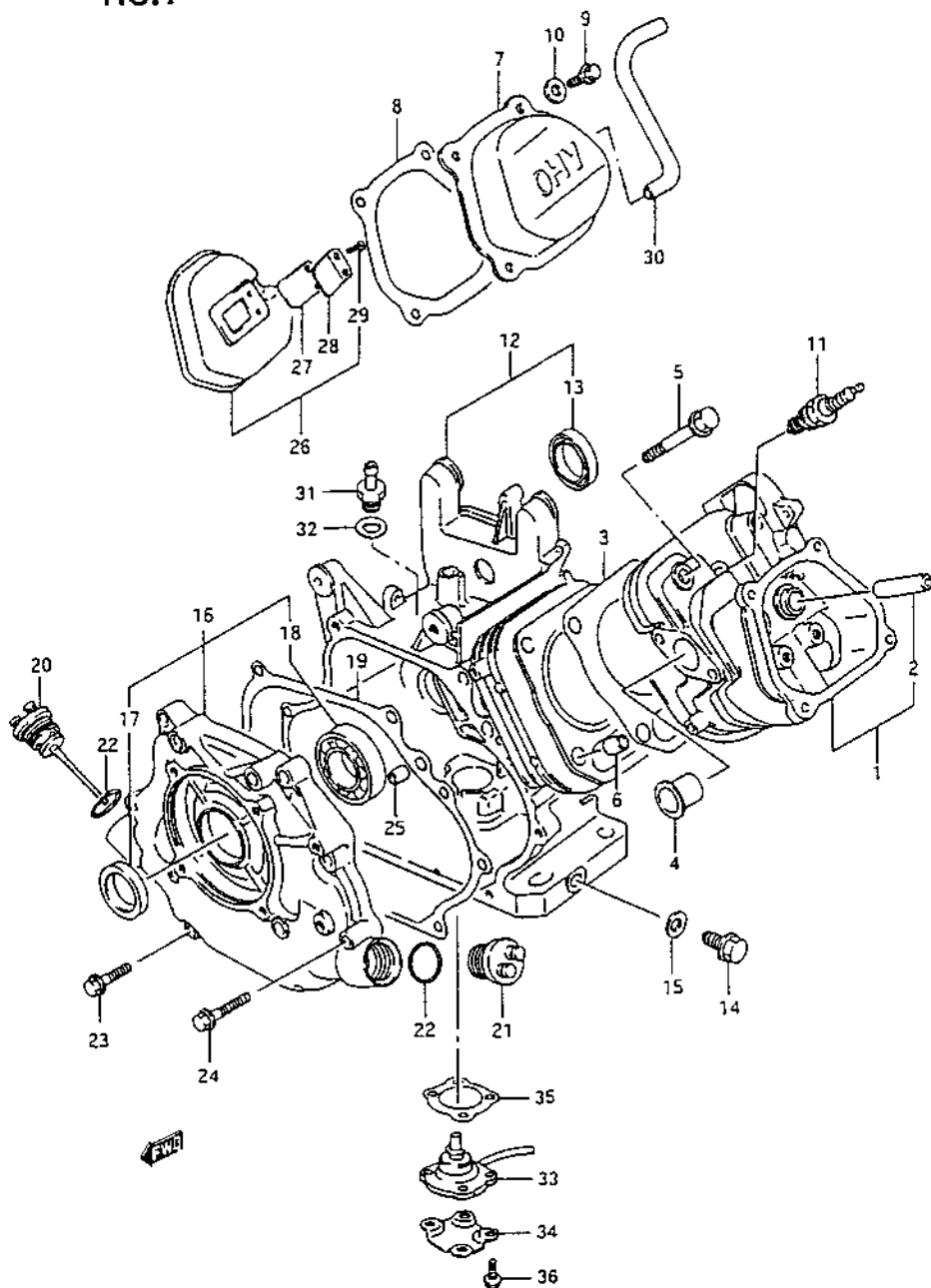


FIG.1 (B-2) CYLINDER / CRANKCASE

Q'TY

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	11110-88C00	HEAD, cylinder	1	
2	11114-88C80	.GUIDE, valve (OS:0.3)	2	
3	11141-88C10	GASKET, cylinder head	1	+11141-88C00
4	11181-88C00	GUIDE, exhaust	1	
5	01550-10803	BOLT	4	
6	04211-13149	PIN	2	
7	11121-88C00	COVER, cylinder head	1	
8	11161-88C00	GASKET, cylinder head cover	1	
9	02162-06167	BOLT (6x16)	4	+09103-06174
10	09160-06121	WASHER (6.5x18x2)	4	
11	09482-00299	SPARK PLUG (BPR6ES)	1	
12-1	11200-88C01	CYLINDER ASSY	1	-V270-013900 electric starter
12-2	11200-88C41	CYLINDER ASSY	1	V272-100001- +11200-88C40 electric starter
12-3	11200-88C30	CYLINDER ASSY	1	-V270-013900 manual starter +11200-88C11
12-4	11200-88C51	CYLINDER ASSY	1	V272-100001- +11200-88C50 manual starter
13	09283-30057	.OIL SEAL	1	
14	01550-12163	PLUG	2	
15	09168-12018	GASKET (12.2x21x2)	2	+09168-12008
16-1	11300-88C20	COVER ASSY, crankcase side (MS)	1	V272-100001-,M8 +11300-88C00
16-2	11300-88C30	COVER ASSY, crankcase side (MQ/MV)	1	5/16-24-UNF-2B +11300-88C10
17	09283-30057	.OIL SEAL	1	
18	08113-62060	.BEARING	1	
19	11351-88C10	GASKET, crankcase	1	+11351-88C00
20	11381-88C10	GAUGE, engine oil level	1	+11381-88C00
21	11382-88C01	PLUG, engine oil hole	1	+11382-88C00
22	09280-26006	O RING	2	
23	01550-08353	BOLT	6	
24	01550-08453	BOLT	1	
25	04211-11129	PIN	2	

FIG.1

FIG.1 (B-3) CYLINDER / CRANKCASE

Q'TY

REMARKS

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
26	11400-88C00	BODY ASSY, air breather	1	
27	11450-90B10	.VALVE, reed	1	+11452-90900
28	11453-90900	..STOPPER, reed valve	1	
29	03211-04083	..SCREW	1	
30	11461-88C00	HOSE, air breather	1	
31	09362-09003	UNION, vacuum hose	1	
32	09166-10012	GASKET, union (10.5x14x1)	1	
33	34810-88C00	SENSOR, oil level	1	
34	34821-90501	PLATE, sensor reed guard	1	
35	34815-90320	GASKET, oil level sensor	1	+34815-90310
36	02162-06167	BOLT (6x16)	4	+09103-06174

