



G3-19D28-0030

Messrs:

YD General

**3TNM74F-NHGE**

for Generator

**SPECIFICATIONS & DRAWINGS FOR MASS PRODUCTION**

15.May.2020

***YANMAR CO.,LTD.***

| Contents      |              |                         |      |              | G3-19D28-0030 |  |
|---------------|--------------|-------------------------|------|--------------|---------------|--|
| Drawing No.   | Part No.     | Name                    | Qty. | Remarks      |               |  |
| G3-19D28-0030 |              | Engine Specification    |      |              |               |  |
| B3-19D28-0020 |              | Out line                |      |              |               |  |
| Z3-19128-0010 |              | Detail of Flywheel      |      |              |               |  |
| E3-19746-0010 |              | Wiring Diagram          |      |              |               |  |
|               |              |                         |      |              |               |  |
|               |              |                         |      |              |               |  |
| G3-19D28-3600 |              | Performance Curve       |      |              |               |  |
| G3-19D28-0040 |              | Scope of supply         |      |              |               |  |
|               |              |                         |      |              |               |  |
|               |              |                         |      |              |               |  |
|               |              | LOOSE PARTS             |      |              |               |  |
|               | 114110-07761 | LABEL, FUEL OIL CAUTION | 1    |              |               |  |
|               | 119515-13200 | GASKET, SILENCER        | 1    |              |               |  |
|               | 119741-55700 | SEPARATOR ASSY,WATER    | 1    |              |               |  |
|               | 119643-66900 | DIODE                   | 1    | for solenoid |               |  |
|               | 119650-77911 | RELAY ASSY, GLOW        | 1    | for solenoid |               |  |
|               | 129211-77920 | TIMER, SECTION 1        | 1    | for solenoid |               |  |
|               |              |                         |      |              |               |  |
|               | OATN4-EN0027 | Operation manual        | 1    |              |               |  |
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G3-19D28-0030

< Career >

- Updated loose parts list
- Updated reference drawings
- Updated emissions regulations to include EU Stage V
- Updated scope of supply document

W.No.

