

## 12.4 Alternator standard, 12V/60A

The alternator serves to keep the battery constantly charged. It is installed on the cylinder block by a bracket, and is driven from the V-pulley at the end of the crankshaft by a V belt.

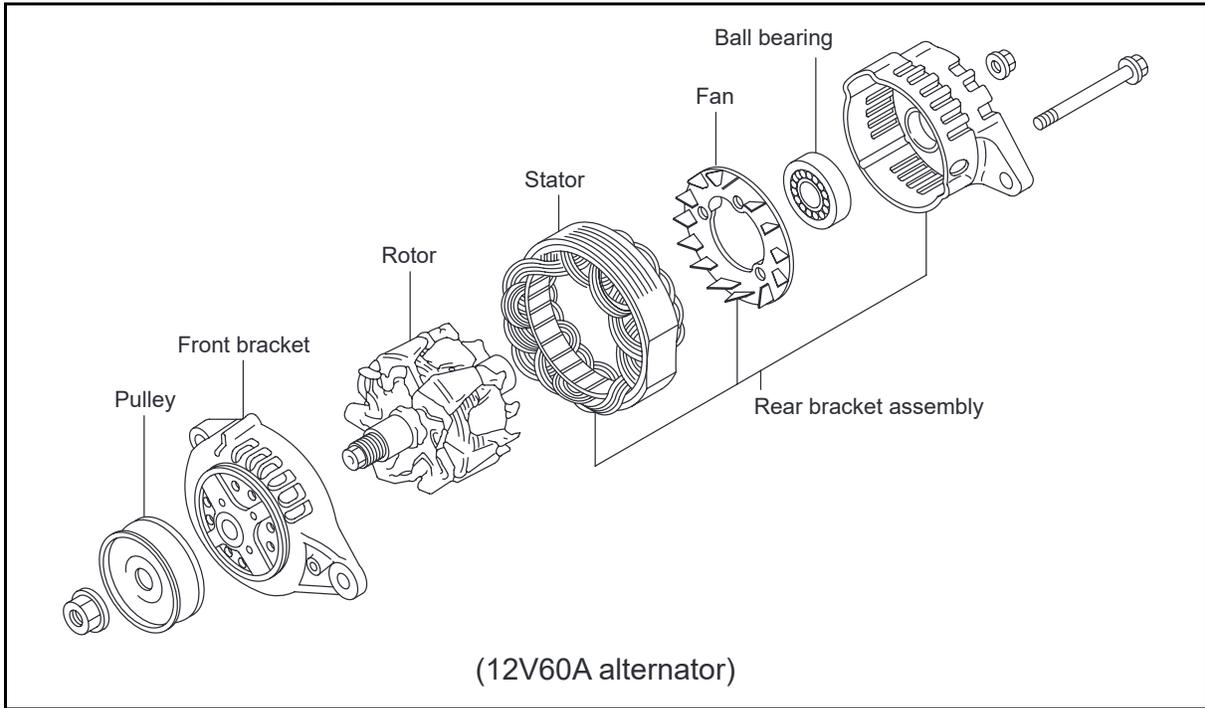
The type of alternator used in this engine is ideal for high speed engines with a wide range of engine speeds. It contains diodes that convert AC to DC, and an IC regulator that keeps the generated voltage constant even when the engine speed changes.

