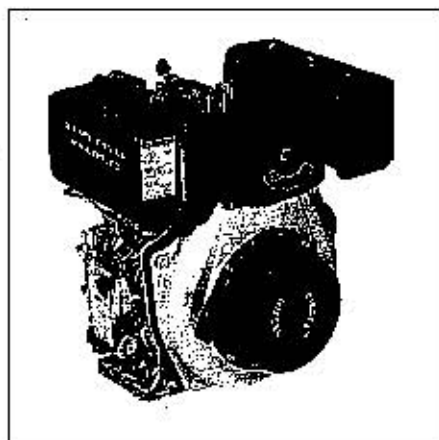
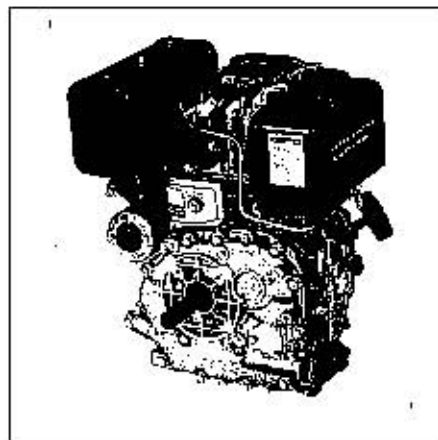


第一章 柴油机主要技术规格及数据  
CHAPTER 1 MAIN TECHNICAL SPECIFICATION AND DATA

1-1 柴油机外观图 DIESEL ENGINE OVERALL FIGURE

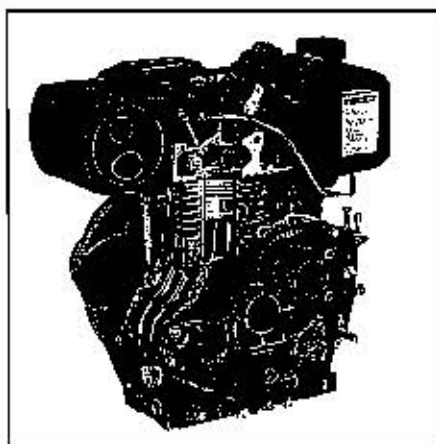


前视图 Front



后视图 Back

外观图 Overall Figure



剖视图 Cross Section Figure

## 1-2 技术规格 SPECIFICATIONS

项目 Item	技术性能指标与规格 Technical specifications					
型号 Model	170		178		186	
类型 Type	单缸、立式、四冲程、风冷、直喷式 Single-cylinder, Vertical, 4-stroke, air-cooled, direct injection					
缸径×活塞行程 毫米 Bore × stroke (mm)	70×55		78×62		86×70	
活塞排量 毫升 Displacement (cc)	211		296		406	
柴油机转速 转/每分钟 Engine speed (rpm)	3000	3600	3000	3600	3000	3600
最大功率 千瓦 (马力) Maximum Output kw(hp)	2.8(3.8)	3.1(4.2)	4.0(5.44)	4.4(6)	5.5(8.8)	7.0(9.5)
持续功率 千瓦 (马力) Continuous Output kw(hp)	2.5(3.4)	2.8(3.8)	3.7(5.0)	4.0(5.5)	5.7(7.7)	6.3(8.6)
活塞平均速度 米/每秒 Mean speed of piston (m/s)	5.5	6.6	6.2	7.44	7.0	8.4
有效平均压力 千帕 千克/平方厘米 Mean effective pressure kPa(kg/cm <sup>2</sup> )	443.2(4.52)	430.9(4.4)	540.5(5.52)	496.6(5.07)	561.8(5.73)	543.5(5.55)
燃油消耗率 Consumption rate of fuel g/KW·h(g/PS·h)	≤ 280.3(206)	≤ 288.3(212)	≤ 276.2(203)	≤ 285.6(210)	≤ 273.5(201)	≤ 285.7(210)
机油消耗率 克/千瓦小时 (克/马力小时) Consumption rate of machine (g/KW)	≤ 4.08(3)		≤ 4.08(3)		≤ 4.08(3)	
燃料箱容量 升 Fuel tank capacity(L)	2.5		3.5		5.5	
润滑油 容量 Lub. Oil capacity	满 升 Full(L)	0.75		1.10		1.65
	有效 升 Effective(L)	0.25		0.40		0.60
曲轴旋转方向 Rotary direction of crankshaft	从飞轮端视为顺时针 Clock wise (View from fly wheel end)					
冷却方式 Cooled type	强制风冷 Force air cooled system					
润滑方式 Lube. Type	压力、飞溅润滑 Pressure, splash					
起动方式 Starting type	反冲式手拉起动或电起动 Recoil or Recoil electric					
净重(手拉起动)千克 Dry weight(Recoil) (kg)	27		33		48	
净重(电起动)千克 Dry weight(Electric) (kg)	32		38		53	

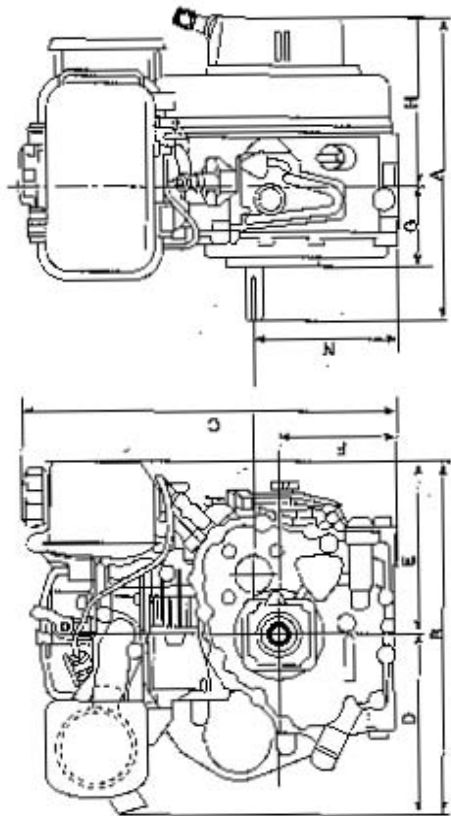
# 1-3 安装尺寸 INSTALLATION DIMENSIONS

型号 MODEL	曲轴输出 Crankhaft PTO		
	键槽轴 Keyway shaft	螺纹轴 Thread Shaft	锥度轴 Taper Shaft
代号 Application code	F1/F2	FP1/FP2	FG1/FG2
170	<p>F1</p> <p>F2</p>	<p>FP1</p> <p>FP2</p>	<p>FG1</p> <p>FG2</p>
178	<p>F1</p> <p>F2</p>	<p>FP1</p> <p>FP2</p>	<p>FG1</p> <p>FG2</p>
186	<p>F1</p> <p>F2</p>	<p>FP1</p>	<p>FG1</p> <p>FG2</p>

### 1-3 安装尺寸 INSTALLATION DIMENSIONS

型号 MODEL	凸轮轴输出 Camshaft PTO	输出法兰 PTO Flanges	
	键槽轴 Keyway shaft	凸轮轴输出 Camshaft PTO	曲轴输出 Crankshaft PTO
代号 Application code	FS	FS	F
170			
178			
186			

1-4 柴油機外形尺寸 DIESEL ENGINE DIMENSIONS



Suitable size	A	B	C	D	E	F	G	H	I	J	K	L	M	N
170	324	410	415	218	102	130	88	185	5	35.5	36.5	95	115	160
178	358	421	450	218	203	145	96	199	5	41.5	43.5	104	144	171.8
196	353	470	494	247	223	165	105	224	5	43.5	51.5	117	155	173.8

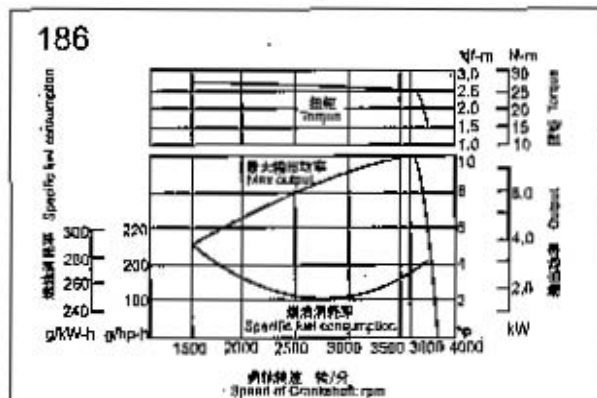
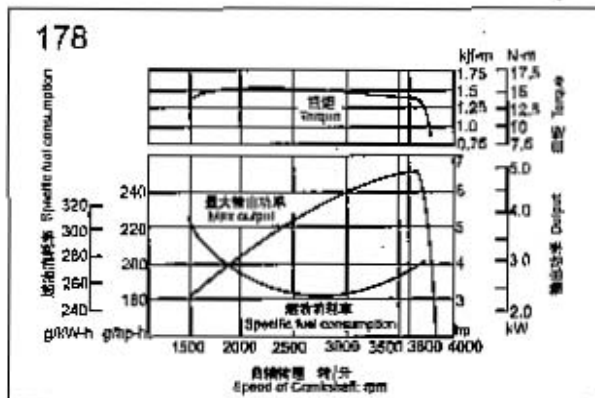
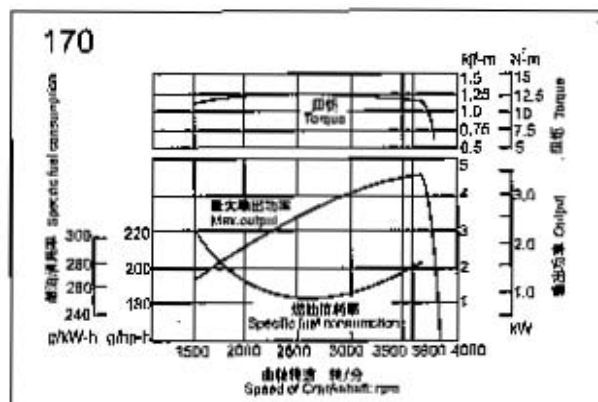
注意：以上数据如有更改恕不另行通知  
 Note: All data subject to alteration without notice.



Application Code:

- NONE: Recoil Starter
  - E: Electric starter
  - F: Keyway shaft
  - FP: Thread shaft
  - FG: Taper shaft
  - FS: Camshaft PTO
- Model name

# 1-5 特性曲线 PERFORMANCE CURVES



以上特性曲线为带空滤，消声器运行30小时后测量。  
 大气条件: ISO 3046/1  
 进气温度: 20°C [27°C]  
 大气压力: 760mmHg [750mmHg]  
 相对湿度: 60% [60%]

Performance measured after 30hrs running in, with air cleaner and exhaust silencer.  
 Atmospheric conditions: ISO 3046/1  
 Intake air temperature: 20°C [27°C]  
 Barometric pressure: 760mmHg [750mmHg]  
 Relative humidity: 60% [60%]

1-6 主要螺栓、螺母拧紧力矩一览表 TORQUE FOR TIGHTEN UP MAIN SCREW BOLT AND NUT

表1-6 Table 1-6

单位: 牛顿·米 unit: N·m

序号 No.	名称 Description	型号 Model		说明 Note
		170	178	
1	连杆螺母 Connecting rod nut	25~30		磨合后重新拧紧 Retighten up after test period
2	气缸盖螺母 Cylinder head nut	28~32	42~46	
3	飞轮螺母 Fly wheel nut	100~110		
4	喷油器压板螺母 Nozzle retainer	10~12		
5	摇臂盖紧固螺栓 Tight screw bolt of rocket support	20~22		
6	标准M8螺栓 Standard M8 bolt	18~22		
7	标准M6螺栓 Standard M6 bolt	10~12		

1-7 配气相位、供油提前角、气门间隙 VALVE OPEN AND CLOSE PHASE, INITIAL ANGLE OF FUEL OF FUEL DELIVERY AND VALVE CLEARANCE

1-7.1 配气相位 (曲轴转角) Valve open and close phase (see table 1-7.1)

表 1-7.1 Table 1-7.1

单位: 度 unit: CA

项目 ITEM	型号 MODEL	配 气 相 位		
		170	178	186
进气门开 Intake valve open		上止点前18°30' BTDC18°30'	上止点前18° BTDC18°	上止点前14° BTDC14°
进气门关 Intake valve close		下止点后45°30' ABDC45°30'	下止点后46° ABDC46°	下止点后50° ABDC50°
排气门开 Exhaust valve open		下止点前55°30' BBDC55°30'	下止点前52° BBDC52°	下止点前54° BBDC54°
排气门关 Exhaust valve close		上止点后8°30' ATDC8°30'	上止点后12° ATDC12°	上止点后10° ATDC10°

1-7.2 供油提前角 (曲轴转角) Initial angle of fuel delivery

表1-7.2 Table 1-7.2

单位: 度 unit: CA

形式 Type	型号 Model		178		186	
	170	3600	3000	3600	3000	3600
柴油机转速 Engine speed (rpm)	3000	3600	3000	3600	3000	3600
供油提前角 Initial angle of fuel delivery	18±1°	19±1°	19±1°	20±1°	21±1°	22±1°