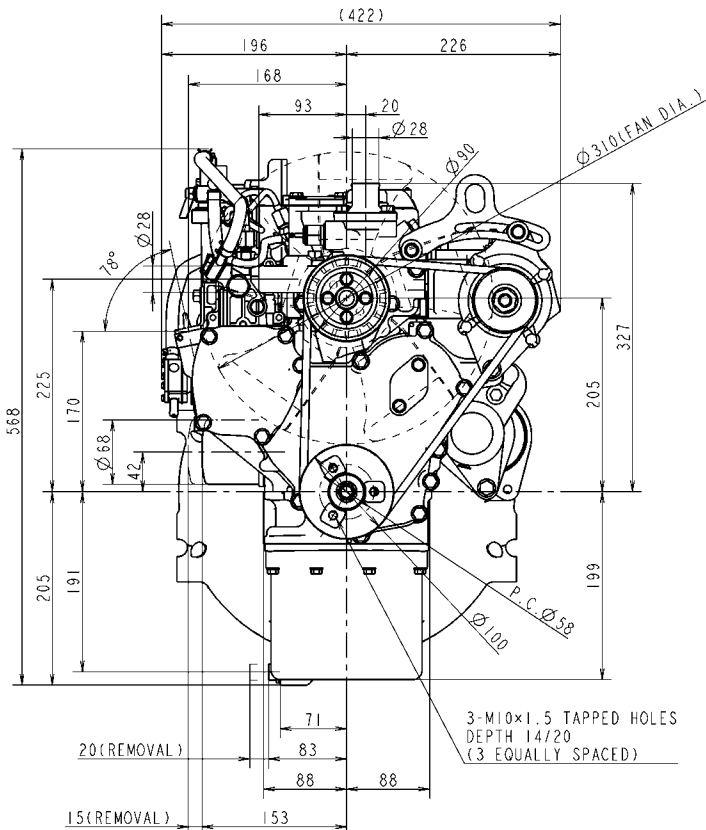
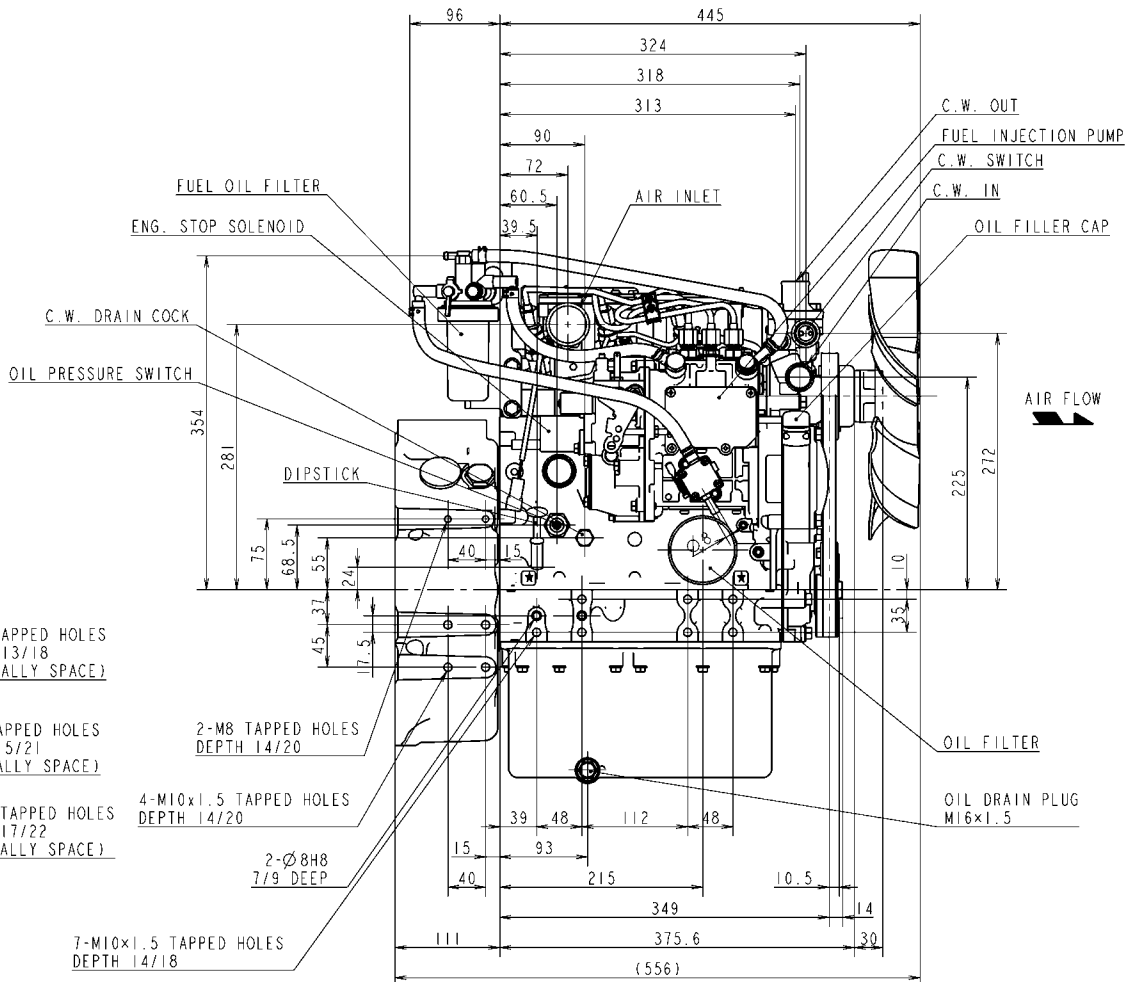
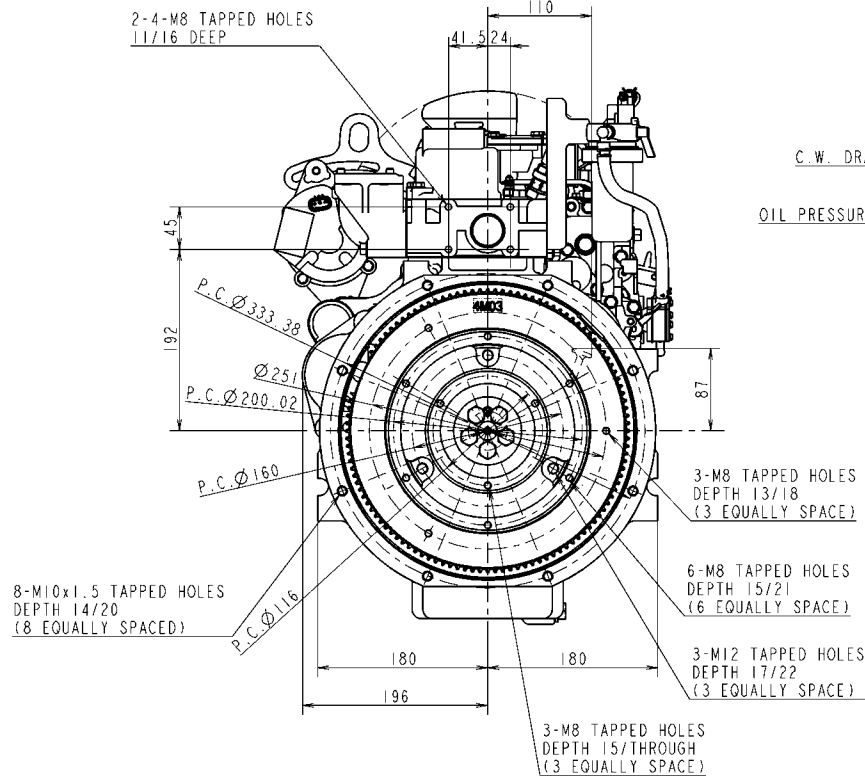