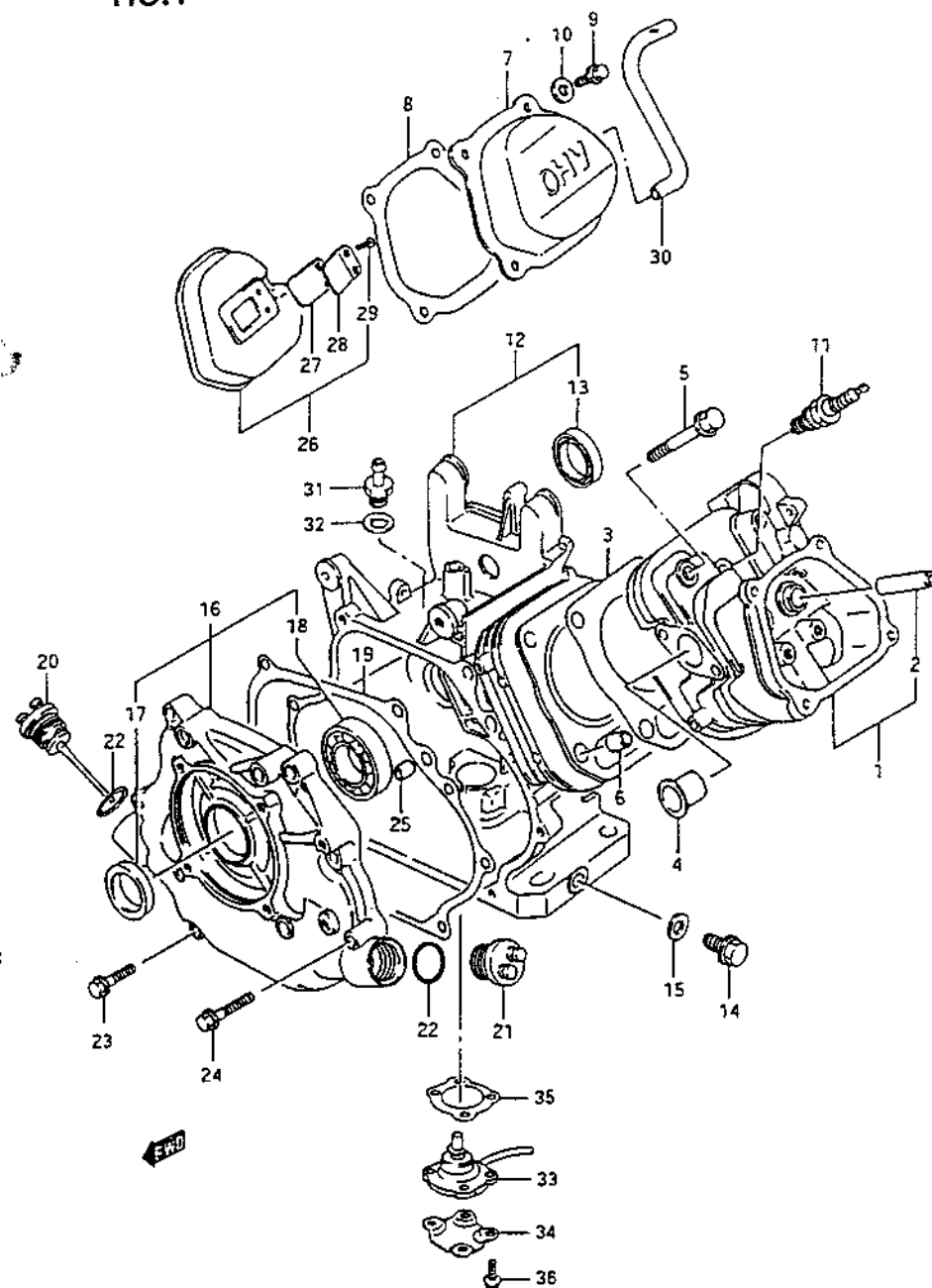


FIG.2

FIG.2 (8- 4) CRANKSHAFT

Q'TY

REMARKS

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1-1	12111-88C00	PISTON	1	
1-2	12111-90C00	PISTON	1	V272-105605~
1-3	12111-88C00-025	PISTON (OS:0.25)	1	OPT
1-4	12111-88C00-050	PISTON (OS:0.50)	1	OPT
2-1	12140-88C01	RING SET, piston	1	+12140-88C00
2-2	12140-88C01-025	RING SET, piston (OS:0.25)	1	OPT, +12140-88C00-025
2-3	12140-88C00-050	RING SET, piston (OS:0.5)	1	OPT
2-4	12140-88C01-050	RING SET, piston (OS:0.5)	1	OPT, V272-105605~
3	12151-88C00	PIN, piston	1	
4	09381-18002	SNAP RING	2	
5	12160-88C00	CONNECTING ROD ASSY	1	
6	12172-88C00	.PLATE, lock	1	
7	12176-88C00	.BOLT, connecting rod stud	2	
8	08310-00083	.NUT	2	
9-1	12181-88C01	PLATE, splasher	1	+12181-88C00
9-2	12181-90C00	PLATE, splasher	1	V272-105934~
10-1	12200-88C00	CRANKSHAFT ASSY (MS)	1	-V270-013900 M8,00:25
10-2	12200-88C61	CRANKSHAFT ASSY (MS)	1	V272-100001~ M8,00:25 +12200-88C60
10-3	12200-88C10	CRANKSHAFT ASSY (MQ)	1	-V270-013900 7/16-20-UNF-2B
10-4	12200-88C40	CRANKSHAFT ASSY (MQ)	1	V272-100001~ 7/16-20-UNF-2B
11-1	12200-88C20	CRANKSHAFT ASSY (MV)	1	-V270-013900 5/16-24-UNF-2B
11-2	12200-88C50	CRANKSHAFT ASSY (MV)	1	V272-100001~ 5/16-24-UNF-2B
12	08113-62060	.BEARING	1	
13-1	12710-90C00	CAMSHAFT	1	+12710-88C01
13-2	12710-90C00	CAMSHAFT	1	V272-105605~
14-1	09443-06072	.SPRING	1	
14-2	12771-90C00	.SPRING	1	V272-105605~
15	08211-16262	WASHER	1	