## 1-7.3 气门间隙 Valve clearance

表 1-7.3 Table 1-7.3

单位: 毫米 unit:mm

名称 Description	型号 Model	170	178	186
进气门 Intake valve		0.15 (冷态) 0.15(Cold state)		
排气门 Exhaust valve		0.15 (冷态) 0.15(Cold state)		

## 1-8 各种温度、烟度、压力范围 RANGE OF TEMPERATURE, SMOKE AND PRESSURE

表1-8 Table 1-8

名称 Description	型号 Model	170	178	186
排气温度(°C) Exhaust temperature(°C)		≤480		
机油温度(°C) Machine oil temperature(°C)		≤95		
烟度(波许) Smoke (Bosch)		≤4		
喷油压力 Pressure of Injection Mpa(kgf/cm)		19.8±0.49 (200±5)		

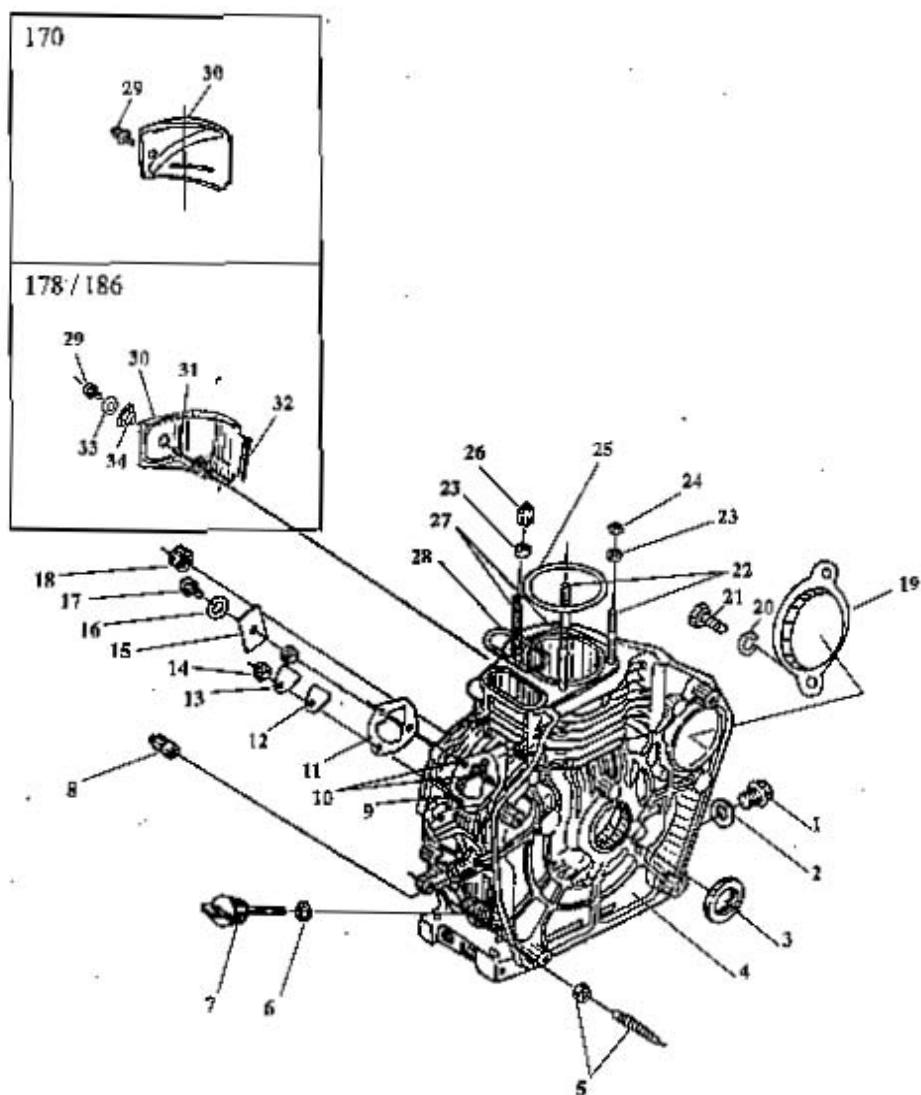


## 第二章 柴油机各系统名称及图

### CHAPTER 2 NAMES AND DIAGRAM OF DIESEL ENGINE PARTS

#### 2-1 机体总成 CYLINDER BLOCK ASSEMBLY <1>

170 / 178 / 186



## 第二章 柴油机各系统名称及图

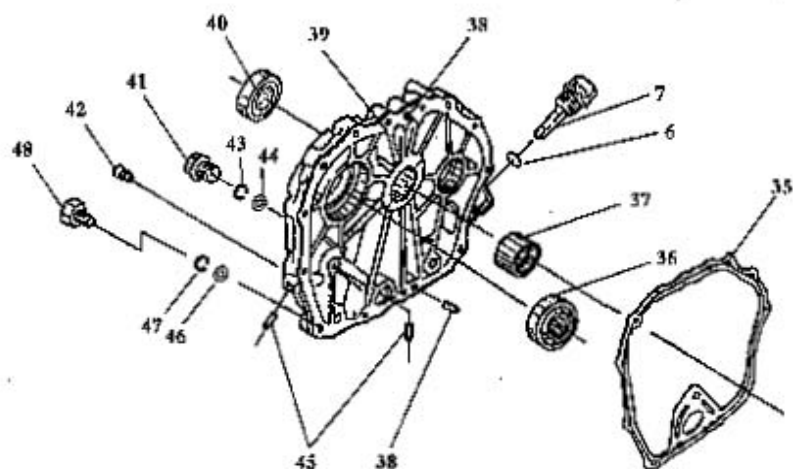
## CHAPTER 2 NAMES AND DIAGRAM OF DIESEL ENGINE PARTS

## 2-1 机体总成 CYLINDER BLOCK ASSEMBLY&lt;1&gt;

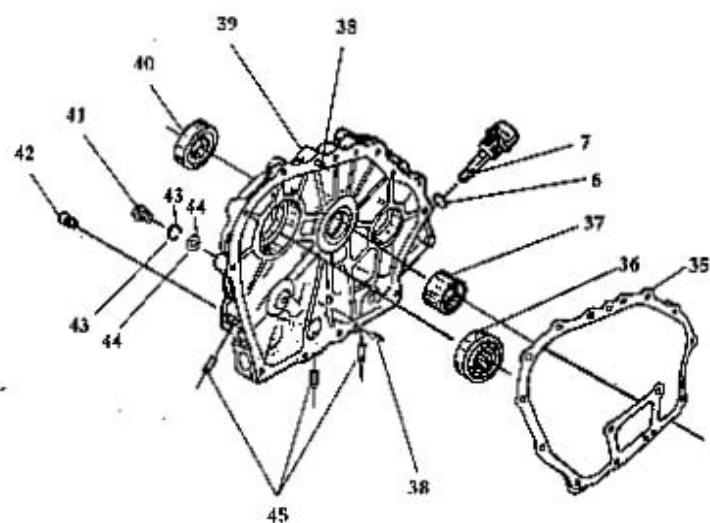
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	170	178	186	170	178	186	170	178	186	170	178	186
1	7001017			放油螺塞			Drain Plug			1		
2	7001100			放油螺塞垫片			Drain Plug Seal			1		
3	YF304508		YF355010	油封			Oil Seal			1		
				8030x45x8	8030x60x10	8030x45x8	8030x60x10					
4	7001001	7801001	8601001	机体			Cylinder Block			1		
5	7011200			油量控制器部件			Fuel Controller Assy.			1		
6	OM24024			O型密封圈24x2.4			O-Ring24x2.4			2		
7	7001002	7801002		机油尺			Oil Gauge			2		
8	ZCB7941/8			滚针轴承7941/8			Needle Bearing 7941/8			2		
9	7001012			喷油泵紧固螺栓(短)			Fuel Pump Stud (Short)			1		
10	7001011			喷油泵紧固螺栓(长)			Fuel Pump Stud (Long)			2		
11	7001201			喷油泵垫片			Fuel Pump Gasket			When Necessary		
12	7001203			喷油泵密封垫片			Seal Gasket					
13	7001202			喷油泵密封板			Seal Plate			1		
14	LMB06			法兰螺母			Flange Nut M6			1		
15	7001009			止推片			Retainer			3		
16	PD08			平垫圈8			Washer 8			1		
17	LSA08012			六角螺栓M8x12			Bolt M8x12			1		
18	ZCB7941/15			滚针轴承7941/15			Needle Bearing 7941/15			1		
19	7001022			起动机孔堵塞			Starter Seat Cover			1		
20	TD10			弹垫 10			Spring Washer 10			1		
21	LSA10016			六角螺栓 M10x16			Bolt M10x16			1		
22	7001003	7801003	8601003	汽缸盖螺栓(短)			Cylinder Head Stud(Short)			1		
23	7001007	7801007	8601007	汽缸盖螺母垫圈			Cylinder Head Nut Washer			2		
24	7001005	7801005	8601005	汽缸盖螺母(短)			Cylinder Head Nut(Short)			4		
25	7001013	7801013	8601013	汽缸盖垫片			Cylinder Head Gasket			2		
26	7001006	7801006	8601006	汽缸盖螺母(长)			Cylinder Head Nut(Long)			1		
27	7001004	7801004	8601004	汽缸盖螺栓(长)			Cylinder Head Stud(Long)			2		
28	7001008	7801008	8601008	密封圈			Seal Ring			2		
29	LSB06014			法兰螺栓M6x14			Flange Bolt M6x14			1		
30	7001018	7801018	8601018	引风板			Air Cover			1		
31		78016D2		引风板衬套			Collar			1		
32		7801603		隔震垫条			Shock Absorber Seat			1		
33		PDB06	PDA06	大平垫8	平垫8		Washer 8	Washer 8		1	1	
34		7801601		隔震垫块			Shock Absorber			1		
35	7001015	7801015	8601015	曲轴箱盖垫片			Crank Case Gasket			1		
36	ZCA6205	ZCA6208	ZCA6207	球轴承			Ball Bearing			1		
				6205	6206	6207	6205	6206	6207			
37	7001014	7801014	8601014	主轴承			Main Bearing			1		
38	XA08012			销 8x12			Pin 8x12			1		
39	7001016	7801016	8601016	曲轴箱盖			Crank Case Cover			1		
40	YF254210	YF304510	YF355010	油封			Oil Seal			1		
				8025x48x10	8030x45x10	8035x50x10	8025x48x10	8030x45x10	8035x50x10			

2-1 机体总成 CYLINDER BLOCK ASSEMBLY <2>

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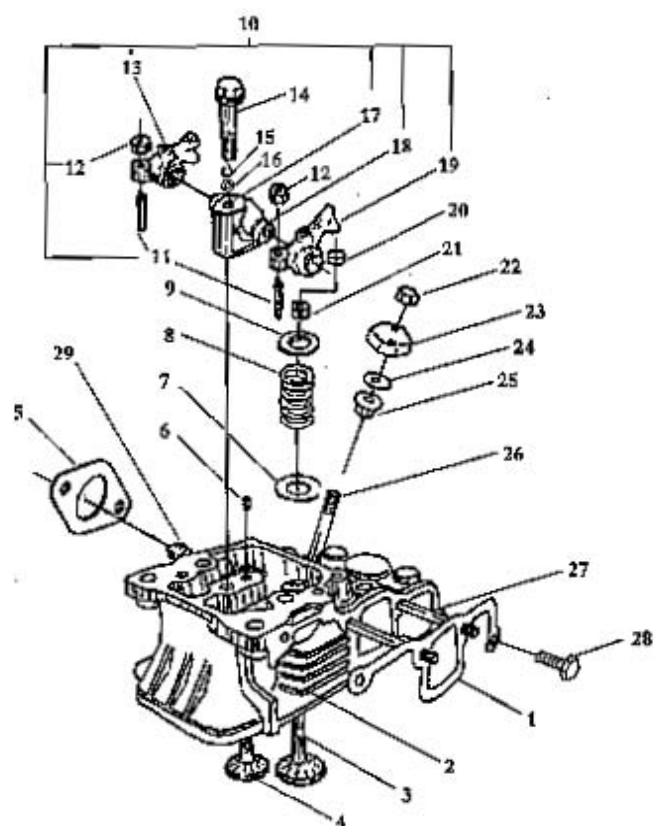


2-1 机体总成 CYLINDER BLOCK ASSEMBLY<2>

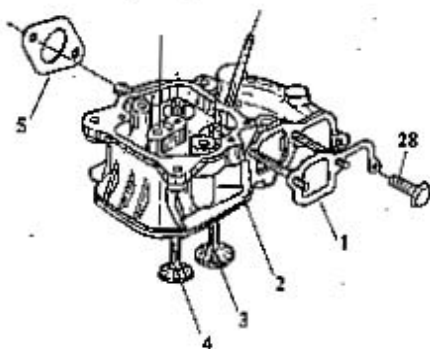
序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
41	LSA08038			六角螺栓M8x38			Bolt M8x38			1	15	16
42	7001019			内六角螺塞			Plug			1		
43	TD08			弹垫 8			Spring Washer 8			1	15	16
44	PDA08			平垫8			Washer 8			1	15	16
45	7001021			铝堵窝			Plug 8			2	3	3
46	PDA06			平垫6			Washer 6			14		
47	TD08			弹垫 6			Spring Washer 6			14		
48	LSA06032			六角螺栓M6x32			Bolt M6x32			14		