### 12.4.1 Specifications

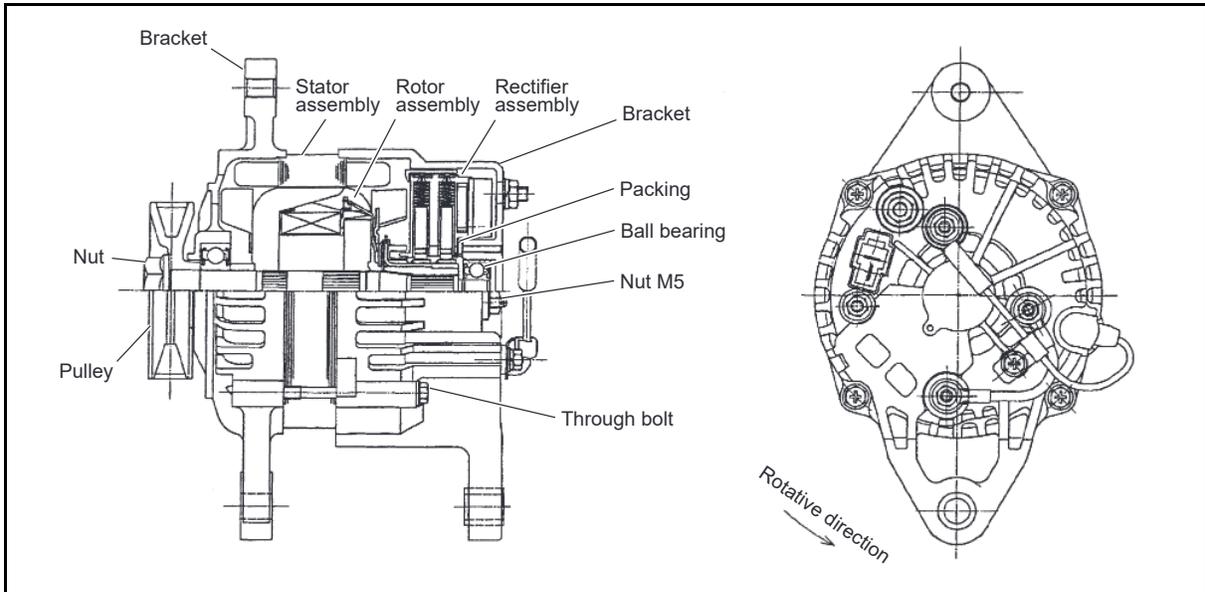
Yanmar code	128271-77200
Model of alternator	LR160-741 (HITACHI)
Model of IC regulator	SA-A (HITACHI)
Battery voltage	12V
Nominal output	12V/60A
Earth polarity	Negative earth
Direction of rotation (viewed from pulley end)	Clockwise
Weight	4.2 kg
Rated speed	5000 min <sup>-1</sup>
Operating speed	1,050-18,000 min <sup>-1</sup>
Speed for 13.5V at 20°C	1050 min <sup>-1</sup> or less
Output current for 13.5V	56A or more/ 5000 min <sup>-1</sup>
Regulated voltage	14.4±0.3V (at 20°C, voltage gradient, -0.01V/°C)