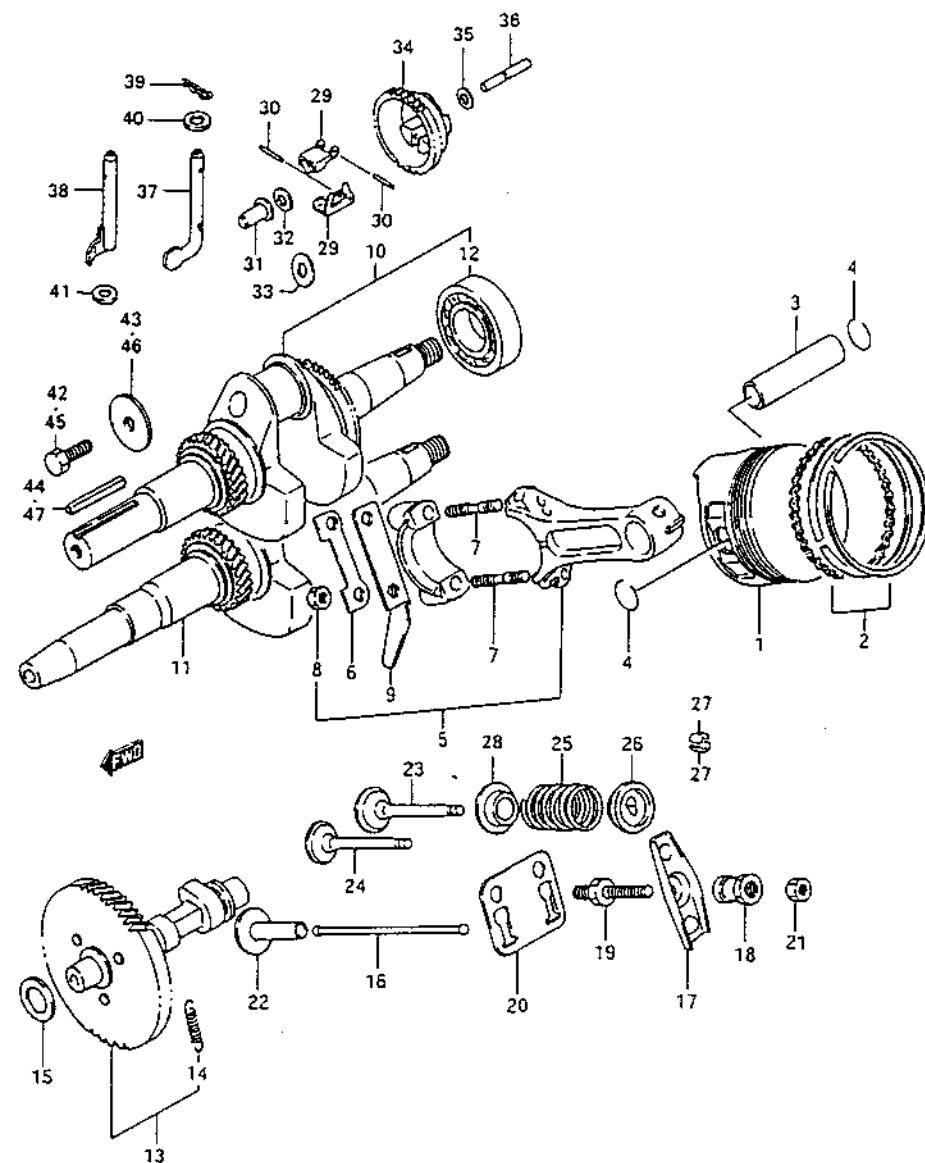


FIG.2

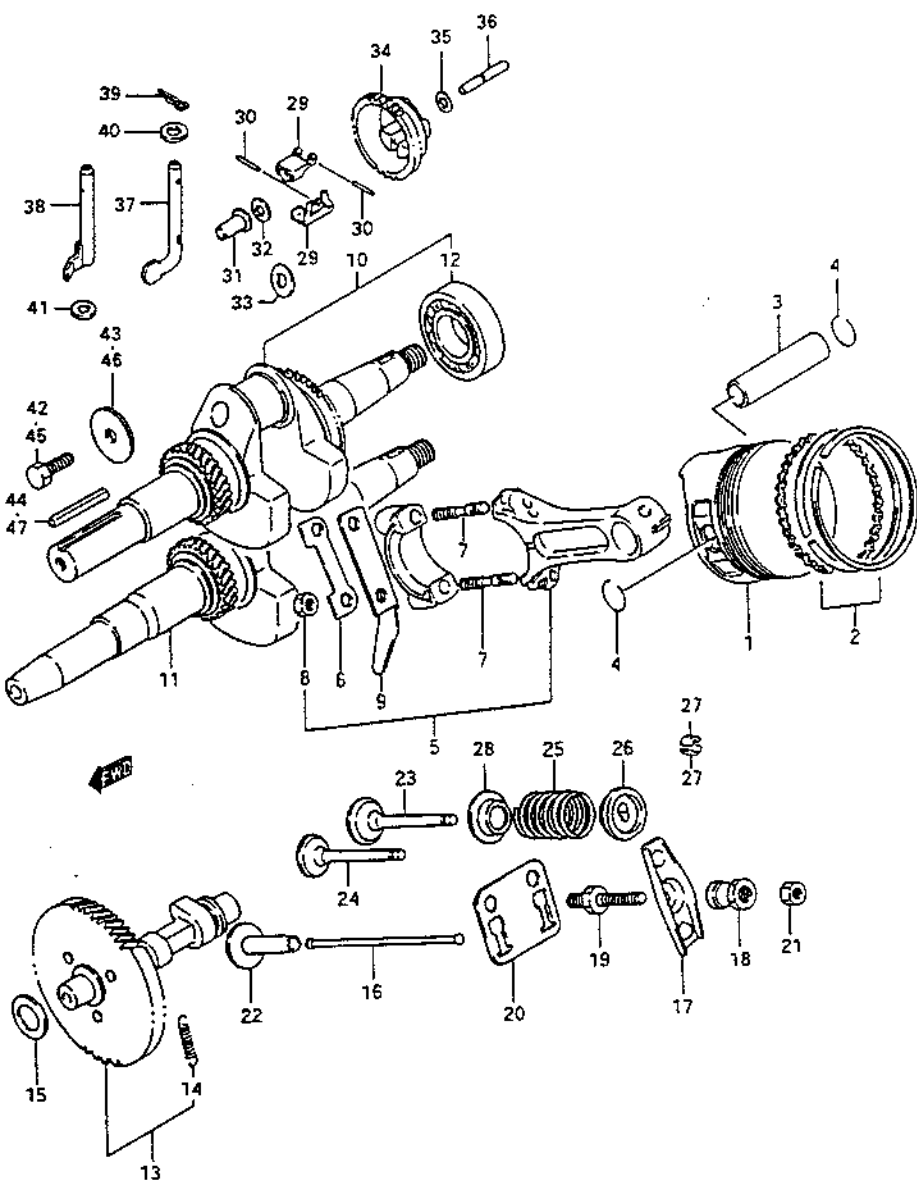


FIG.2 (B- 5) CRANKSHAFT

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
16	12894-88C01	ROD, push	2	L:150 +12894-88C00
17	12961-88C00	ARM, locker	2	
18	12962-88C00	PIVOT	2	
19	12963-88C00	BOLT, pivot stud	2	
20	12966-88C00	GUIDE, push rod	1	
21	09140-06021	NUT	2	
22	12891-88C00	TAPPET	2	
23-1	12911-88C00	VALVE, intake	1	00:27 +12911-88C10 used with 12931-88C10 and 12932-88C00
23-2	12911-88C10	VALVE, intake	1	111513-
24-1	12912-88C10	VALVE, exhaust	1	00:23 +12912-88C30 used with 12931-88C10 and 12932-88C00
24-2	12912-88C30	VALVE, exhaust	1	111513-
25	12921-88C00	SPRING, valve	2	
26-1	12931-88C00	RETAINER, valve spring	2	
26-2	12931-88C10	RETAINER, valve spring	2	111513-
27	12932-88C00	COTTER, valve	4	111513-
28	12951-88C00	GUIDE, spring	2	
29	19211-88C00	ARM, centrifugal	2	
30-1	19215-90900	PIN, centrifugal arm	2	
30-2	19215-90901	PIN, centrifugal arm	2	V272-115032-
31-1	19221-88C00	SLIDER, governor	1	
31-2	19221-88C11	SLIDER, governor	1	V272-100001-
32	08211-06161	WASHER	1	
33	09160-06106	WASHER	1	
34	19222-88C01	GEAR, governor	1	+19222-88C00
35	08322-01063	WASHER	1	
36	19223-88C00	SHAFT, governor gear	1	INC 11300-
37	19231-88C00	SHAFT, throttle return	1	-V270-013900
38	19230-88C11	SHAFT, throttle return	1	V272-100001-
39	09385-08003	PIN	1	

FIG.2

FIG.2 (B- 6) CRANKSHAFT

Q'TY

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
40	08322-01083	WASHER	1	-V270-013900
41	09160-08112	WASHER	1	V272-100001~ +19160-08074
42	01570-08253	BOLT	1	type:MS,MV
43	09160-08102	WASHER	1	type:MS,MV
44	09421-07003	KEY (7x7x33)	1	type:MS,MV
45	12622-88C00	BOLT	1	type:MQ
46	09160-11007	WASHER	1	type:MQ
47	12621-88C00	KEY (6.31x6.31x55)	1	type:MQ

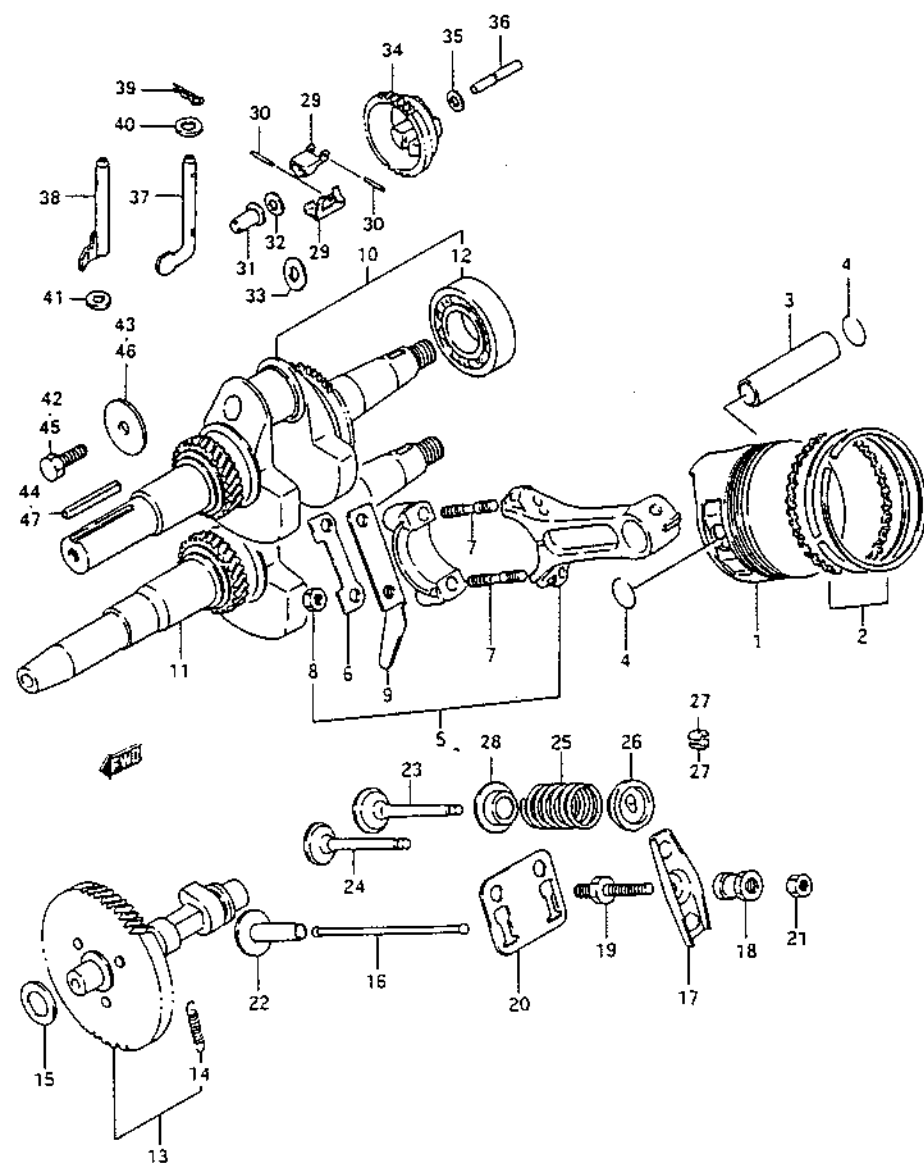


FIG.3

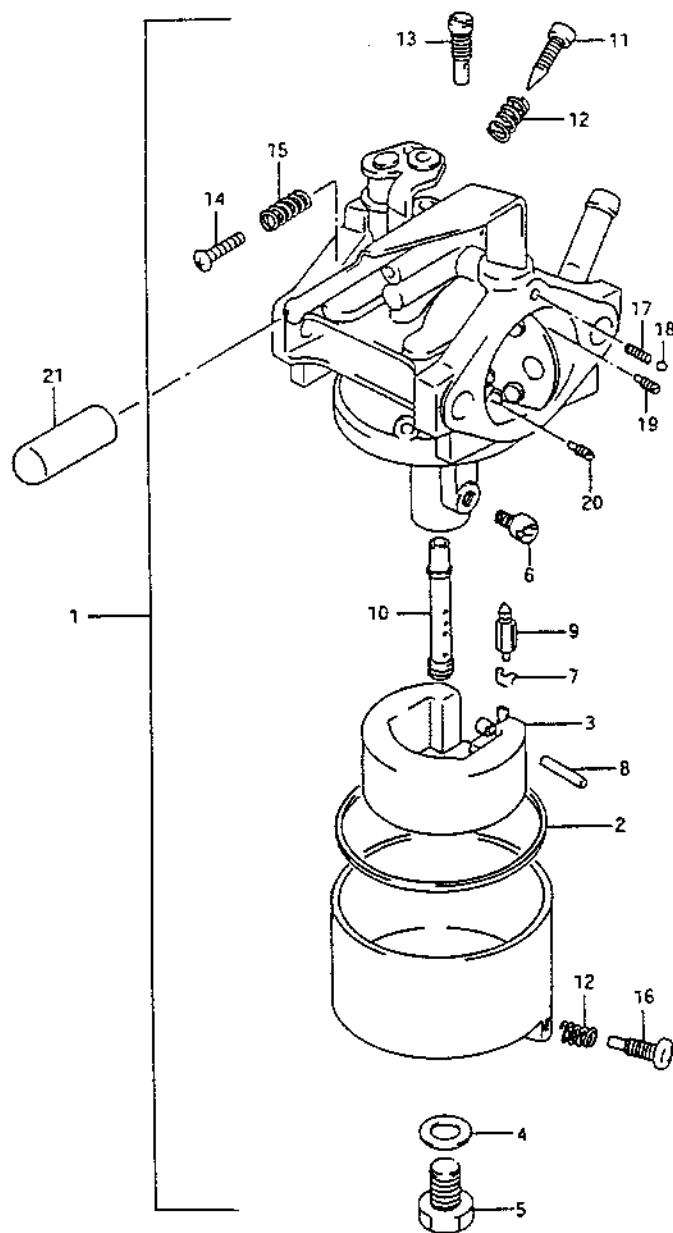


FIG.3 (B- 7) CARBURETOR

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	13200-88C11	CARBURETOR ASSY	1	+13200-88C10
2	13251-87400	.GASKET	1	
3	13250-87420	.FLOAT	1	+13250-87400
4	13343-98520	.PACKING	1	
5	13247-88C00	.BOLT	1	
6-1	09491-20022	.JET, main (100)	1	+09491-20010 for 13200-88C10
6-2	09491-20011	.JET, main (102.5)	1	for 13200-88C11
7	13375-88C00	.CLIP	1	
8	13254-98300	.PIN	1	
9	13372-88C00	.NEEDLE	1	
10	13235-88C10	.NOZZLE, main	1	
11	13279-90000	.ADJUSTER	1	
12-1	13268-96110	.SPRING	2	for 13200-88C10
12-2	13268-99011	.SPRING	2	for 13200-88C11
13	09492-52002	.JET, pilot (52.5)	1	
14	02112-03123	.SCREW	1	+13267-88C00
15	13268-92910	.SPRING	1	
16	13605-88C00	.SCREW	1	
17	13434-43010	.SPRING	1	
18	13596-93010	.BALL	1	
19	09493-28007	.JET, air (1.4)	1	
20	09493-30004	.JET, pilot air (1.5)	1	
21	09251-04003	CAP	1	