2-2 气缸盖总成 CYLINDER HEAD ASSEMBLY

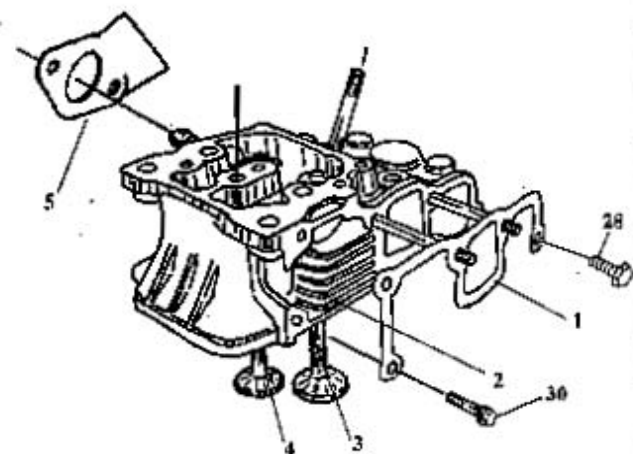
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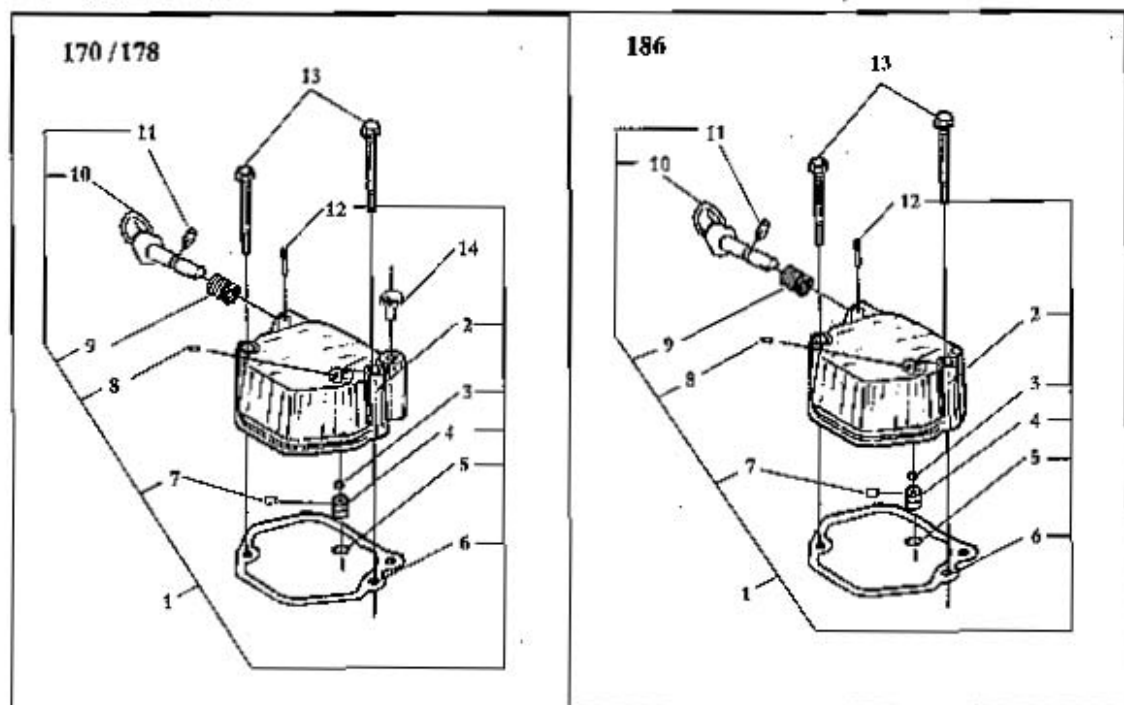
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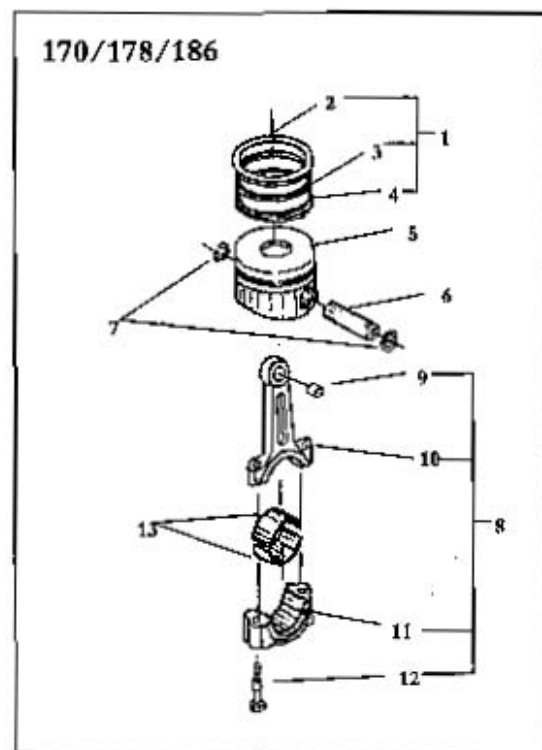
## 2-2 气缸盖总成 CYLINDER HEAD ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7002014	7802014	8602014	进气管垫片			Air Intake Gasket			1		
2	7002200	7802200	8602200	汽缸盖部件			Cylinder Head Assy.			1		
3	7002003	7802003	8602003	进气门			Intake Valve			1		
4	7002004	7802004	8602004	排气门			Exhaust Valve			1		
5	7002015	7802015	8602015	消声器垫片			Silencer Gasket			1		
6	XA04008			销 4x8			Pin 4x8			1		
7	7002007		8602007	气门弹簧垫圈			Valve Spring Washer			2		
8	7002005	7802005	8602005	气门弹簧			Valve Spring			2		
9	7002002	7802002	8602002	气门弹簧座			Spring Retainer			2		
10	7002100		8602100	气门摇臂总成			Rocker Arm Assy.			1		
11	7002105			气门调节螺钉			Valve Screw			2		
12	LMA06075			六角螺母 M6x0.75			Nut M6x0.75			2		
13	7002103		8602103	排气摇臂			Exhaust Rocker Arm			1		
14	7002106		8602106	摇臂座螺栓			Bolt			1		
15	TD08	TD10	弹簧			Spring Washer			1			
			8	10	8	10						
16	PDA08	PDA10	平垫			Washer			1			
			8	10	8	10						
17	7002102		8602102	摇臂座			Rocker Arm Support			1		
18	7002101		8602101	摇臂轴			Rocker Arm Shaft			1		
19	7002104		8602104	进气摇臂			Intake Rocker Arm			1		
20	7002016	7802016	8602016	气门杆垫块			Valve Cap			2		
21	7002001	7802001	8602001	气门锁夹			Cotter			4		
22	LMB06			法兰螺母 M6			Flang Nut M6			2		
23	7002009			喷油器压板			Nozzle Retainer			1		
24	7002018			隔热套垫片			Spacer Washer			1		
25	7002011			隔热套			Spacer			1		
26	LZ06050			螺栓 AM6x50			Stud AM6x50			2		
27	LZ06056	LZ06075	螺栓			Stud			2			
			AM6x55	AM6x75	AM6x55	AM6x75						
28	LSB06022			法兰螺栓 M6x22			Flange Bolt M6x22			2		
29	LZ08020			螺栓 AM8x20			Stud AM8x20			2		
30		LSB06028		法兰螺栓 M6x28			Flange Bolt M6x28					1

2-3 气缸盖罩总成 CYLINDER HEAD BONNET ASSEMBLY



2-4 活塞连杆总成 PISTON & CONNECTING ROD ASSEMBLY



### 2-3 气缸盖罩总成 CYLINDER HEAD BONNET ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7003300		8603300	气缸盖罩部件			Bonnet Assy.			1		
2	7003001		8603001	气缸盖罩			Cylinder Head Bonnet			1		
3	7003201			球			Ball			1		
4	7003202			呼吸器座			Breather Assy.			1		
5	7003203			销			Pin			1		
6	OM12019			O形密封圈			O-ring 12x1.9			1		
7	7001021			铝堵塞			Plunger 8x10			1		
8	7003003	8603003		气缸盖罩垫片			Bonnet Gasket			1		
9	7003004			减压弹簧			Decompression Spring			1		
10	7003100			减压轴部件			Decompression Shaft Assy.			1		
11	OM10019			O型密封圈10x1.9			O-ring 10x1.9			2		
12	XA03016			销 3x16			Pin 3x16			1		
13	LSA06055	LSA06070	六角螺栓			Bolt			1			
			M6x55		M6x70	M6x55		M6x70				
14	7003005		加油螺塞			Plunger			1			

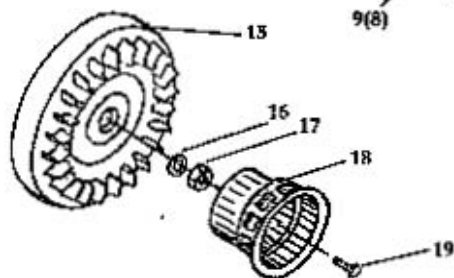
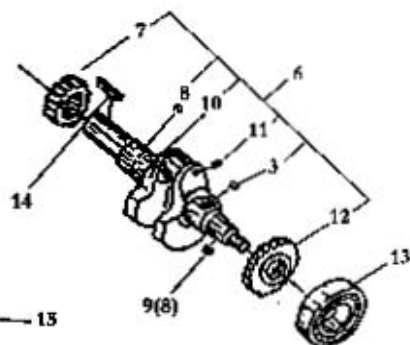
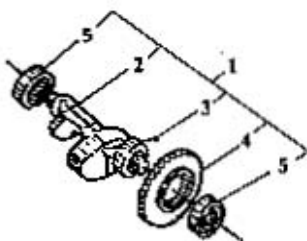
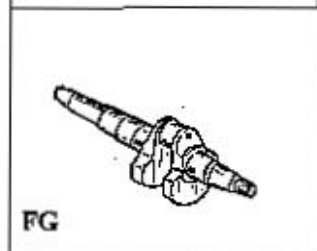
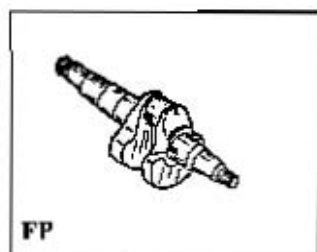
### 2-4 活塞连杆总成 PISTON&CONNECTING ROD ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7004300	7804300	8604300	活塞环组			Piston Ring Set			1		
2	7004101	7804101	8604101	第一道气环			First Piston Ring			1		
3	7004102	7804102	8604102	第二道气环			Second Piston Ring			1		
4	7004100	7804100	8604100	油环部件			Oil Ring Assy.			1		
5	7004103	7804103	8604103	活塞			Piston			1		
6	7004104	7804104	8604104	活塞销			Piston Pin			1		
7	DQB19	DQB21	DQB23	挡圈			Clip			1		
				19	21	23	19	21	23			
8	7004200	7804200	8604200	连杆组件			Connecting Rod Assy.			1		
9	7004208	7804208	8604208	连杆小头衬套			Bush			1		
10	7004201	7804201	8604201	连杆体			Rod Body			1		
11	7004202	7804202	8604202	连杆盖			Crank Pin Box			1		
12	7004203	7804203	8604203	连杆螺栓			Rod Bolt			2		
13	7004205	7804205	8604205	连杆轴瓦			Crank Pin Bearing			2		