### 12.4.2 Structure

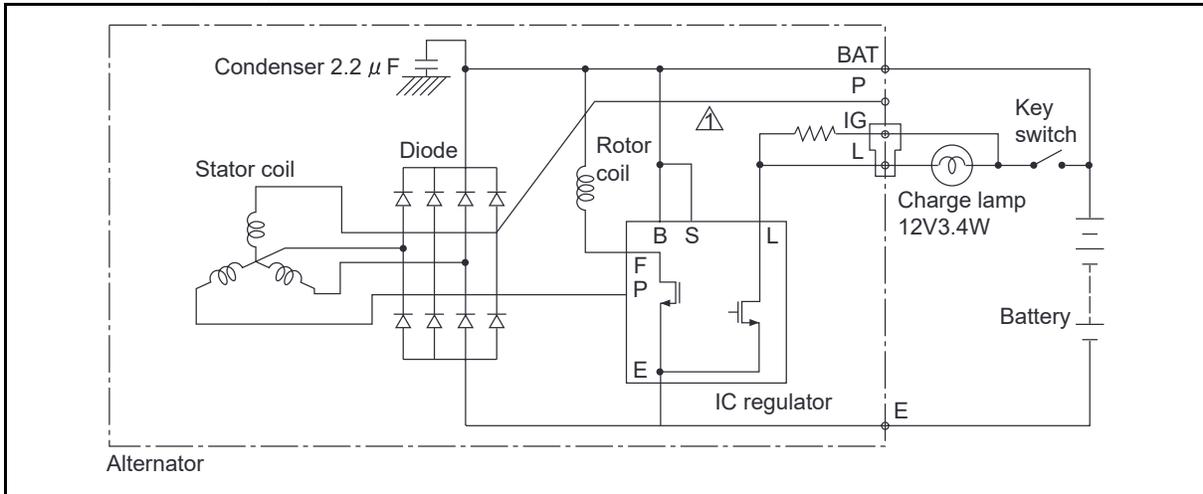
#### (1) Disassembly drawing



#### (2) Structure



### 12.4.3 Wiring diagram

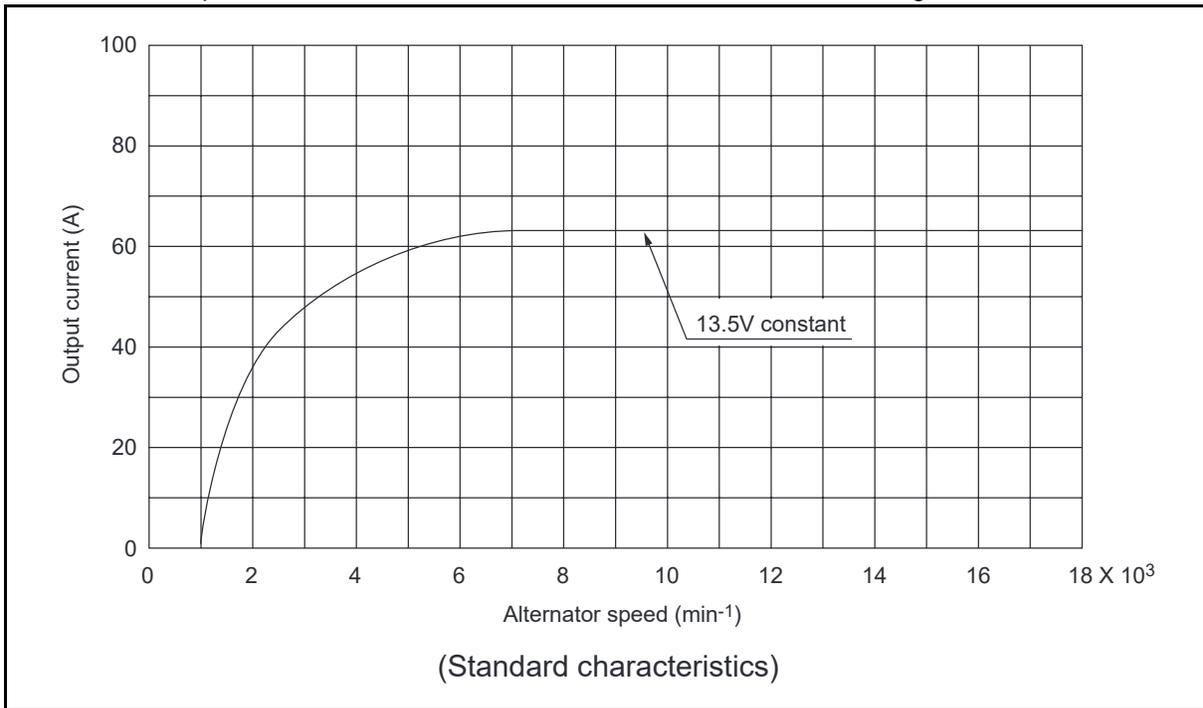


[NOTICE]

- 1) Don't do mis-connecting and short-circuit of each terminal.
- 2) Don't remove a battery terminal and a B terminal when rotating.
- 3) Shut out a battery switch during the alternator stop.

### 12.4.4 Standard output characteristics

The standard output characteristics of this alternator are shown as the below figure.



### 12.4.5 Inspection

#### (1) V belt inspection

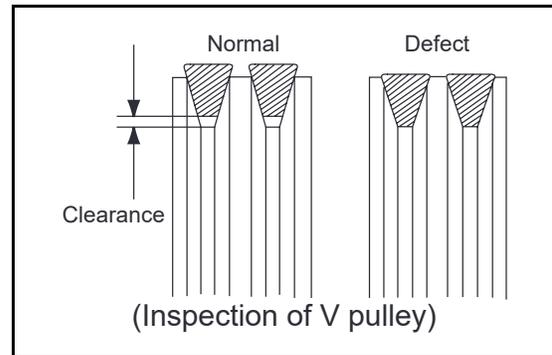
- 1) Inspect the matter whether there are not crack, stickiness and wear on the belt visually. Check that a belt doesn't touch the bottom part of the pulley groove. If necessary, replace the V belt set.
- 2) V belt tension :  
(Refer to 2.2.2.(4) in Chapter 2.)