FIG.4

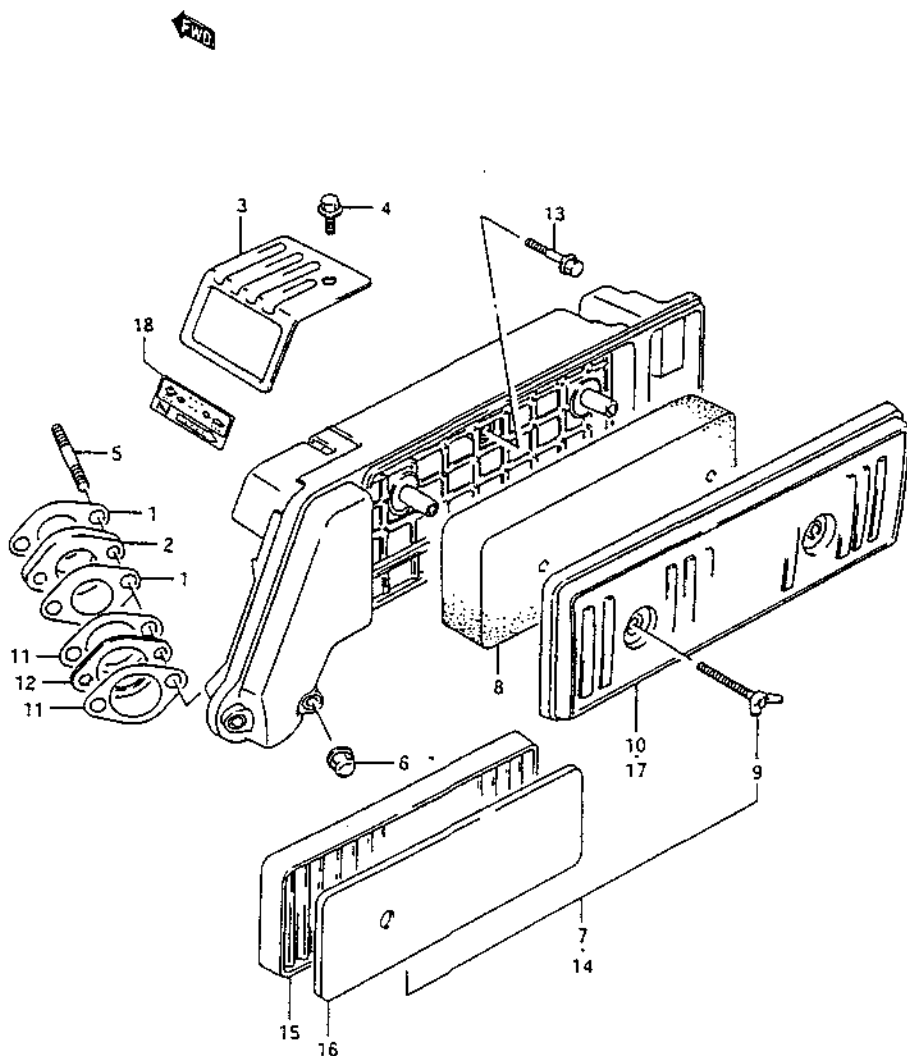


FIG.4 (B- 8) AIR CLEANER

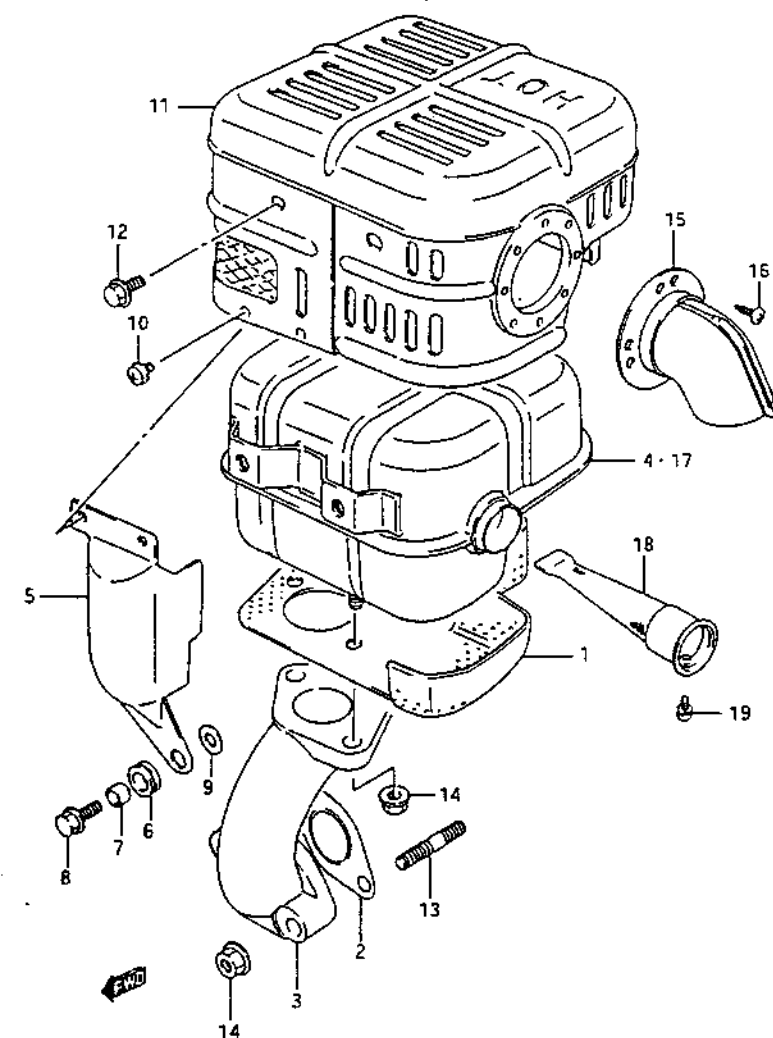
REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	13125-88C10	GASKET, carburetor	2	+13125-88C00
2	13129-88C10	INSULATOR, carburetor	1	+13129-88C00
3	13511-88C00	COVER, carburetor	1	
4	02162-06103	BOLT	1	
5	09108-06008	STUD BOLT	2	
6	08313-20063	NUT	2	
7-1	13700-88C10	CLEANER ASSY, air	1	
7-2	13700-88C40	CLEANER ASSY, air	1	V272-103956-
8	13781-88C10	.FILTER	1	+13781-88C00
9	13831-88C00	.BOLT, wing	2	
10	13740-88C00	.CAP, air cleaner	1	
11	13881-88C10	GASKET, air cleaner	2	+13881-88C00
12	13891-88C00	INSULATOR, air cleaner	1	
13	09103-06176	BOLT	1	+09103-06075
14	13700-88C20	CLEANER ASSY, air	1	Dual element
15	13780-88C20	.FILTER	1	Dual element
16	13785-88C20	.FILTER, outer	1	Dual element
17	13740-88C00	.CAP, air cleaner	1	Dual element
18	19849-88C00	LABEL, engine idle	1	

FIG.5

FIG.5 (B- 9) MUFFLER

Q'TY

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1-1	14130-88C10	GASKET, muffler	1	+14130-88C00
1-2	14131-88C20	GASKET, muffler	1	OPT
2	14141-88C10	GASKET, exhaust	1	+14141-88C00
3	14151-88C00	MANIFOLD, exhaust	1	
4	14310-88F00	MUFFLER	1	+14310-88C10
5	14171-88C01	COVER, exhaust manifold	1	+14171-88C00
6	09320-08046	CUSHION	1	V270-002621-
7	09180-06001	SPACER	1	V270-002621-
8-1	09103-06172	BOLT (L:12)	1	-V270-002620 +09103-06056
8-2	09103-06114	BOLT (L:20)	1	V270-002621-
8-3	09103-06170	BOLT (L:20)	1	V272-100001-
9	08322-01063	WASHER	1	V270-002621-
10	02142-05103	SCREW	2	
11	14780-88C00	COVER, muffler	1	
12	02162-06103	BOLT	4	
13	09108-08213	STUD BOLT	2	
14	08316-10083	NUT	5	
15	14380-88C10	DEFLECTOR	1	OPT
16	09132-05042	SCREW	3	OPT
17	14310-88F10	MUFFLER	1	OPT +14310-88C30
18	14840-88C00	SCREEN, spark arrester	1	OPT
19	02112-34083	SCREW	1	OPT



NOT USED BY CASE

FIG.6 (B-10) RECOIL STARTER (-V270-013900)

FIG.6

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	17210-88C00-15E	COVER, cooling fan	1	
2	17231-88C01	COWLING, ventilation, upper	1	
3	09103-06172	BOLT (6x12)	9	+09103-06056
4	17351-90900	PROTECTOR, lead wire	1	
5	17241-88C00	COWLING, ventilation, lower	1	
6	18100-88C20-15E	STARTER ASSY, recoil	1	+18100-88C50-15E used with 18211-88C20
7	18210-93001	.GRIP	1	
8	18121-87400	.REEL	1	
9	18151-87400	.PLATE	1	
10	18142-87400	.SPRING	1	
11	18136-96300	SPACER, pole drive	1	
12	18137-88C00	.PLATE, slide	1	
13	18130-87400	.RATCHET SET	1	+18131-87400
14	18152-87400	..SPRING	1	
15	18155-87400	..SPRING	1	
16	18161-87400	..WASHER	1	
17	18162-87400	..WASHER	1	
18	08310-00063	.NUT	1	
19	08321-01063	.LOCK WASHER	1	
20	99000-81159-50M	ROPE	1	L:50000+1620
21	09117-06501	BOLT	3	+09100-06132
22	08321-01063	LOCK WASHER	3	
23	18211-88C10	PULLEY, starter	1	
24	02112-06167	SCREW	3	
25	08321-01067	LOCK WASHER	3	
26-1	19823-88C22	PLATE, name (V270E)	1	+19823-88C21
26-2	19823-88C41	PLATE, name (V270)	1	+19823-88C32

COLOR : 15E (Yellow)