2-5 曲轴飞轮总成 CRANK SHAFT & FLYWHEEL ASSEMBLY

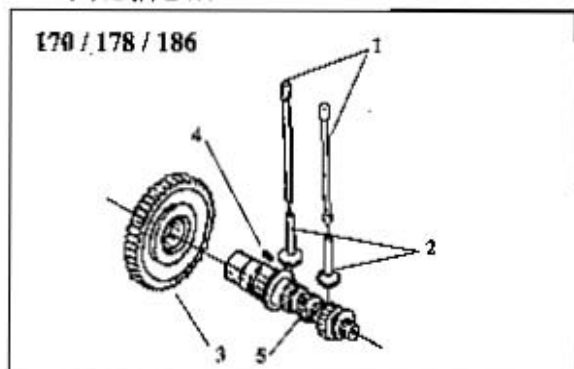
170/178/186



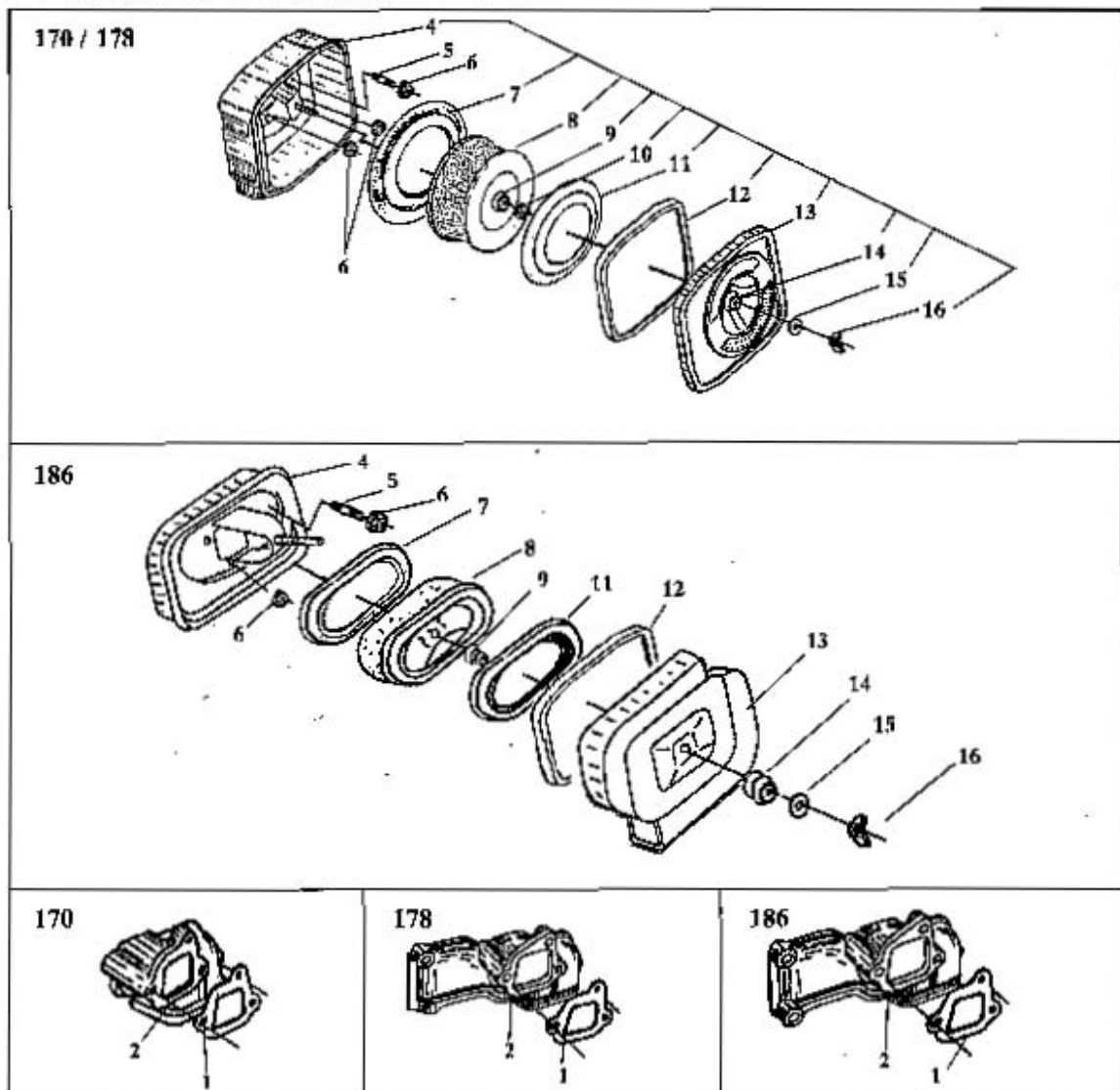
## 2-5 曲轴飞轮总成 CRANK SHAFT&amp;FLYWHEEL ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7005300	7805300	8605300	平衡轴部件			Balance Shaft Assy.			1		
2	7005007	7805007	8605007	平衡轴			Balance Shaft			1		
3	PJA0507			键 A5x7			Key A5x7			2		
4	7005008	7805008	8605008	平衡轴传动齿轮			Balance Gear			1		
5	ZCA6202		ZCA6203	球轴承			Ball Bearing			2		
				6202	6203	6202	6203					
6	7005200	7805200	8605200	曲轴部件			Crank Shaft Assy			1		
7	7005004	7805004	8605004	曲轴正时齿轮			Timing Gear			1		
8	PJA0512			平键 A5x12			Key A5x12			2	2	1
9			PJA0514	平键 A5x14			Key A5x14					1
10	7005201	7805201	8605201	曲轴			Crank Shaft			1		
11	7005202			铝堵塞			Plunger			1		
12	7005009	7805009	8605009	平衡轴传动齿轮			Balance Driving Gear			1		
13	ZCA6306	ZCA6307	ZCA6308	球轴承			Ball Bearing			1		
				6306	6307	6308	6306	6307	6308			
14	PJC0545		PJC0650	平键			Key			1		
				C5x45	C6x50	C5x45	C6x50					
15	7005101	7805101	8605101	飞轮(非电启动)			Fly Wheel(Recoil Start Type)			1		
16	7005003		8605003	飞轮螺母垫片			Washer			1		
17	7005002		8605003	飞轮螺母			Fly Wheel Nut			1		
18	7005001		8605001	起动机爪盘			Starter Pulley			1		
19	LSB06012			法兰螺栓 M6x12			Flange Bolt M6x12			3		

## 2-6 凸轮轴总成 CAMSHAFT ASSEMBLY



## 2-7 进气系统总成 AIR CLEANER ASSEMBLY



## 2-6 凸轮轴总成 CAMSHAFT ASSEMBLY

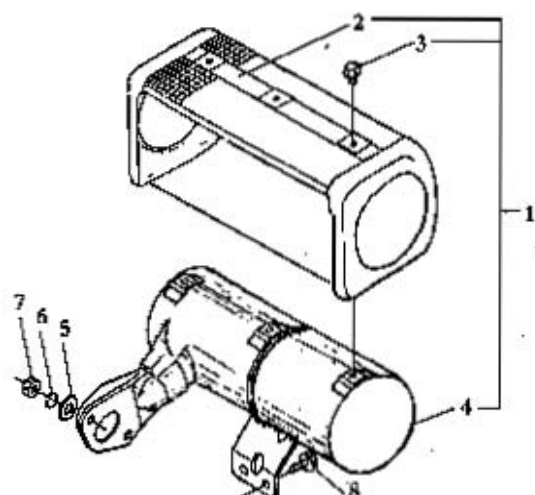
序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7006100	7806100	8606100	气门推杆部件			Valve Rod Assy.			2		
2	7006003		8606003	气门挺柱			Valve Tappet			2		
3	7006002	7806002	8606002	凸轮轴正时齿轮			Camshaft Timing Gear			1		
4	PJA0514	PJAD412	PJA0414	平键			Key			1		
				A5x14	A4x12	A4x14	A5x14	A4x12	A4x14			
5	7006001	7806001	8606001	凸轮轴			Camshaft			1		

## 2-7 进气系统总成 AIR CLEANER ASSEMBLY

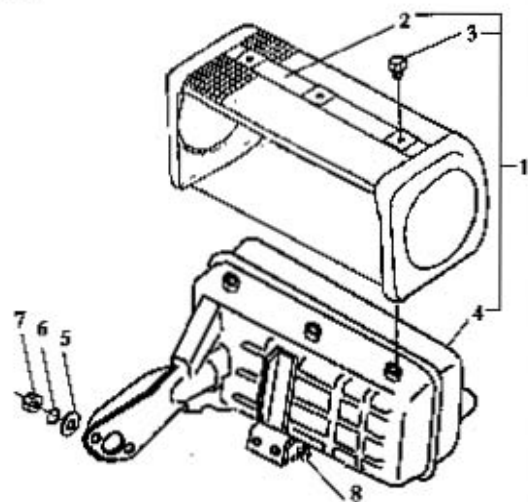
序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7007001		8607001	空滤器垫片			Air Cleaner Gasket			1		
2	7007401	7807401	8607401	进气管			Intake Pipe			1		
3	7007500		8607500	空滤器总成			Air Cleaner Assy			1		
4	7007300		8607300	空滤器壳体部件			Air Cleaner Case Assy			1		
5	LZA06022			螺栓AM6x22			Stud AM6x22			1		
6	LMB06			法兰螺母M6			Flange Nut M6			3		
7	7007303		8607303	防震垫圈 II			Shock Absorber II			1		
8	7007100		8607100	空气滤芯部件			Air Cleaner Element Assy			1		
9	7007101		8607101	滤芯防震件			Element Shock Absorber			1		
10	LMB06			法兰螺母 M6			Flange Nut M6			1		
11	7007203		8607203	防震垫圈 I			Shock Absorber I			1		
12	7007201		8607301	密封圈			Seal Ring			1		
13	7007200		8607200	空滤盖部件			Cover Assy			1		
14	7007211		8607211	空滤盖防震件			Cover Shock Absorber			1		
15	PDA06		PDA08	平垫			Washer			2		1
				6	8		6	8				
16	LMD06		LMD08	蝶形螺母			Wing Nut			1		
				M6	M8		M6	M8				

## 2-8 消声器总成 SILENCER ASSEMBLY

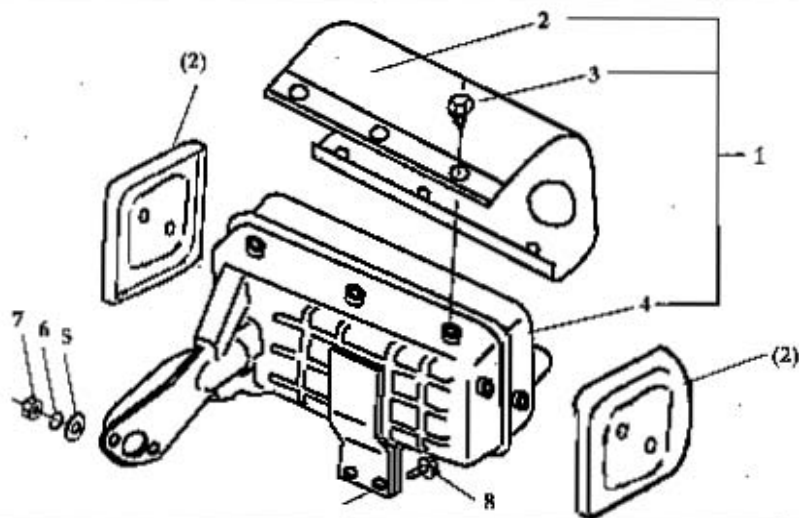
170



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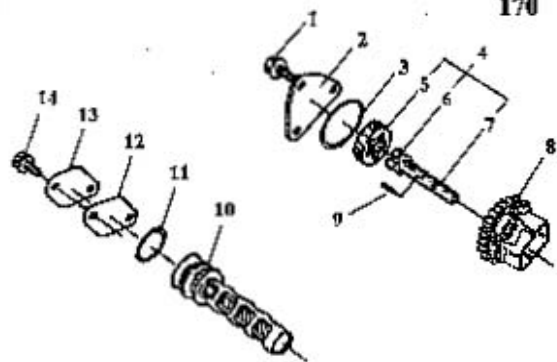


186

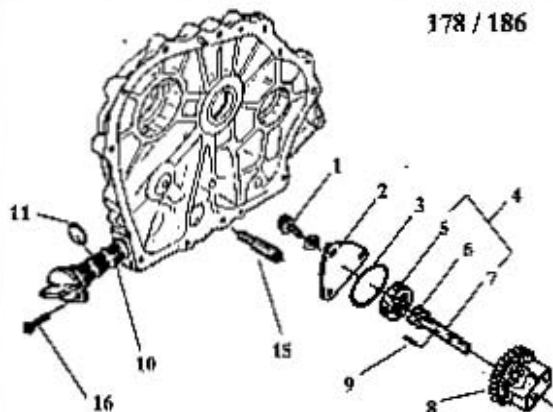


## 2-9 润滑系统总成 LUBE OIL SYSTEM

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## 2-8 消声器总成 SILENCER ASSEMBLY