#### (2) Visual check of wiring and check of unusual sound

- 1) Confirm whether wiring is right or there is no looseness of the terminal part.
- 2) Confirm that there is no unusual sound from the alternator during the engine operation.

#### (3) Inspection of charge lamp circuit

- 1) Move a start switch to the position of on. Confirm lighting of the charge lamp.
- 2) Start an engine, and confirm the lights-out of the lamp. Repair a charge lamp circuit when a lamp doesn't work.



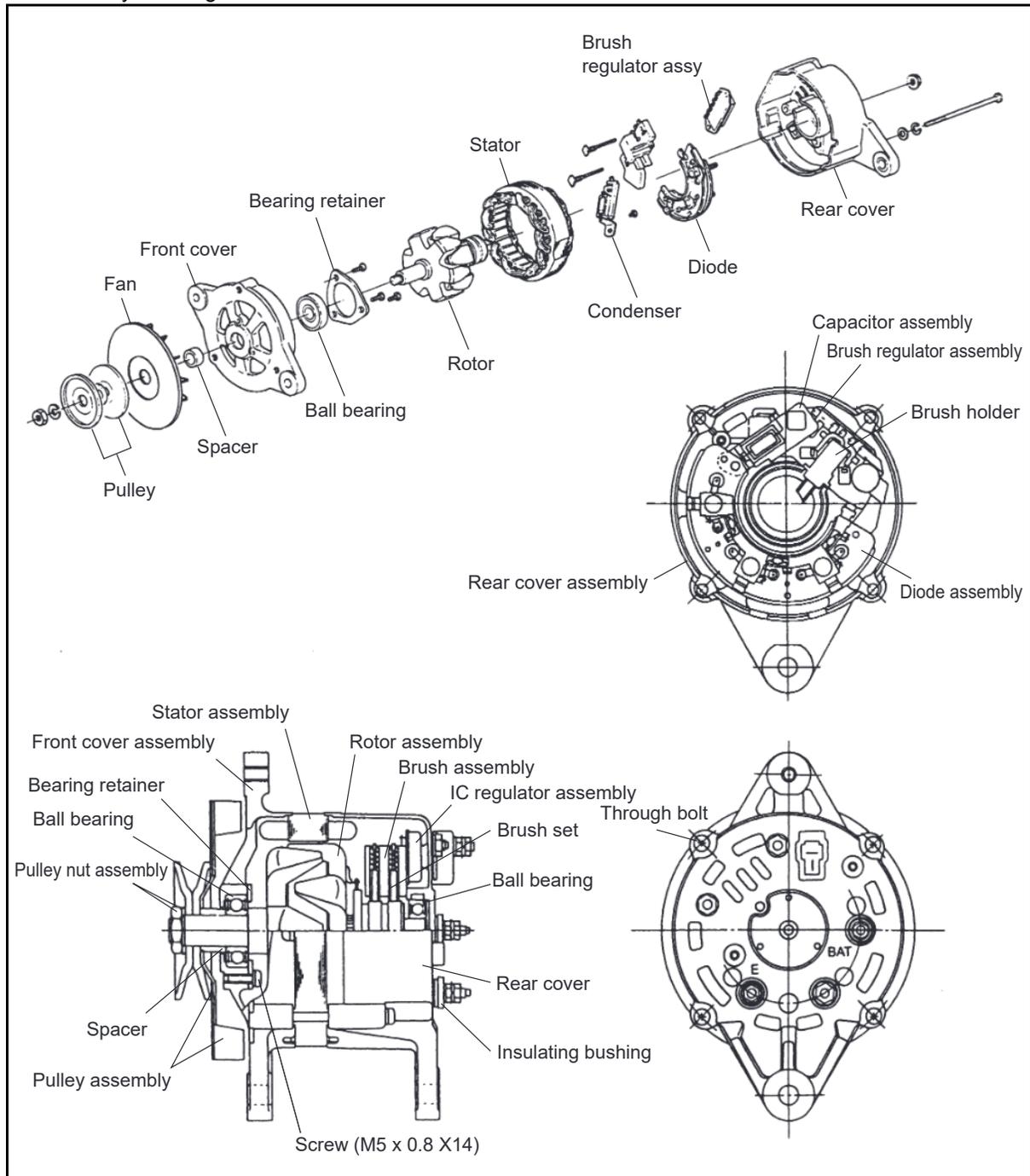
## 12.5 Alternator 12V/80A (Optional)