Refer to FIG.7(B-10) for V272-100001-

FIG.7

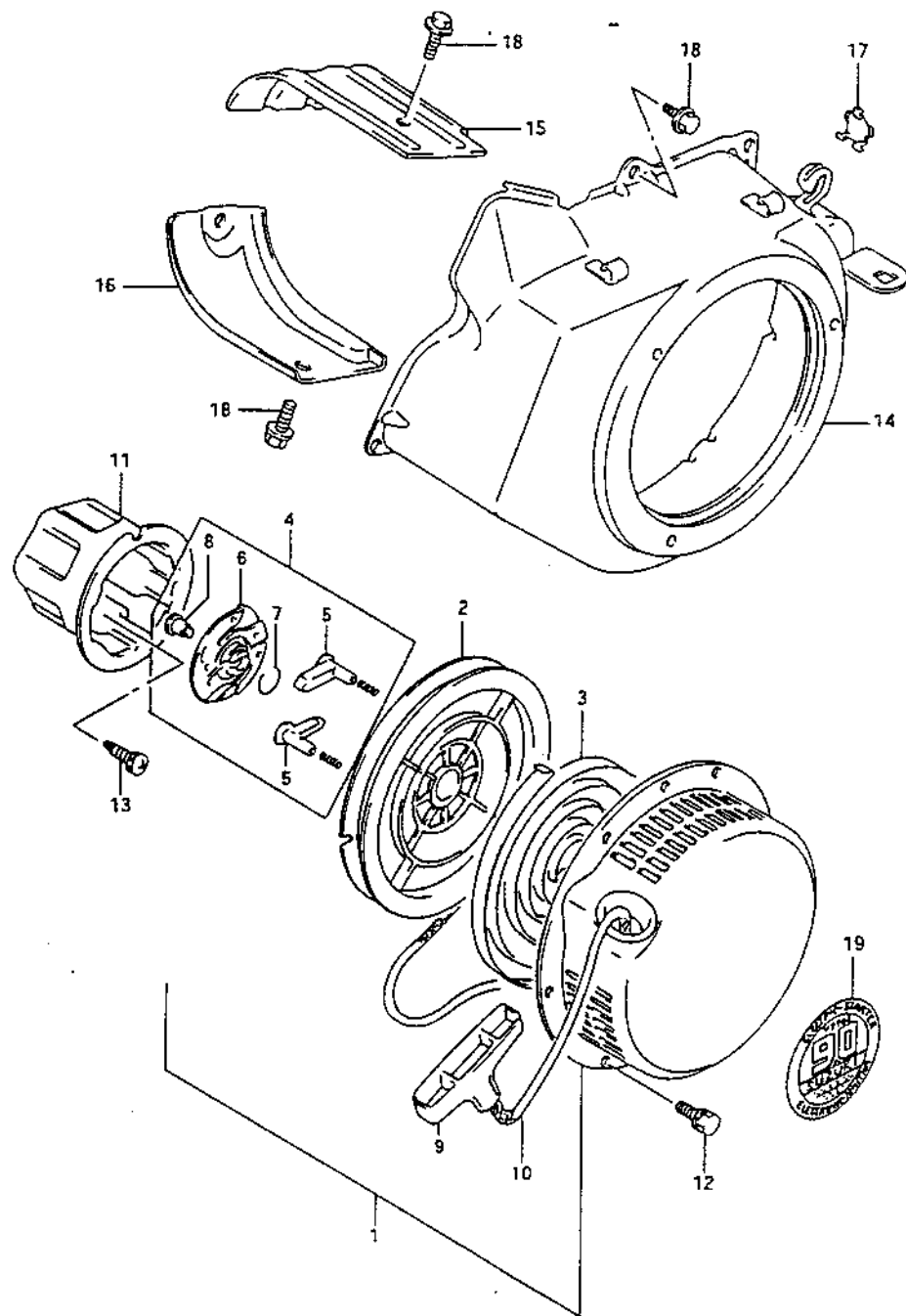


FIG.7 (B-11) RECOIL STARTER (V272-100001-)

Q'TY

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1-1	18100-88C50-15E	STARTER ASSY, recoil	1	
1-2	18100-88C50-1ZD	STARTER ASSY, recoil	1	
2	18121-88C50	.REEL	1	
3	18142-88C50	.SPRING, spiral	1	
4	18130-88C50	.RATCHET SET	1	
5	18131-88C50	..RATCHET	1	
6	18132-88C50	..RATCHET GUIDE	1	
7	18152-88C50	..SPRING, friction	1	
8	18153-90930	..SCREW	1	
9	18210-93002	.GRIP	1	+18210-93001
10	99000-81159-50M	ROPE	1	L:50000+1620
11	18211-88C20	PULLEY, starter	1	
12	09117-06501	BOLT, recoil starter (6x8)	3	
13	02112-36163	SCREW, starter pulley	3	
14-1	17210-88C00-15E	COVER, cooling fan	1	
14-2	17210-88C00-1ZD	COVER, cooling fan	1	
15	17231-88C10	COWLING, ventilation upper	1	
16	17241-88C10	COWLING, ventilation lower	1	
17	17351-90900	PROTECTOR, lead wire	1	
18	09103-06172	BOLT (6x12)	9	+09103-06056
19-1	19823-88C22	PLATE, name (V270E)	1	electric starter
19-2	19823-88C42	PLATE, name (V270E)	1	V272-108741-
19-3	19823-88C41	PLATE, name (V270)	1	manual starter

COLOR : 15E (Yellow)
1ZD (Black)

FIG. 8

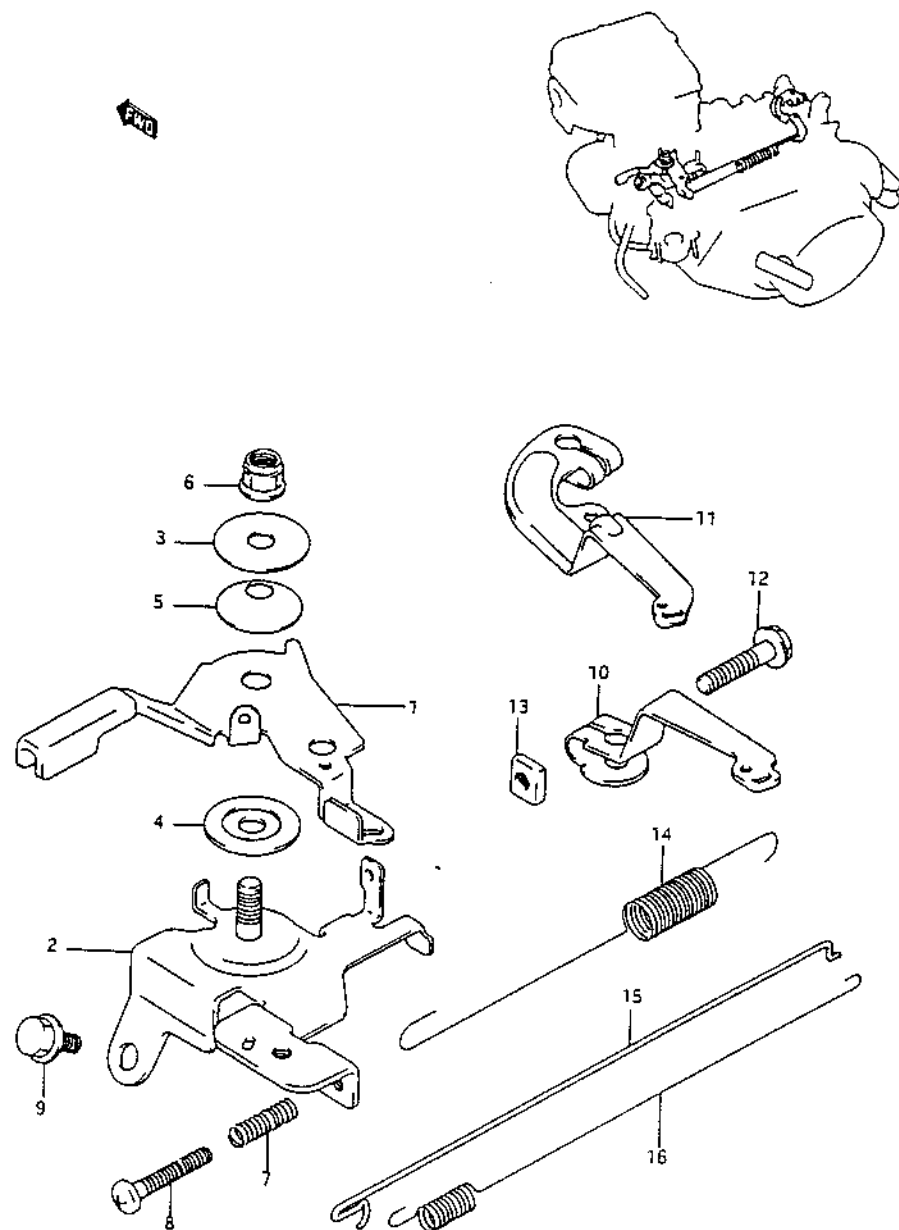


FIG. 8 (B-12) THROTTLE CONTROL

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	19251-88C00	LEVER, governor control	1	
2	19260-88C00	BRACKET, GOV control	1	
3	09160-08085	WASHER, GOV control	1	+09160-08004
4	09161-08014	WASHER, GOV control	1	
5	09164-08019	WASHER, GOV control	1	
6	08319-31087	NUT	1	
7	09440-07046	SPRING	1	
8-1	02112-05303	SCREW	1	
8-2	02112-05253	SCREW	1	
9	09103-06172	BOLT (6x12)	2	V272-100001- +09103-06056
10	19241-88C00	LEVER, throttle control	1	-V270-013900
11	19241-88C11	LEVER, throttle control	1	V272-100001- +19241-88C10
12	02162-06253	BOLT	1	
13	09152-06022	NUT	1	
14-1	19245-88C10	SPRING, throttle control	1	type:MS,MQ +19245-88C00
14-2	19245-88C30	SPRING, throttle control	1	V272-100011- type:MS,MQ
14-3	19245-88C20	SPRING, throttle control	1	type:MV
14-4	19245-88C40	SPRING, throttle control	1	V272-100001- type:MV
15	19271-88C01	ROD, carburetor	1	L:214 +19271-88C00
16	19274-88C01	SPRING, carburetor rod	1	L:203 +19274-88C00