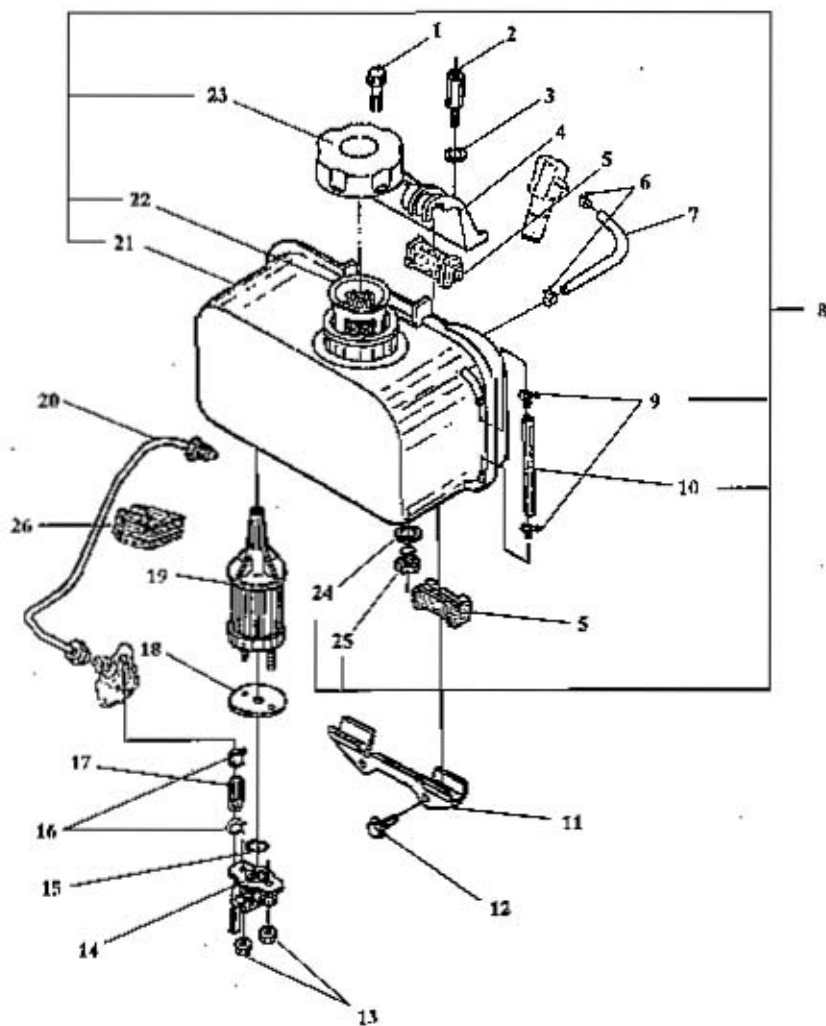
序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7008300	7808300	8608300	消声器总成			Muffler Assy.			1		
2	7008100	7808100	8608100	外罩部件			Cover Assy.			1		
3	LSB0608			法兰螺栓M6x8			Flange Bolt M6x8			6	10	
4	7008200	7808200	8608200	消声器体部件			Silencer Assy.			1		
5	PDA 08			平垫8			Washer 8			2		
6	TD 08			弹垫8			Spring Washer 8			2		
7	LMA 08			六角螺母M8			Nut M8			2		
8	LSB06012	LSB08012		法兰螺栓			Flange Bolt			2		
				M6x12	M8x12		M6x12	M8x12				

## 2-9 润滑系统总成 LUBE OIL SYSTEM

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	LSB0608			法兰螺栓 M6x8			Flange Bolt M6x8			3		
2	7009003			机油泵盖板			Oil Pump Cover			1		
3	OM34518			O型密封圈 34.5x1.8			O-ring 34.5x1.8			1		
4	7009100	7809100		机油泵组件			Oil Pump Assy			1		
5	7009103			外转子			Outer Rotator			1		
6	7009101			内转子			Inner Rotator			1		
7	7009102	8609102		转子泵轴			Oil Pump Shaft			1		
8	7009004	7809004		机油泵传动齿轮			Oil Pump Gear			1		
9	XA03016			销 3x16			Pin 3x16			1		
10	7009200	7809200		机油滤部件			Oil Filter Assy			1		
11	OM25024			O型密封圈 25x2.4			O-ring 25x2.4			1		
12	7009002			机油滤盖板垫片			Filter Cover Gasket			1		
13	7009001			机油滤盖板			Filter Cover			1		
14	LSB0608			法兰螺栓 M6x8			Flange Bolt M6x8			2		
15	7809005			进油导管			Intake Pipe			1		
16	LAB06014			法兰螺栓 M6x14			Flange Bolt M6x14			1		

2-10 燃油系统 FUEL TANK&FUEL PIPE ASSEMBLY

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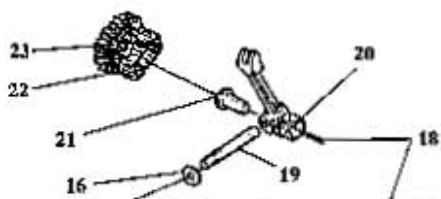


## 2-10 燃油系统总成 FUEL TANK&amp;FUEL PIPE ASSEMBLY

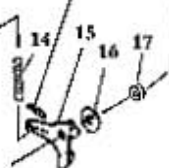
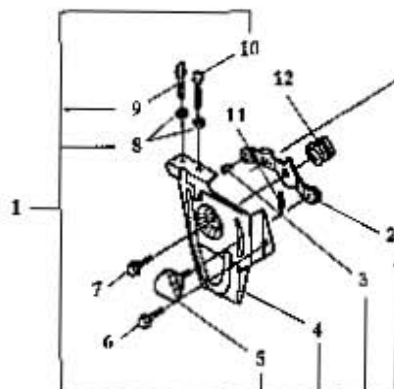
序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	LSB08045			法兰螺栓 M8x45			Flange Bolt M8x45			1		
2	7010003			上支架紧固螺栓			Upper Stay Bolt			1		
3	PDA08			平垫圈8			Washer 8			1		
4	7010001	7810001	8610001	油箱上支架			Upper Stay			1		
5	7010002			油箱减震垫			Damper			4		
6	7010013			回油管卡箍			Clamp			2		
7	7010012			回油管			Fuel Oil Return Pipe			1		
8	7010200	7810200	8610200	油箱部件			Fuel Tank Assy.			1		
9	7010005			油面管卡箍			Clamp			2		
10	7010006			油面管			Fuel Level Pipe			1		
11	7010014			油箱下支架			Lower Stay			1		
12	LSB06014			法兰螺栓 M6x14			Flange Bolt M6x14			2		
13	LMB06			法兰螺母 M6			Flange Nut M6			2		
14	7010400			油箱开关体部件			Fuel Cock Assy.			1		
15	OM13218			O形密封圈 13.2x1.8			O-ring 13.2x1.8			1		
16	7010011			输油管卡箍			Clamp			2		
17	7010009			输油管			Fuel Pipe			1		
18	7010007			柴油滤垫片			Strainer Gasket			1		
19	7010300	7810300	8610300	柴油滤清器			Filter Strainer Assy.			1		
20	7010500	7810500	8610500	高压油管部件			Fuel Injection Pipe Assy.			1		
21	7010201	7810201	8610201	油箱本体			Fuel Tank			1		
22	7010004			燃油滤杯			Fuel Filler			1		
23	7010100			油箱盖部件			Tank Cap Assy.			1		
24	7010016			密封垫片			Seal Washer			1		
25	LSB12012			法兰螺栓 M12x12			Flange Bolt M12x12			1		
26			8610017	油管减震垫			Fuel Injection Pipe Damper					1



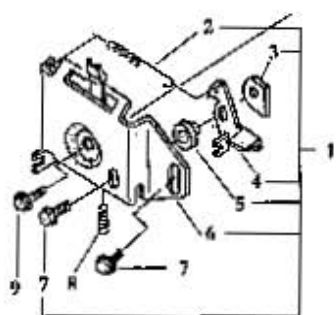
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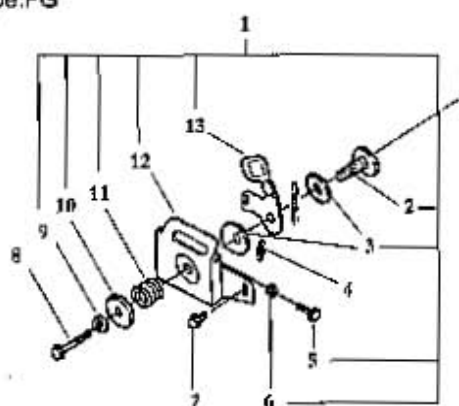
Type:F/FP



Type:SD



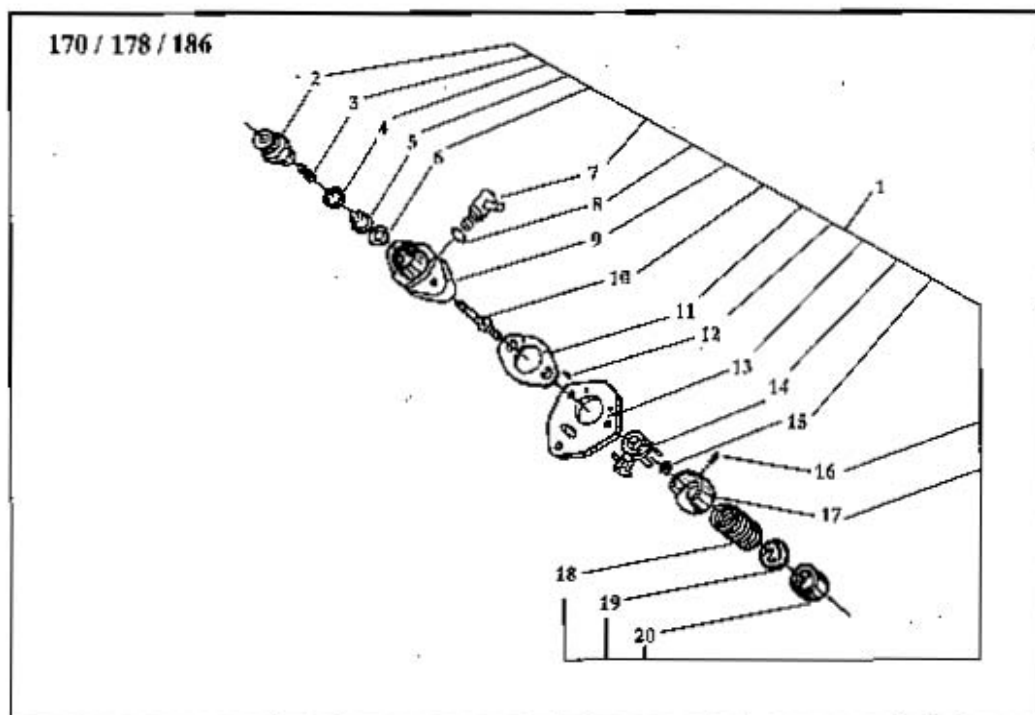
Type:FG



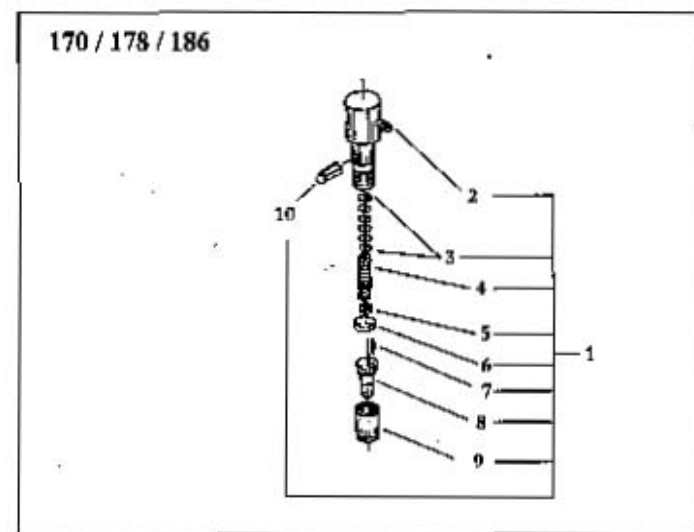
## 2-11 调速及操纵系统 GOVERNOR&amp;CONTROL SYSTEM(FG)

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
TYPE: F/FP												
1	7011300			操纵手柄部件			Control Lever Assy.			1		
2	7011303			操纵手柄			Control Lever			1		
3	7011302			拉杆头			Pull Lever Head			1		
4	7011304			操纵支架			Bracket			1		
5	7011301			手柄			Handle			1		
6	LSB06014			法兰螺栓M6x14			Flange Bolt M6x14			1		
7	LSB06020			法兰螺栓M6x20			Flange Bolt M6x20			1		
8	LMA06			六角螺母M6			Nut M6			2		
9	7011305			拉线螺栓			Pull Bolt			1		
10	7011306			高速限位螺钉			Speed Limit Screw			1		
11	7011006			回位弹簧 II			Return Spring II			1		
12	7011005			回位弹簧 I			Return Spring I			1		
TYPE: SD												
1	7011500			操纵手柄组件			Control Lever Assy.			1		
2	7011501			拉紧弹簧			Tension Spring			1		
3	7011502			压板			Tighten Plate			1		
4	7011503			停车手柄			Stop Handle			1		
5	7011504			垫块			Block			1		
6	7011505			操纵支架			Bracket			1		
7	LSB06014			法兰螺栓M6x14			Flange Bolt M6x14			2		
8	7011006			回位弹簧 II			Return Spring II			1		
9	LSB06022			法兰螺栓M6x22			Flange Bolt M6x22			1		
TYPE: FG												
1	7011400			操纵手柄组件			Control Lever Assy.			1		
2	7011401			手柄轴			Lever Shaft			1		
3	7011402			手柄垫片			Lever Washer			2		
4	7011006			回位弹簧 II			Return Spring II			1		
5	7011306			高速限位螺钉			Speed Limit Screw			1		
6	LMA06			六角螺母M6			Nut M6			1		
7	LSB06014			法兰螺栓M6x14			Flange Bolt M6x14			1		
8	LSB06030			法兰螺栓M6x30			Flange Bolt M6x30			1		
9	LMA10125			六角螺母M10x1.25			Nut M10x1.25			1		
10	7011407			碗形盖			Bowl-Shape Cover			1		
11	7011405			压缩弹簧			Compress Spring			1		
12	7011404			操纵支架			Bracket			1		
13	7011403			操纵手柄			Control Handle			1		
14	7011008	8611006		调速弹簧			Governor Spring			1		
15	7011101			调速杠杆			Governor Lever			1		
16	7011003			杠杆轴垫片			Lever Washer			1		
17	YF081405			油封8x14x5			Oil Seal 8x14x5			1		
18	XA03022			销3x22			Pin 3x22			2		
19	7011102			杠杆轴			Lever Shaft			1		
20	7011601	7811601	8611601	拨叉			Lever Fork			1		
21	7011004	7811004		调速推盘			Tappel			1		
22	7011001			飞锤			Fly Block			2		
23	7011002			飞锤销			Fly Block Pin			2		