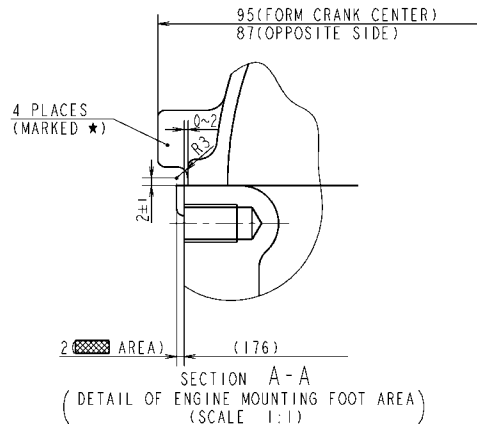
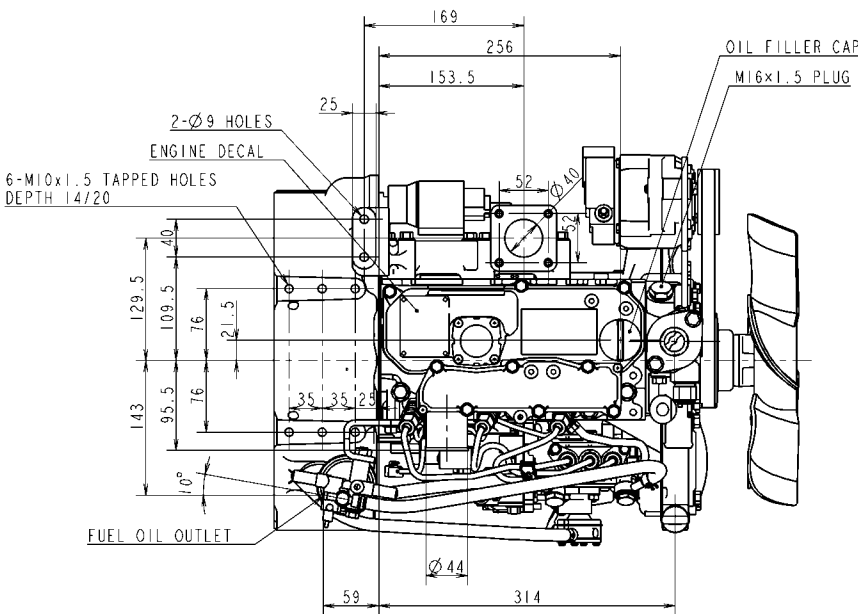
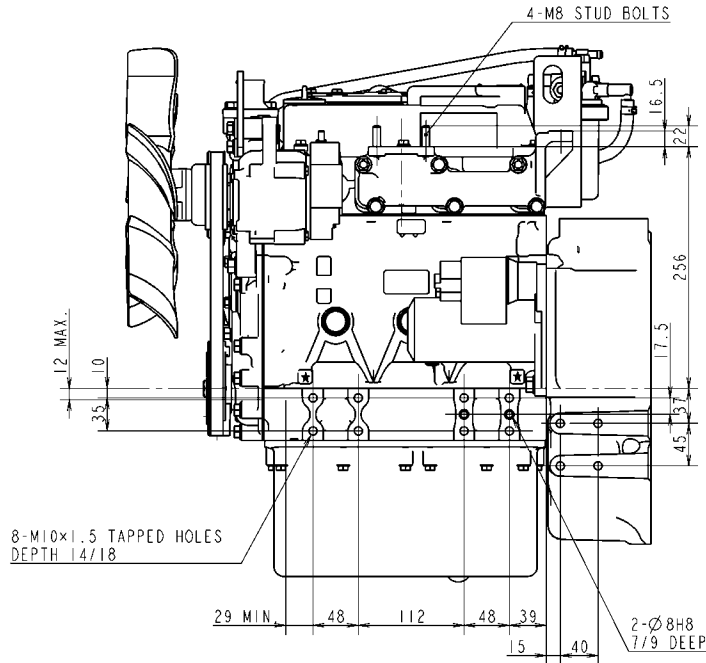
# ENGINE SPECIFICATIONS