FIG. 9

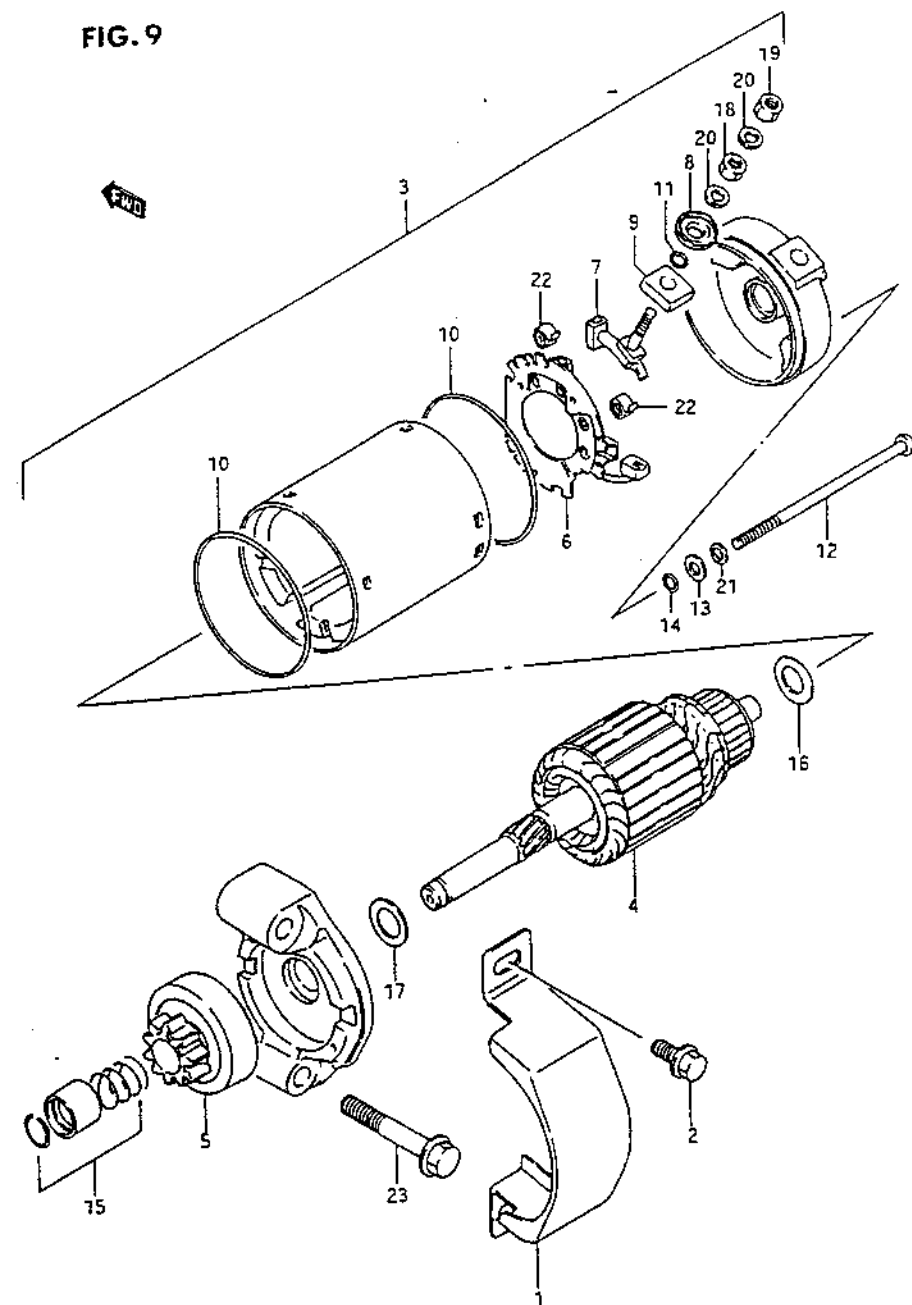


FIG. 9 (C- 2) STARTING MOTOR

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	17207-88C00	COVER, starter	1	
2	09103-06172	BOLT (6x12)	2	+09103-06056
3	31100-88C00	MOTOR, starter	1	
4	31310-88C00	.ARMATURE	1	
5	31320-88C00	.CLUTCH SUB ASSY	1	
6	31132-27A01	.HOLDER ASSY, brush	1	+31132-44110
7	31130-88C00	.BRUSH SUB ASSY	1	
8	31172-38300	.BUSH	1	
9	31173-88C00	.BUSHING	1	
10	31264-44110	.O RING	2	
11	31143-38300	.O RING	1	
12	31281-87402	.SCREW	2	+31281-38300
13	31161-38300	.WASHER	2	
14	31156-38300	.O RING	2	
15	31312-87400	.STOPPER SET, pinion	1	
16	31170-43400	.SHIM, No.2	2	+31361-47010
17	31361-88C00	.WASHER	1	
18	08310-00067	.NUT	1	
19	08310-00067	.NUT	1	
20	08321-01067	.LOCK WASHER	2	
21	08321-01057	.LOCK WASHER	2	
22	31135-65010	.SPRING	2	
23	09103-08207	BOLT (9x45)	2	

FIG.10

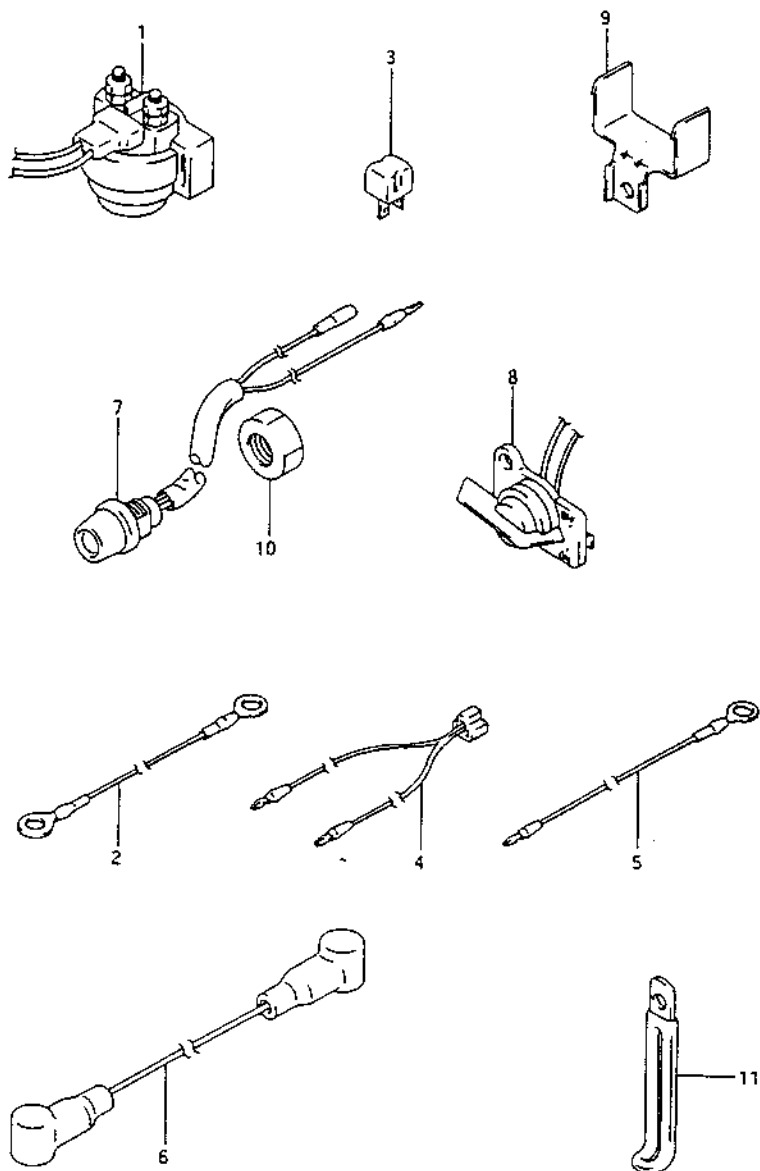
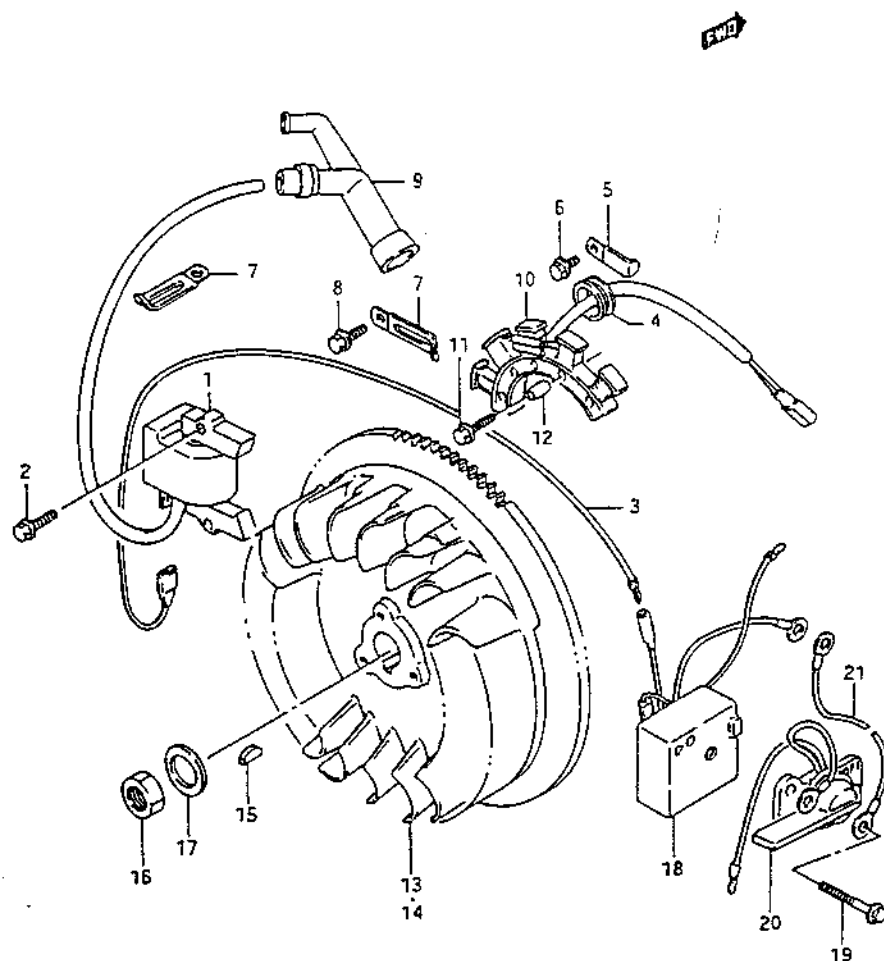