2-12 喷油泵总成 FUEL INJECTION PUMP ASSEMBLY



2-13 喷油器总成 FUEL NOZZLE ASSEMBLY



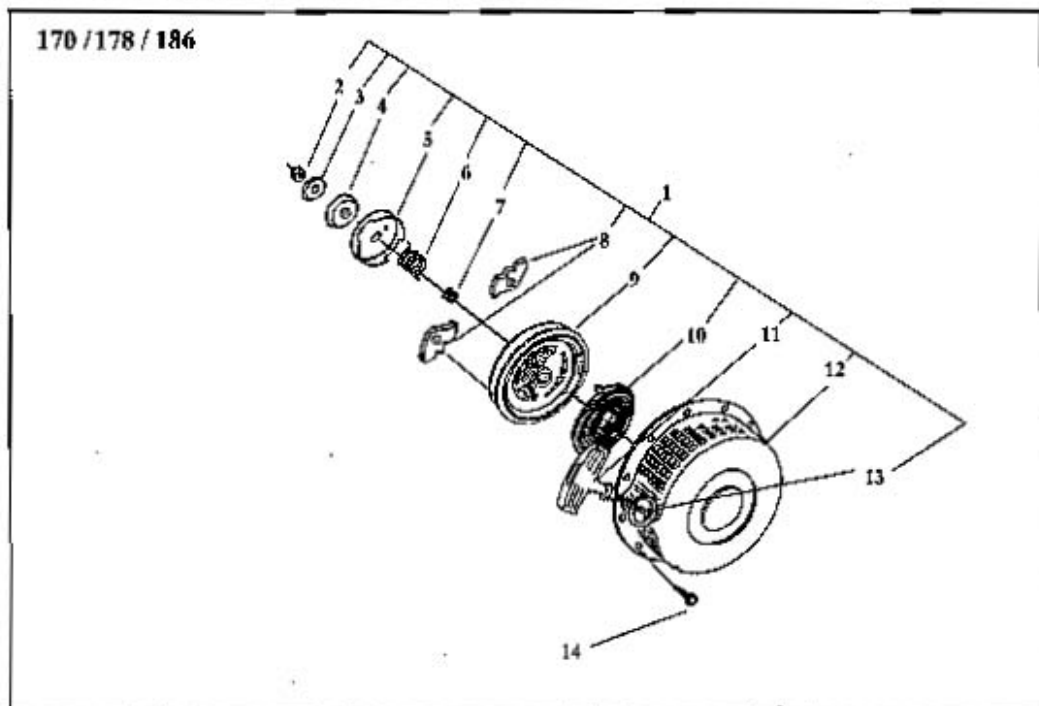
## 2-12 喷油泵总成 FUEL INJECTION PUMP ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7012000		8612000	喷油泵总成			Fuel Pump Assy.			1		
2	7012006			出油阀紧座			Delivery Holder			1		
3	7012008			出油阀弹簧			Delivery Spring			1		
4	7012009			出油阀密封垫			Delivery Gasket			1		
5	7012201			出油阀芯			Delivery Valve			1		
6	7012202			出油阀座			Delivery Seat			1		
7	7012400			油管接体焊接件			Joint			1		
8	7012005			O型圈			O-ring			1		
9	7012101	8612101		泵体			Pump Body			1		
10	7012100	8612100		柱塞			Plunger			1		
11	7012013			垫片			Shim Set			按需 When Necessary		
12	XA02006			销 2x6			Pin 2x6			2		
13	7012011			泵体连接板			Packing			1		
14	7012300			油量控制套筒焊接件			Control Lever Assy.			1		
15	7012004			钢丝挡圈			Snap Ring			1		
16	XA03008			销 3x8			Pin 3x8			1		
17	7012012			支承体			Spring Seat			2		
18	7012016			柱塞弹簧			Pump Spring			1		
19	7012015			弹簧下座			Spring Seat			1		
20	7012014			挺柱体			Tappet			1		

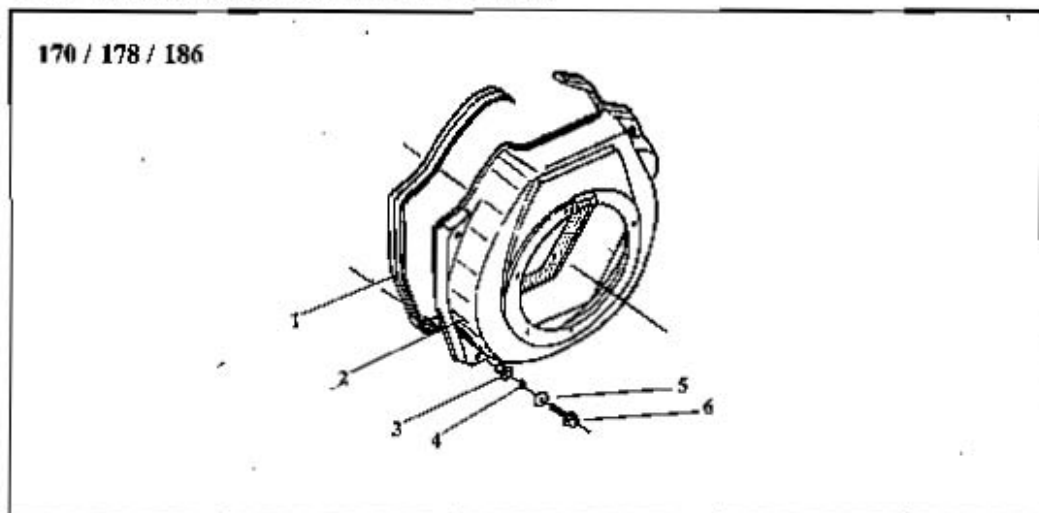
## 2-13 喷油器总成 FUEL NOZZLE ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7013000		8613000	喷油器总成			Fuel Nozzle Assy.			1		
2	7013200			喷油器体部件			Nozzle Holder Assy.			1		
3	7013007			垫片			Shim Pack			按需 When Necessary		
4	7013006			调压弹簧			Nozzle Spring			1		
5	7013005			调压杆			Spring Retainer			1		
6	7013003			中间体			Stop Plate			1		
7	7013004			定位销			Pin			2		
8	7013100	8613100		喷油嘴偶件			Nozzle Valve			1		
9	7013002			喷油嘴螺母			Nozzle Case Nut			1		
10	7013008			弹性销			Pin			1		

2-14 手拉起动总成 RECOIL STARTER ASSEMBLY



2-15 导风罩总成 COOLING DEVICE ASSEMBLY



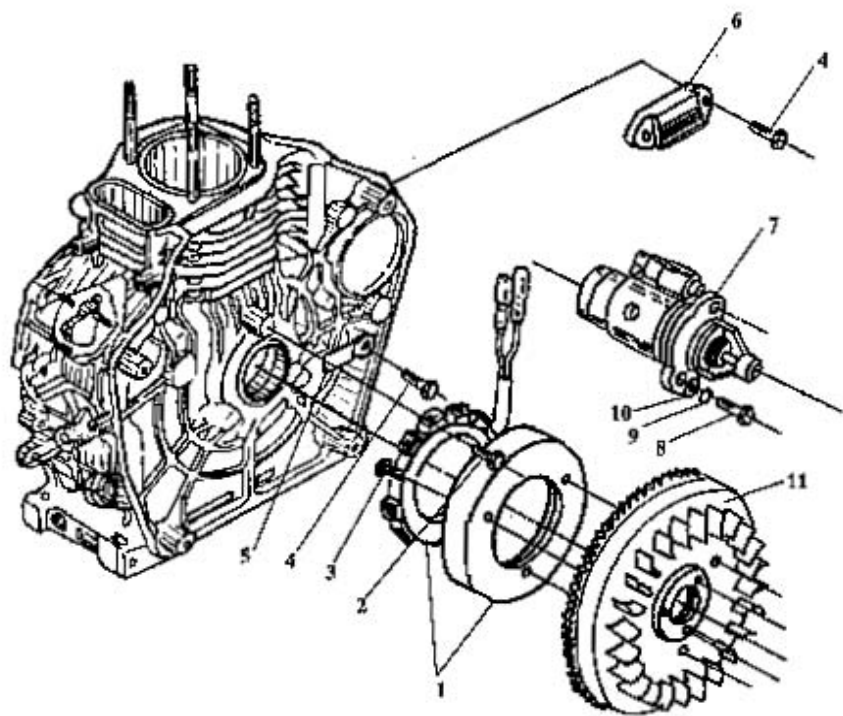
## 2-14 手拉启动总成 RECOIL STARTER ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7014000	7814000	8614000	手拉盘总成			Recoil Starter Assy.			1		
2	LSB06		LSB08	法兰螺母			Flange Nut			1		
				M6	M8	M6		M8				
3	7014003			摩擦盘垫片			Friction Washer			1		
4	7014006			摩擦盘			Friction Plate			1		
5	7014004		8614004	起动爪压盘			Ratchet Plate			1		
6	7014005			扭转弹簧			Return Spring			1		
7	7014002			压缩弹簧			Push Spring			1		
8	7014001			起动爪			Ratchet Plate			2		
9	7014012	7814012	8614012	起动拉盘			Reel			1		
10	7814009		8614009	蜗轮弹簧			Spiral Spring			1		
11	7014007			起动手柄			Starter Handle			1		
12	7014100	7814100	8614100	手拉盘外壳部件			Case Assy.			1		
13	7014008		8614008	起动拉绳			Starter Rope			1		
14	LSB0808			法兰螺栓M6x8			Flange Bolt M6x8			4		

## 2-15 导风罩总成 COOLING DEVICE ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7017003	7817003	8617003	减震垫			Shock Absorber Seat			1		
2	7017100	7817100	8617100	导风罩焊接件			Fan Case Welded Assy.			1		
3	7017002			减震套			Shock Absorber Seat			4	5	4
4	7017003			衬套10x10			Collar			4	5	4
5	PDB06			大垫圈			Washer 6			4	5	4
6	LSA06022			螺栓M6x22			Bolt M6x22			4	5	4

170 / 178 / 186



## 2-16 起动机及发电机总成 STARTER &amp; GENERATOR ASSEMBLY

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	17B	186	170	17B	186	170	17B	186	170	17B	186
1	7016100			飞轮发电机			Fly Wheel Generator			1		
2	LSA06020			六角螺栓M6x20			Bolt M6x20			3		
3	LDB06012			沉头螺钉M6x12			Screw M6x12			3		
4	LSB06012			法兰螺栓M6x12			Flange Bolt M6x12			3		
5	7016003			压板			Clamp			1		
6	7016004			整流稳压器			Regulator			1		
7	7016005			起动电机			Starting Motor			1		
8	LSA10035			法兰螺栓M10x35			Flange Bolt M10x35			2		
9	PDA10			平垫圈10			Washer 10			2		
10	TD10			弹垫圈10			Washer 10			2		
11	7016200	7816200	B616200	飞轮齿圈组件 (电起动机式)			Fly Wheel With Gear			1		



①

# DIESEL ENGINE

## AIR-COOLED



②

### HOW TO START



③

### CAUTION

- FUEL OIL**
- USE DIESEL FUEL
  - CLEAN FILTER EVERY 300hr.
- LUBE OIL**
- SAE 10W30 GRADE / CC.
  - CHANGE LUBE OIL EVERY 100hr.
  - CLEAN FILTER EVERY 100hr.
- STARTING**
- CHECK LUBE OIL LEVEL
  - ADD FUEL
  - FOR EASY STARTING IN COLD
  - WARM UP WITHOUT LOAD.
- STOPPING**
- CLOSE FUEL COCK.
  - AFTER STOPPING ENGINE.