### 12.5.1 Specifications

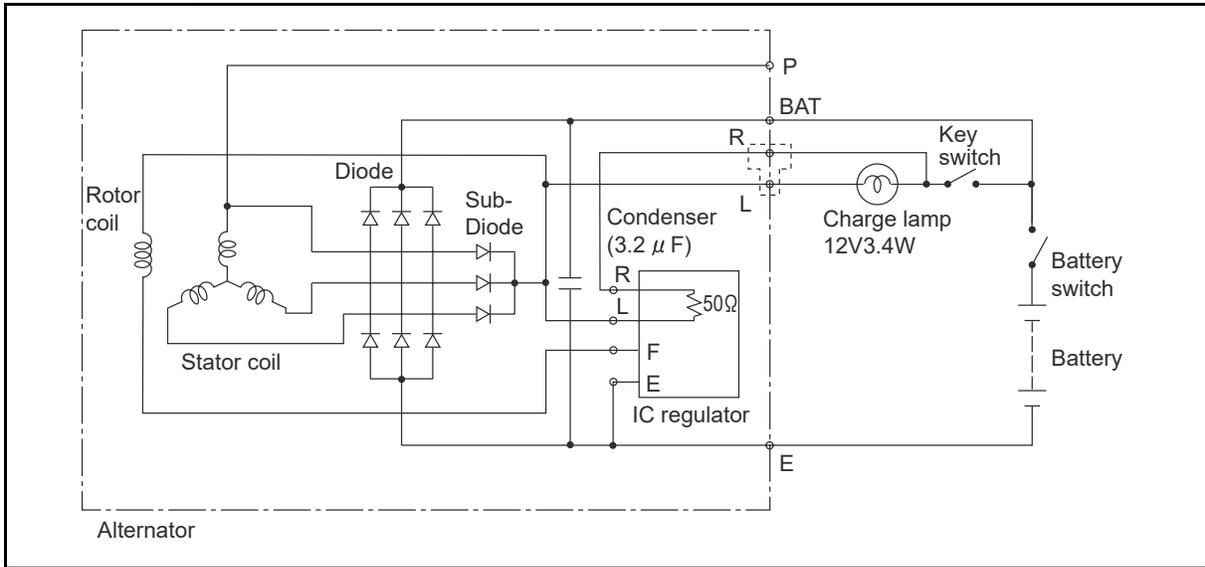
Yanmar code	119573-77201
Model of alternator	LR180-03C (HITACHI)
Model of IC regulator	TR1Z-63 (HITACHI)
Battery voltage	12V
Nominal output	12V/80A
Earth polarity	Negative earth
Direction of rotation (viewed from pulley end)	Clockwise
Weight	5.4 kg
Rated speed	5000 min <sup>-1</sup>
Operating speed	1,200-9,000 min <sup>-1</sup>
Speed for 13.5V at 20°C	1,200 min <sup>-1</sup> or less
Output current for 13.5V	75A or more/ 5000 min <sup>-1</sup>
Regulated voltage	14.5 ± 0.3V (at 20°C, voltage gradient, -0.01V/°C)

### 12.5.2 Structure

Disassembly drawing and Structure



### 12.5.3 Wiring diagram



[NOTICE]

- 1) Don't do mis-connecting and short-circuit of each terminal.
- 2) Don't remove a battery terminal and a B terminal when rotating.
- 3) Shut out a battery switch during the alternator stop.

### 12.5.4 Standard output characteristics

The standard output characteristics of this alternator are shown as the below figure.