FIG.10 (C- 3) ELECTRICAL

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	31800-94401	RELAY ASSY, starting motor	1	
2	32282-88C10	LEAD WIRE, SW earth	1	
3	32800-16A00	RECTIFIER	1	
4	36610-88C71	LEAD WIRE, diode	1	
5	36640-88C00	LEAD WIRE, earth	1	
6	36650-88C00	LEAD WIRE, starter	1	
7	37161-88C01	SWITCH, starting	1	
8	37800-90901	SWITCH, engine stop	1	
9	38412-94500	BRACKET, starter relay	1	
10	09159-14014	NUT	1	
11	09404-06433	CLAMP	1	+09404-06404

FIG. 11

FIG. 11 (C- 4) MAGNETO



REF. NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	32900-92A01	UNIT, igniter	1	+32900-88C01
2-1	09103-06048	BOLT (6x20)	2	
2-2	09103-06170	BOLT (6x20)	2	
3	32281-90900	WIRE, magneto stop reed	1	+32281-88C00
4	09308-16006	GROMMET (16x26x7.5)	1	
5	09404-06429	CLAMP (L:35)	1	
6	09103-05002	BOLT (5x11.5)	1	
7	09404-06433	CLAMP (L:65)	3	+09404-06433
8	09103-06172	BOLT (6x12)	1	+09103-06056
9	33510-88C00	CAP ASSY, spark plug (R)	1	
10	32120-88C10	COIL, right (21W)	1	
11	09103-05011	BOLT (5x18)	2	
12	09180-05027	SPACER	2	
13	32110-88C01	ROTOR, with ring gear	1	electric starter +32110-88C00
14	32112-88C11	ROTOR, w/o ring gear	1	manual starter
15	08341-31059	KEY	1	
16	08310-00163	NUT	1	
17	08322-01163	WASHER	1	
18	34910-88C01	UNIT, oil level alarm	1	+34910-88C00
19	01547-06353	BOLT (6x35)	1	
20	37800-90901	SWITCH ASSY, engine stop	1	manual starter
21	32282-88C10	LEAD WIRE, switch arth	1	manual starter

FIG.12

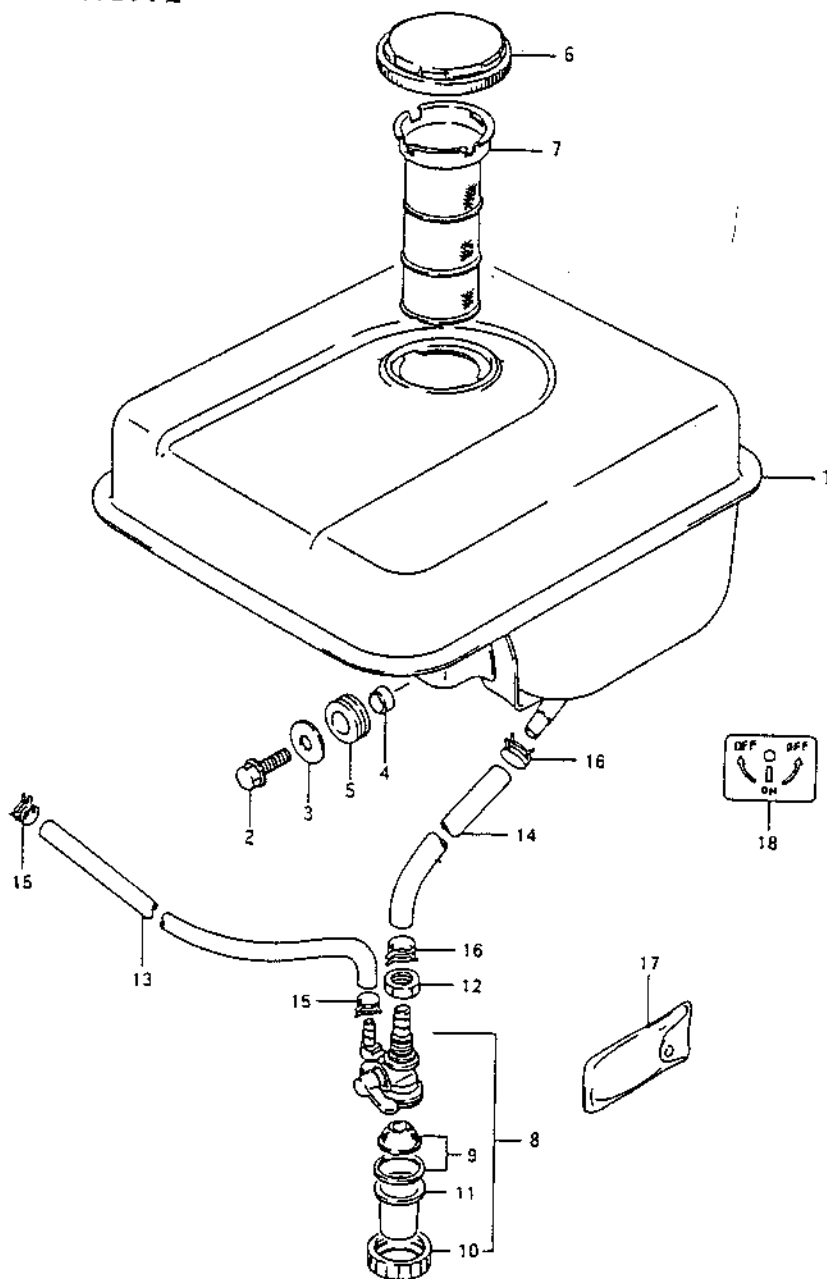


FIG.12 (C-5) FUEL TANK

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	44110-88C01-15E	TANK, fuel	1	+44110-88C00-15E
2	09103-08325	BOLT (8x24.5)	4	+099103-08220
3	09160-08085	WASHER (8.2x26x1.6)	4	+09160-08075
4	09180-08092	SPACER (8.8x12x6)	4	
5	09320-12055	CUSHION	4	+09320-12011
6	44210-88C10	CAP, tank	1	+44210-88C01
7-1	44400-90910	FILTER	1	+V270-008570 +44400-90900
7-2	44400-90911	FILTER	1	V270-008571- +44400-90901
8	44300-88C00	COCK ASSY, fuel	1	
9	44320-88C00	ELEMENT SET	1	
10	44317-90200	CAP	1	
11	44319-90200	CUP	1	
12	08310-00123	NUT	1	
13	09354-53103-600	HOSE (5x10x360)	1	L:600+360
14	09354-70123-600	HOSE (tank to cock)	1	L:600+180
15	09401-09401	CLIP	2	
16-1	09401-11409	CLIP	2	
16-2	09401-11413	CLIP	2	V272-108065-
17	09800-00357	TOOL ASSY	1	
18	19851-90930	LABEL, cock	1	+19851-90910

COLOR : 15E (Yellow)

FIG.13

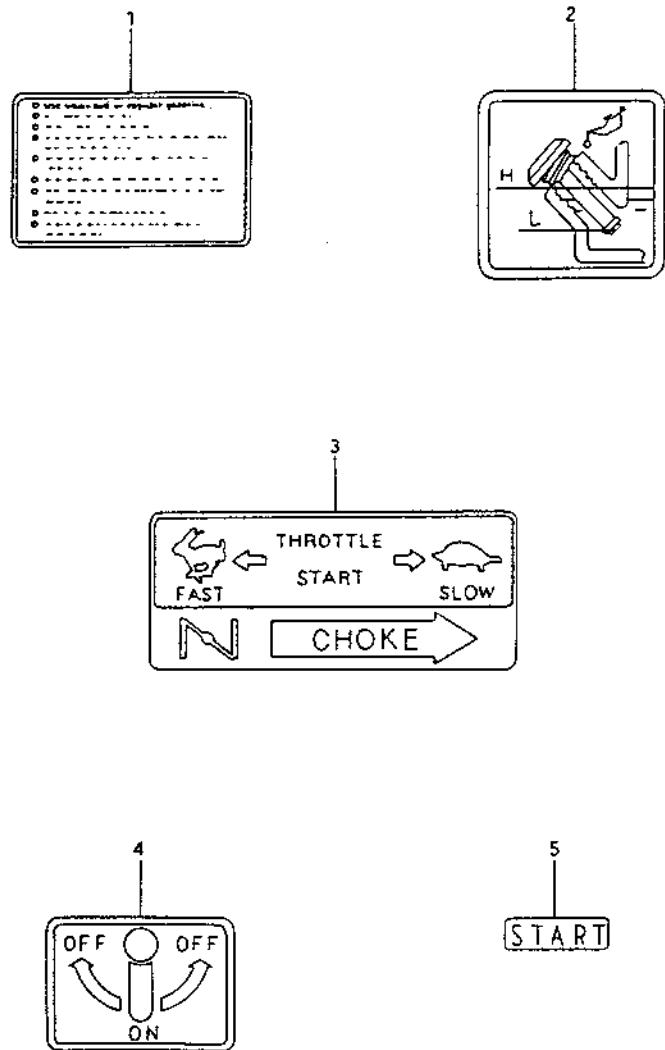


FIG.13 (C- 6) LABEL

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	19841-90021	LABEL, fuel	1	
2	19847-90960	LABEL, engine oil	1	
3	19849-88C00	LABEL, engine idle	1	
4	19851-90930	LABEL, cock	1	
5	53513-88C00	LABEL, start	1	
6	99011-88C20-DLM	MANUAL, owner's	1	not shown