⑥

**STOP RUN**

⑦

MODEL	178F
CONT.OUTPUT	3.8kW(5PS)/3600rpm 4kW(5.5PS)/3600rpm
DISPLACEMENT	0.290L
WEIGHT	33kg
ENGINE NO.	

**AIR-COOLED DIESEL GENERATOR**

MODEL	170F
CONT.OUTPUT	2.5kW(3.4PS)/3600rpm 2.8kW(3.8PS)/3600rpm
DISPLACEMENT	0.211L
WEIGHT	27kg
ENGINE NO.	

**AIR-COOLED DIESEL GENERATOR**

MODEL	185F
CONT.OUTPUT	5.7kW(7.7PS)/3000rpm 6.6kW(9.0PS)/3600rpm
DISPLACEMENT	0.466L
WEIGHT	46kg
ENGINE NO.	

**AIR-COOLED DIESEL GENERATOR**



## 2-17 贴花组 TAGS

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7018001			油箱商标贴花			Fuel Tank Marks Tag			1		
2	7018002			起动机操作贴花			Start Operation Tag			1		
3	7018003			注意事项贴花			Caution Items Tag			1		
4	7018006			手拉盘贴花			Recoil Starter Tag			1		
5	7018005			空滤贴花			Air cleaner Tag			1		
6	7018007			油门操纵贴花			Governor & Control Tag			1		
7	7018004	7818004	8618004	铭牌贴花			Tag			1		

## 2-18 包装箱及随机附件 PACKAGE &amp; TOOLS

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
1	7019001			随机工具			Tools			1		
2	7019003			塑料罩			Plastic Cover			1		
3	7019005			说明书及印刷品			Operating Manual			1		
4	7019006			文件袋			Plastic Bag			1		
5	7019002	7819002	8619002	泡沫件			Foam			1		
6	7019004	7819004	8619004	包装纸箱			Carton			1		

### 第三章 柴油机易损件及其它零件

## CHAPTER 3 Easy Destroyed and other Parts of Diesel Engine

### 3-1 易损件 EASY DESTROYED PARTS

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
A	7004100	7804100	8604100	油环部件			Oil Ring Set			1		
B	7004001	7804001	8604001	第一道气环			First Gas Ring			1		
C	7004002	7804002	8604002	第二道气环			Second Gas Ring			1		
D	7004005	7804005	8604005	连杆轴瓦			Crank Pin Bearing			1		
E	YF254210	YF304010	YF355010	油封			Oil Seal			1		
F	YF304508		YF355010	油封			Oil Seal			1		
G	7013000	7813000	8613000	喷嘴咀			Nozzle Valve			1		
H	7002011			隔热套			Spacer			1		
I	7010300	7810300	8610300	柴油滤芯部件			Filter Element Assem			1		
J	7007100		8607100	空气滤芯部件			Air Cleaner Element Assem			1		
K	7001013	7801013	8601013	气缸盖垫片			Cylinder Head Gasket			1		
L	YF081405			油封SG8×14×5			Oil Seal SG8×14×5			1		
M	7001008	7801008	8601008	密封圈			Ring			1		
N	OM10019			O形密封圈10×1.9			O-Ring10×1.9			1		
O	OM24024			O形密封圈24×2.4			O-Ring24×2.4			1		
P	OM25024			O形密封圈25×2.4			O-Ring25×2.4			1		
Q	OM12024			O形密封圈12×1.9			O-Ring12×1.9			1		
R	OM34518			O形密封圈34.5×1.8			O-Ring34.5×1.8			1		
S	OM13219			O形密封圈13.2×1.9			O-Ring13.2×1.9			1		

### 3-2 油封 SEALS

序号 Item	编号 Code			名称			Description			数量 Q'ty		
	170	178	186	170	178	186	170	178	186	170	178	186
E	YF254210	YF304510	YF355010	油封			Oil Seal			1		
F	YF304508		YF355010	油封			Oil Seal			1		
L	YF081405			油封SG8×14×5			Oil Seal SG8×14×5			1		

### 3-3 环状密封圈 RINGS

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
M	7001008	7801008	8601008	密封圈			Ring			1		
N	OM10019			O形密封圈10×1.9			O-Ring10×1.9			1		
O	OM24024			O形密封圈24×2.4			O-Ring24×2.4			1		
P	OM25024			O形密封圈25×2.4			O-Ring25×2.4			1		
Q	OM12019			O形密封圈12×1.9			O-Ring12×1.9			1		
R	OM34518			O形密封圈34.5×1.8			O-Ring34.5×1.8			1		
S	OM13219			O形密封圈13.2×1.9			O-Ring13.2×1.9			1		

### 3-4 垫圈组 FULL GASKET SETS

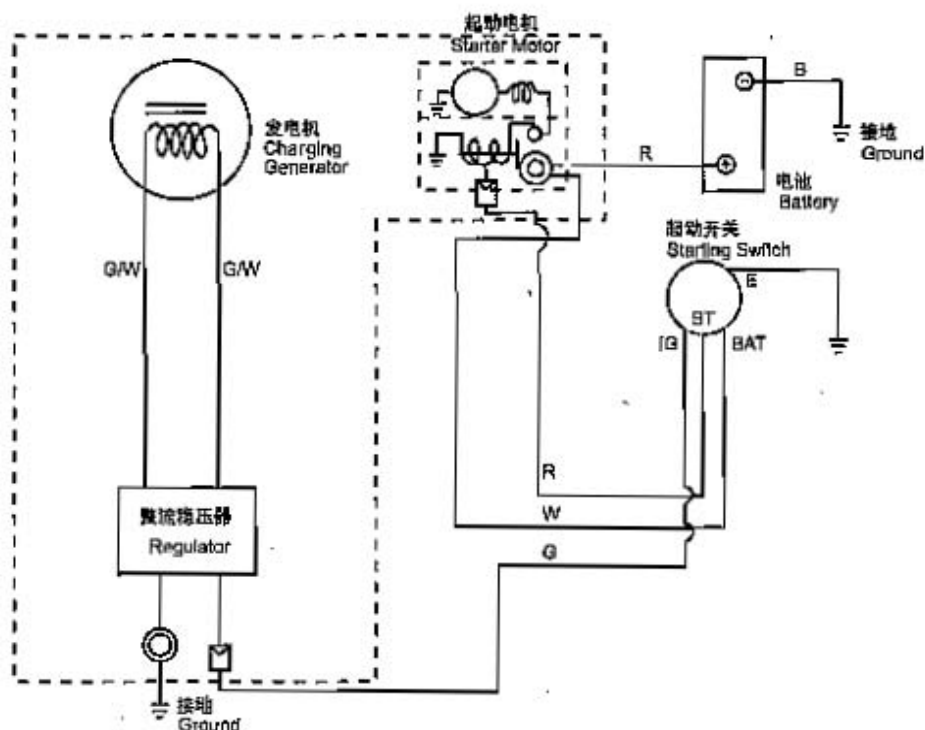
序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
a	7001100			放油螺塞垫片			Oil Plug Seal Assem			1		
b	7012001			喷油泵垫片			Fuel Injection Pump Gasket			1		
c	7012002			密封板垫片			Seal Gasket			1		
d	7001015	7801015	8601015	曲轴箱盖垫片			Crank Case Gasket			1		
e	7002014	7802014	8602014	进气管垫片			Air Intake Gasket			1		
f	7002015	7802015	8602015	消声器垫片			Silencer Gasket			1		
g	7003003		8603003	气缸盖罩垫片			Bonnet Gasket			1		
h	7007001		8607001	空气滤清器垫片			Air Cleaner Gasket			1		
i	7009002			机油滤盖板垫片			Oil Filter Gasket			1		
j	7010007			柴油滤垫片			Fuel Oil Filter Gasket			1		

### 3-5 轴承 BEARINGS

序号 Item	编号 Code			名称			Description			数量 Qty		
	170	178	186	170	178	186	170	178	186	170	178	186
l	ZCA6306	ZCA6307	ZCA6308	球轴承			Ball Bearing			1		
m	ZCA6205	ZCA6206	ZCA6207	6205	6206	6207	6205	6206	6207	2		
n	ZCA6202		ZCA6202	6202		6203	6202		6203	2		
o	ZCB7941/8			滚针轴承 7941/8			Needle Bearing 7941/8			1		
p	ZCB37941/15			滚针轴承 37941/15			Needle Bearing 37941/15			1		

## 第四章 电起动电气原理图

### CHAPTER 4 Principle Diagram of Electricity of Electric Starting



- B: 黑 Black  
 W: 白 White  
 R: 红 Red  
 Y: 黄 Yellow  
 G/W: 绿/白 Green/white

开关功能图解  
How Key Switch Functions

	E	IG/BAT	ST
OFF	○		
1		○	
2		○	○

部分介绍 Part Introduction

- 1) 电池 Battery:  $\left\{ \begin{array}{l} 170\text{FE: } 18-24\text{AH} \\ 178\text{FE: } 24-36\text{AH} \\ 186\text{FE: } 36-45\text{AH} \end{array} \right.$   
 2) 电池电缆 Battery Cable: @S@ (AV/20)

发电机电机 Charging generator	形式 Model	GP9507
	输出电流 Output Current	2.6~3.3A(DC)
	充电起点 At charging start	低于 1000rpm (13V)
	可容许环境温度 Allowable ambient temperature	-20~+65℃
	整流稳压器(型号) Rectification of regulator (model)	RS2190
起动机 Starting motor	12V-0.8KW	

# LONGEVITY Diesel Engine Parts List

## 1. Cylinder Block Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7001017			Drain plug			1		
2	7001100			Drain Plug Shim			1		
3	YF304508		YF355010	Oil Seal			1		
				SG30x45x8		SG35x50x10			
4	7001001	7801001	8601001	Cylinder Block			1		
5	7011200		8611200	Fuel Controller Assy.			1		
6	OM24024			O-Ring			2		
7	7001002	7801002		Oil Gauge			2		
8	ZCB7941/8			Needle Bearing 7941/8			2		
9	7001012			Fuel Pump Stud(Short)			1		
10	7001011			Fuel Pump Stud(Long)			2		
11	7001201			Fuel Pump Shim			Necessary		
12	7001203			Seal Gasket			1		
13	7001202			Seal Plate			1		
14	LMB06			Flange Nut M6			3		
15	7001009			Retainer			1		
16	PD08			Wahser 8			1		
17	LSA08012			Bolt M8x12			1		
18	ZCB7941/15			Needle Bearing 7941/15			1		
19	7001022			Starter Seat Cover			1		
20	TD10			Spring Washer 10			1		
21	LSA 10016			Bolt M10x16			1		
22	7001003	7801003	8601003	Cylinder Head Stud(Short)			2		
23	7001007	7801007	8601007	Cylinder Head Nut Washer			4		
24	7001005	7801005	8601005	Cylinder Head Nut(Short)			2		
25	7001013	7801013	8601013	Cylinder Head Gasket			1		

26	7001006	7801006	8601006	Cylinder Head Nut(Long)			2		
27	7001004	7801004	8601004	Cylinder Head Stud(Long)			2		
28	7001008	7801008	8601008	Seal Ring			1		
29	LSB06014			Flange Bolt M6x14			1		
30	7001018	7801018	8601018	Air Cover			1		
31	/	7801602	/	/	Collar	/	/	1	/
32	/	7801603		/	Shock Absorber Seat		/	1	
33	/	PDB06	PDA06	/	Washer 6	Washer 6	/	1	1
34	/	7801601		/	Shock Absorber		/	1	
35	7001015	7801015	8601015	Crank Case Gasket			1		
36	ZCA6205	ZCA6206	ZCA6207	Ball Bearing			1		
				6205	6206	6207			
37	7001014	7801014	8601014	Main Bearing			1		
38	XA08012			Pin 8x12			2		
39	7001016	7801016	8601016	Crank Case Cover			1		
40	YF254210	YF304510	YF355010	Oil Seal			1		
				SG25x42x10	SG30x45x10	SG35x50x10			
41	LSA08038			Flange Bolt M8x38			1	15	16
42	70D1019			Plug			1		
43	TD08			Spring 8			1	15	16
44	PDA08			Washer 8			1	15	16
45	7001021			Plug ( 8)			2	3	3
46	PDA06	/	/	Washer 6			14	/	/
47	TD06	/	/	Spring 6			14	/	/
48	LSA06032	/	/	Bolt M6x32			14	/	/