G3-19D28-0030

| No | Model name                                       |                          | 3TNM74F-NHGE                         |                                                             | Remarks                   |
|----|--------------------------------------------------|--------------------------|--------------------------------------|-------------------------------------------------------------|---------------------------|
| 1  | Type                                             |                          | 4 cycle, Inline, Water-cooled Diesel |                                                             |                           |
| 2  | No.of cylinders-Bore×Stroke                      |                          | mm                                   | 3-φ74×77                                                    |                           |
| 3  | Combustion system                                |                          |                                      | Indirect Injection                                          |                           |
| 4  | Compression ratio                                |                          |                                      | 23.5                                                        |                           |
| 5  | Displacement                                     |                          | cc                                   | 993                                                         |                           |
| 6  | Gross Rated output<br>SAE J 1995 ( without fan ) |                          | kW                                   | 17.8                                                        | +/- 3%                    |
|    |                                                  |                          | min <sup>-1</sup>                    | 3600                                                        |                           |
| 7  | Rated output (reference, with fan)               |                          | kW                                   | 17.0                                                        | (Net)                     |
| 8  | Continuous rating<br>( without fan )             |                          | kW                                   | 15.9                                                        |                           |
|    |                                                  |                          | min <sup>-1</sup>                    | 3600                                                        |                           |
| 9  | -                                                |                          | -                                    | -                                                           |                           |
|    |                                                  |                          | -                                    | -                                                           |                           |
| 10 | Specific fuel consumption( Gross )               |                          | g/kW-h                               | max.281                                                     | at rated output           |
| 11 | Ambient condition                                |                          | 25°C、100kPa、30%                      |                                                             |                           |
|    |                                                  |                          | air flow restriction 2.9 kPa         | back pressure 9.8 kPa                                       |                           |
| 11 | Engine speed at no load                          | Max.                     | min <sup>-1</sup>                    | 3770                                                        | +25/-25                   |
|    |                                                  | Min.                     | min <sup>-1</sup>                    | 2300                                                        | +25/-25                   |
| 12 | Governorability                                  | Governor type            |                                      | centrifugal-all speed governor                              |                           |
|    |                                                  | Temporary                | %                                    | max.10                                                      | load                      |
|    |                                                  | Permanent                | %                                    | max.4                                                       | 100%                      |
|    |                                                  | Recovery time            | sec                                  | max.5                                                       | ↓                         |
|    |                                                  | Stability                | min <sup>-1</sup>                    | max.20                                                      | 0%                        |
| 13 | Gradients                                        | Longitudinal             | deg                                  | 30 (25)                                                     | intermitted for 3 minutes |
|    |                                                  | Lateral                  | deg                                  | 30 (25)                                                     | (continuous)              |
| 14 | Firing order                                     |                          |                                      | 1-3-2-1                                                     | order from F.W.           |
| 15 | Direction of rotation                            |                          |                                      | counterclockwise                                            | viewed from F.W.          |
| 16 | Engine dry weight                                |                          | kg                                   | 110 +5 / 0                                                  |                           |
| 17 | Fuel injection timing                            |                          | deg                                  | b.T.D.C 21.0°                                               | at rated output           |
| 18 | Fuel system                                      | Fuel type                |                                      | Diesel oil                                                  |                           |
|    |                                                  | Fuel injection pump      |                                      | In-line(Yanmar MC)                                          |                           |
|    |                                                  | Fuel injection nozzle    |                                      | throttle type                                               |                           |
|    |                                                  | Fuel filter              |                                      | paper element                                               |                           |
| 19 | Lubrication system                               | System                   |                                      | forced feed                                                 |                           |
|    |                                                  | Oil grade                |                                      | CD,10W30 or #30                                             |                           |
|    |                                                  | Oil pump                 |                                      | trochoid pump                                               |                           |
|    |                                                  | Oil filter               |                                      | paper element                                               |                           |
|    |                                                  | Oil capacity             | liter                                | 3.4                                                         | maximum                   |
|    |                                                  |                          | liter                                | 1.6                                                         | effective                 |
|    |                                                  | Oil pressure             | MPa                                  | 0.34                                                        | at rated output           |
| 20 | Cooling system                                   | LO maintainance interval | hr                                   | 250                                                         |                           |
|    |                                                  | Cooling water quality    |                                      | Soft Water                                                  |                           |
|    |                                                  | Heat exchanger           |                                      | not provided                                                |                           |
|    |                                                  | Pressure cap             | MPa                                  | 0.09 (recommend)                                            |                           |
|    |                                                  | Fan / Spacer             |                                      | D310 pusher(UI)/T=30<br>Crank pulley/ fan pulley = φ100/φ90 |                           |
|    |                                                  | Coolant capacity         | liter                                | 1.0                                                         |                           |