FIG. 14

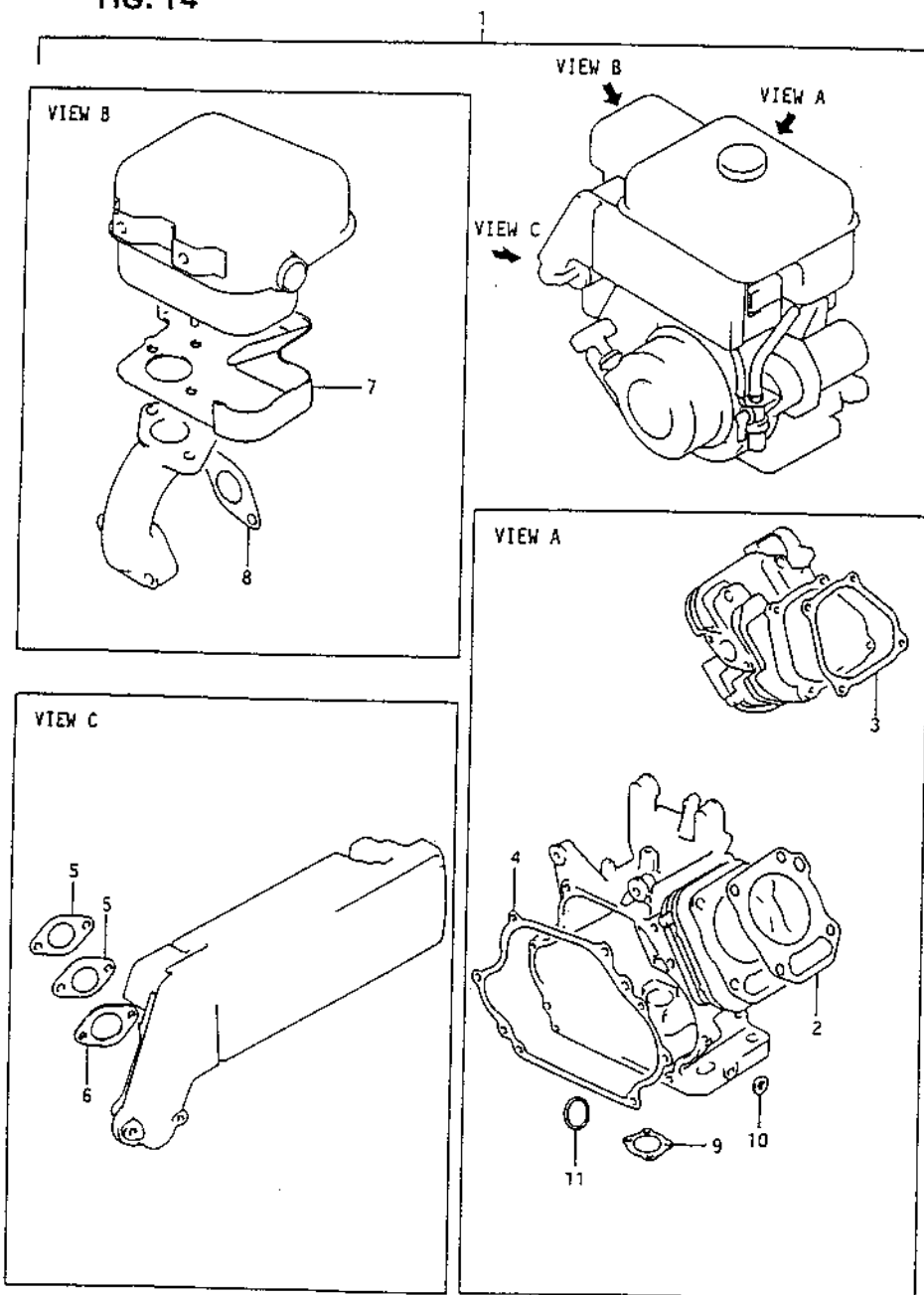


FIG.14 (C- 7) OPT:GASKET SET

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	11400-88812	GASKET SET A7607	1	
2	11141-88C10	.GASKET, cylinder head	1	
3	11161-88C00	.GASKET, cylinder head cover	1	
4	11351-88C10	.GASKET, crank case	1	
5-1	13125-88C10	.GASKET, carburetor	2	
5-2	13125-90C10	.GASKET, carburetor	2	V272-114114-
6	13881-88C10	.GASKET, air cleaner	1	
7	14130-88C10	.GASKET, muffler	1	
8	14141-88C10	.GASKET, exhaust	1	
9	34815-90320	.GASKET, oil level sensor	1	
10	09168-12018	.GASKET (12x21x2)	2	+09168-12008
11	09280-26005	.O RING (D:2.4, ID:26.2)	2	

FIG. 15

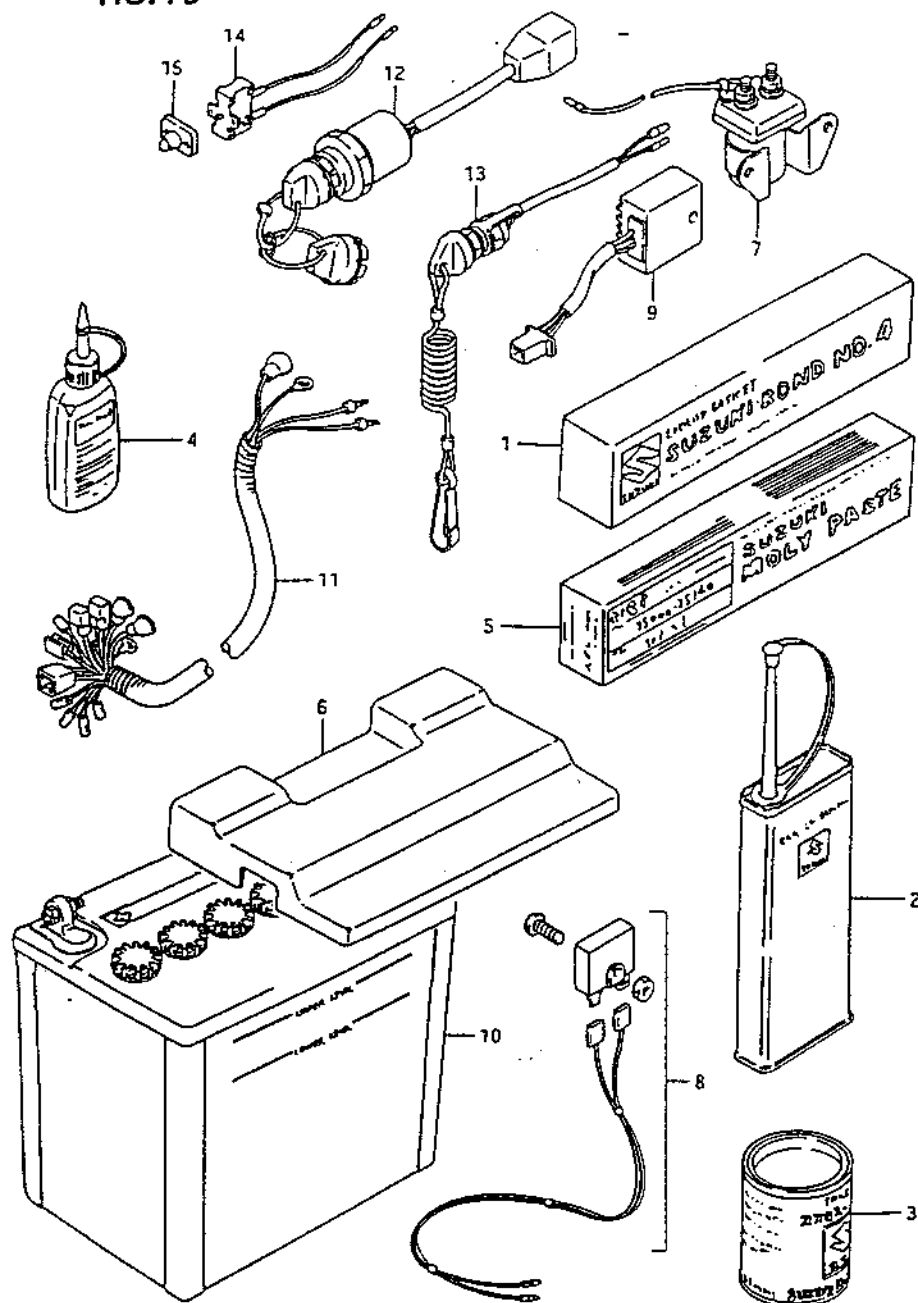


FIG. 15 (C- 8) OPTIONAL

Q'TY

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REMARKS
1	99000-31030	GASKET, liquid	1	NET:200g
2	99000-32040	CEMENT, thread lock	1	NET:200g
3	99000-25030	GREASE, super C	1	NET:150g
4	99000-32030	CEMENT, thread lock super	1	NET:50g
5	99000-25140	SUZUKI MOLY PASTE	1	NET:50g
6	33625-87401	COVER, battery	1	
7	31800-37020	RELAY ASSY, starting motor	1	
8	32800-16A00	RECTIFIER	1	+32800-19063
9	32800-88C00	REGULATOR, rectifier	1	
10-1	33610-87431	BATTERY (26A19L)	1	+33610-87431
10-2	33610-87432	BATTERY (26A19L)	1	V272-114626-
11	36610-88C20	HARNESS, wiring	1	
12	37110-88C00	SWITCH ASSY, ignition	1	
13	37820-88C00	SWITCH ASSY, emergency	1	
14	53241-88C00	BREAKER, circuit	1	
15	53246-87400	CAP, protector	1	