## 2. Cylinder Head Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186

1	7002014	7802014	8602014	Air Intake Gasket		1		
2	7002200	7802200	8602200	Cylinder Head Assy.		1		
3	7002003	7802003	8602003	Intake Valve		1 set		
4	7002004	7802004	8602004	Exhaust Valve				
5	7002015	7802015	8602015	Silencer Gasket		1		
6	XA04008			Pin 4x8		1		
7	7002007		8602007	Valve Spring Washer		2		
8	7002005	7802005	8602005	Valve Spring		2		
9	7002002	7802002	8602002	Spring Retainer		2		
10	7002100		8602100	Exhaust Rocker Arm		1		
11	7002105			Valve Screw		2		
12	LMA06075			Nut M6x0.75		2		
13	7002103		8602103	Exhaust Rocker Arm		1		
17	7002102		8602102	Rock Arm Support		1		
18	7002101		8602101	Rocker Arm Shaft		1		
19	7002104		8602104	Intake Rocker Arm		1		
14	7002106		8602106	Bolt		1		
15	TD08		TD10	Spring Washer		1		
				8	10			
16	PDA08		PDAD10	Washer		1		
				8	10			
20	7002016	7802016	8602016	Valve Cap		2		
21	7002001	7802001	8602001	Cotter		4		
22	LMB06			Nut M6		2		
23	7002009			Nozzle Retainer		1		
24	7002018			Spacer Washer		1		
25	7002011			Spacer		1		
26	LZ06050			Stud AM6x50		2		
27	LZ06055		LZ06075	Stud		2		
				AM6x55	AM6x75			
28	LSB06022			Flange Bolt M6x22		1	2	2



29	LZ08020		Stud AM8x20	2	
30	/	/	LSB06028	Flange Bolt M6x28	1

### 3. Cylinder Head Bonnet Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7003300		8603300	Bonnet Assy.			1		
2	7003001		8603001	Cylinder Head Bonnet			1		
3	7003201			Ball			1		
4	7003202			Breath Assy.			1		
5	7003203			Pin			1		
6	OM12019			O-Ring 12x1.9			1		
7	7001021			Plug 8x10			1		
9	7003004			Decompression Spring			1		
10	7003100			Decompression Shaft Assy.			1		
11	OM10019			O-Ring 10x1.9			2		
12	XA03016			Pin 3x16			1		
14	7003005	/	/	Plunger			1	/	/
8	7003003	8603003		Bonnet Gasket			1		
13	LSA06055		LSA06070	Bolt			1		
				M6x55		M6x70			

### 4. Piston & Connect Rod Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7004300	7804300	8604300	Piston Ring Set			1		
2	7004101	7804101	8604101	First Piston Ring			1		

3	7004102	7804102	8604102	Second Piston Ring			1
4	7004100	7804100	8604100	Oil Ring Assy.			1
5	7004103	7804103	8604103	Piston			1
6	7004104	7804104	8604104	Piston Pin			1
7	DQB19	DQB21	DQB23	Clip			2
				19	21	23	
8	9906020	7804200	8604200	Connecting Rod Assy.			1
9	7004206	7804206	8604206	Bush			1
10	7004201	7804201	8604201	Rbd Body			1
11	7004202	7804202	8604202	Crank On Box			1
12	7004203	7804203	8604203	Rbd Bolt			2
13	7004205	7804205	8604205	Crank Pin Bearing			2

### 5. Crank Shaft & Flywheel Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7005300	7805300	8605300	Balance Shaft Assy.			1		
2	7005007	7805007	8605007	Balance Shsft			1		
3	PJA0507			Key A5x7			2		
4	7005006	7805006	8605006	Balance Gear			1		
5	ZCA6202		ZCA6203	Ball Bearing			2		
				202		203			
6	7005200	7805200	8605200	Crank Shaft Assy.			1		
7	7005004	7805004	8605004	Timing Gear			1		
8	PJA0512			Key A5x12			2	2	1
9	/	/	PJA0514	Key A5x14			/	/	1
10	7005201	7805201	8605201	Crank Shaft			1		
11	7005202			Plunger ( 6)			1		
12	7005009	7805009	8605009	Balance Driving Gear			1		
				Camshaft Timing Gear			1		

13	ZCA6306	ZCA6307	ZCA6308	Ball Bearing			1
				6306	6307	6308	
14	PJC0545		PJC0650	Key			1
				C5x45		C6x50	
15	7005101	7805101	8605101	Fly Wheel (Recoil Start Type)			1
16	7005003		8605003	Washer			1
17	7005002		8605003	Fly Wheel Nut			1
18	7005001		8605001	Starter Pulley			1
19	LSB06012			Flange Bolt M6x12			1

### 6. Camshaft Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7006100	7806100	8606100	Valve Rod Assy.			2	2	2
2	7006003		8606003	Valve Tappet			2		2
	7006200	7806200	8606200	Camshaft Assy.			1	1	1
3	7006002	7806002	8606002	Camshaft Timing Gear			1	1	1
4	PJA0514	PJA0412	PJA0414	Key			1	1	1
				A5x14	A4x12	A4x14			
5	7006001	7806001	8606001	Canshaft			1	1	1

### 7. Air Cleaner Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7007001		8607001	Air Cleaner Gasket			1		
2	7007401	7807401	8607401	Intake Pipe			1		
3	7007500		8607500	Air Cleaner Assy.			1		
4	7007300		8607300	Air Cleaner Case Assy.			1		
13	7007200		8607200	Cover Assy.			1		

7	7007303	8607303	Shock Absorber		1	
9	7007101	8607101	Element Shock Absorber		1	
10	LMD06		Wing Nut M6		1	
11	7007203	8607203	Shock Absorber		1	
12	7007201	8607301	Seal Ring		1	
14	7007211	8607211	Cover Shock Absorber		1	
15	PDA06	PD08	Washer		2	1
			6	8		
16	LMD06	LMD08	Wing Nut		1	
			M6	M8		
8	7007100	8607100	Air Cleaner element Assy.		1	
5	LZA06022		Stud AM6x22		1	
6	LMB06		Flange Nut M6		1	

### 8. Silencer Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7008300	7808300	8608300	Muffler Assy.(Include Cover)			1		
2	7008100	7808100	8608100	Cover Assy.			1		
3	LSB0608			Flange Boly M6x8			6	10	
4	7008200	7808200	8608200	Silent Assy.			1		
5	PDA 08			Washer 8			2		
6	TD 08			Spring Washer 8			2		
7	LMA 08			Bolt M8			2		
8	LSB06012	LSB08012		Flange Bolt M6x8			2		
				M6x12	M8x12				

### 9. Lube oil System

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	LSB0608			Flange Bolt M6x8			3		
2	7009003			OI Pump Cover			1		
3	OM34518			O-Ring 34.5x1.8			1		
4	7009100		8609100	OI Pump Assy.			1		
5	7009103			Outer Rotator			1		
6	7009101			Inner Rotator			1		
7	7009102	7809102		OI Pump Shaft			1		
8	7009004	7809004		OI Pump Gear			1		
9	XA03016			Pin 3x16			1		
10	7009200	7809200		OI Filter Assy.			1		
11	MFQ 25024			O-Ring 25x2.4			1		
12	7009002	/		Filter Cover Gasket			1	/	
13	7009001	/		Filter Cover	/		1	/	
14	LSB0608	/		Flange Bolt M6x8			2	/	
15	/		7809005	Intake Pipe			/		1
16	/		LAB06014	Flange Bolt M6x14			/		1

### 10. Fuel Tank & Fuel Pipe Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	LSB08045			Flang Bolt M8x45			1		
2	7010003			Upper Stay Bolt			1		
3	PD08			Washer 8			1		
4	7010001	7810001	8610001	Upper Stay			1		
5	7010002			Damper			4		
6	7010013			Clamp			2		
7	7010012			Fuel Return Pipe			Necessary		
8	7010200	7810200	8610200	Fuel Tank Assy.			1		

9	7010005			Clamp	2
10	7010006			Fuel Level Pipe	1
11	7010014			Lower Stay	1
12	LSB06014			Flange Bolt M6x14	2
13	LMB06			Flange Bolt M6	2
14	7010400			Fuel Cock Assy.	1
15	MFQ13218			O-Ring 13.2x1.8	1
16	7010011			Clamp	1
17	7010009			Fuel Hose	Necessary
18	7010007			Strainer Gasket	1
19	7010300	7810300	8610300	Fuel Strainer Assy.	1
20	7010500	7810500	8610500	Fuel Injection Pipe Assy.	1
21	7010201	7810201	8610201	Fuel Tank	1
22	7010004			Fuel Filter	1
23	7010100			Fuel Tank Cap Assy.	1
24	7010016			Seal Washer	1
25	LSB12012			Flange Bolt M12x12	1

### 11. Governor & Control System

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
TYPE: F/FP									
1	7011300			Control Lever Assy.			1		
2	7011303			Control Lever			1		
3	7011302			Pull Lever Head			1		
4	7011304			Bracket			1		
5	7011301			Handle			1		
8	LMA06			Nut			2		
9	7011305			Pull Bolt			1		

10	7011306		Speed limit Screw	1
11	7011006		Return Spring	1
12	7011005		Return Spring	1
6	LSB06014		Flange Bolt M6x14	1
7	LSB06020		Flange Bolt M6x20	1
TYPE: SD				
1	7011500		Control Lever Assy.	1
2	7011501		Tension Spring	1
3	7011502		Tighten Plate	1
4	7011503		Stop Handle	1
5	7011504		Block	1
6	7011505		Bracket	1
7	LSB06014		Flange Bolt M6x14	2
8	7011006		Return Spring	1
9	LSB06022		Flange Bolt M6x22	1
TYPE: FG				
1	7011400		Control Lever Assy.	1
2	7011401		Lever Shaft	1
3	7011402		Lever Washer	2
4	7011006		Return Spring	1
5	7011306		Speed limit Screw	1
6	LMA06		Flange Nut M6	1
7	LSB06014		Flange Bolt M6x14	1
8	LSB06030		Flange Bolt M6x30	1
9	LMA10125		Bolt M10x1.25	1
10	7011407		Bowl- shape Cover	1
11	7011405		Compress Spring	1
12	7011404		Bracket	1
13	7011403		Control Handle	1
14	7011006	8611006	Governor Spring	1

15	7011101			Governor Lever	1
18	XA03022			Pin 3x22	2
19	7011102			Lever Shaft	1
20	7011601	7811601	8611601	Lever Fork	1
16	7011003			Lever Washer	1
17	7011008			Oil Seal 6x14x5	1
21	7011004			Tappet	1
22	7011001			Fly Block	2
23	7011002			Fly Block Pin	2

## 12. Fuel Injection Pump Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7012000		8612000	Fuel Pump Assy.			1		
2	7012006			delivery Hblder			1		
3	7012008			Delivery Spring			1		
4	7012009			Delivery Gasket			1		
5	7012201			Delivery Valve			1		
6	7012202			Delivery Seat			1		
7	7012400			Joint			1		
8	7012005			O-Ring			1		
9	7012101	8612101		Pump Body			1		
10	7012100	8612100		Plunger			1		
11	7012013			Shim Set			Necessary		
12	XA02006			Pin 2x6			2		
13	7012011			Packing			1		
14	7012300			Control Lever Assy.			1		
15	7012004			Snap Ring			1		
16	XA03008			Pin 3x8			1		
17	7012012			Spring Seat			2		



18	7012016	Pump Spring	1
19	7012015	Spring Seat	1
20	7012014	Tappet	1

### 13. Fuel Nozzle Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7013000		8613000	Fuel Nozzle Assy.			1		
2	7013200			Nozzle Holder Assy.			1		
3	7013007			Shim Set			Necessary		
4	7013006			Nozzle Spring			1		
5	7013005			Spring Retainer			1		
6	7013003			Stop Plate			1		
7	7013004			Pin			2		
8	7013100	8613100		Nozzle valve			1		
9	7013002			Nozzle Case Nut			1		
10	7013008			Pin			1		

### 14. Recoil Starter Assembly

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7014000	7814000	8614000	Recoil Starter Assy.			1		
2	LSB06		LSB08	Flange Nut			1		
				M6	M8				
3	7014003			Friction Washer			1		
4	7014006			Friction Plate			1		
5	7014004	8614004		Ratchet Cover			1		
6	7014005			Return Spring			1		
7	7014002			Push Spring			1		
8	7014001			Ratchet Plate			2		

9	7014012	8614012	Reel	1
10	7814009	8614009	Spiral Spring	1
11	7014007		Starter Handle	1
12	7014100	8614100	Casw Assy.	1
13	7014008	8614008	Starter Rope	1
14	LSB0608		Flange Bolt M6x8	4

### 15. Cooling device Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7017003	7817003	8617003	shock Absorber			1		
2	7017100	7817100	8617100	Fan Case Welded Assy.			1		
3	7017002			shock Absorber			4	5	4
4	7017003			Coller 8x10			4	5	4
5	PDB06			Washer 6			4	5	4
6	LSA06022			bolt M6x22			4	5	4

### 16. Starter & generator Assy.

Item	Code			Description			Q'ty (pc/unit)		
	170	178	186	170	178	186	170	178	186
1	7016100			Fly Wheel Generator			1		
2	LSA06020			Bolt M6x20			3		
3	LDB06012			Screw M6x12			3		
4	LSB06012			Flange Bolt M6x12			3		
5	7016003			Clamp			1		
6	7016004			Regulator			1		
7	7016005			Starting Mtor			1		
8	LSA01035			Bolt M10x35			2		

9	PD10			Washer 10	2
10	TD10			Spring Washer 10	2
11	7016200	7816200	8616200	Fly Wheel With Gear	1