| ENGINE SPECIFICATIONS |                    |              |              | G3-19D28-0030                |                                                                                    |
|-----------------------|--------------------|--------------|--------------|------------------------------|------------------------------------------------------------------------------------|
| No                    | Model name         |              | 3TNM74F-NHGE |                              | Remarks                                                                            |
| 21                    | Air cleaner        |              |              | not provided                 | max.air flow restriction<br>2.9kPa<br>at rated output<br>(EGR close initial value) |
| 22                    | Breather system    |              |              | closed                       |                                                                                    |
| 23                    | Muffler            |              |              | not provided                 | max.back pressure<br>9.8kPa<br>at rated output<br>(EGR close initial value)        |
| 24                    | Starting system    | Starter      |              | 12V-1.0 kW                   |                                                                                    |
|                       |                    | Battery      |              | 55B24 (recommend)            |                                                                                    |
|                       |                    | Starting aid |              | glow plugs                   |                                                                                    |
| 25                    | Generator          |              |              | 12V-40A                      |                                                                                    |
| 26                    | Engine color       |              |              | Black                        |                                                                                    |
| 27                    | Applied regulation |              |              | ARB-OR, EPA Tier4, EU StageV |                                                                                    |
| < Career >            |                    |              |              |                              |                                                                                    |

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|                                                |            |               |                       |                |
|------------------------------------------------|------------|---------------|-----------------------|----------------|
| WEIGHT (RAW)                                   | (± 1)      | kg            | C. MANAGER S. MANAGER |                |
| WEIGHT (CALC.)                                 | (± 1)      | kg            |                       |                |
| S. ENGINEER                                    | MANAGER    | MODEL         | 3TNM74F-NHGE          | SCALE 1:4(1:1) |
| CHECKED                                        | SPECIALIST | QTY           | 1                     | MATERIAL       |
| DESIGNED                                       | DRAWN      | DATE: Y. M. D | NAME                  | OUTLINE        |
| I. Tetsuaki                                    |            | E. Adachi     |                       | 2012. 9. 24    |
| YANMAR                                         |            | CODE          |                       | B3-19D28-0020  |
| POWER SYSTEM OPERATIONS DIV., YANMAR CO., LTD. |            | DRAW SIZE     |                       | A1             |

With respect to the use of environmentally hazardous substances for the parts, the substances in use shall conform to the requirement specified in YIS V-001J, "Restrictions of use for Environmentally Hazardous Substances".

本製品の部品・材料に環境に有害な物質を使用しないこと。YIS V-001J「環境に有害な物質の使用制限」の要求事項に準拠すること。

|                            |        |
|----------------------------|--------|
| 3D-CAD                     | NOTICE |
| GEOMETRICAL TOLERANCE      | SYMBOL |
| KIND OF TOLERANCE          | SYMBOL |
| STRATNESS TOLERANCE        | SYMBOL |
| CIRCULARITY TOLERANCE      | SYMBOL |
| PROFILE OF LINE TOLERANCE  | SYMBOL |
| FLATNESS TOLERANCE         | SYMBOL |
| CYLINDRICITY TOLERANCE     | SYMBOL |
| POINT TOLERANCE            | SYMBOL |
| PARALLELISM TOLERANCE      | SYMBOL |
| PERPENDICULARITY TOLERANCE | SYMBOL |
| ANGULARITY TOLERANCE       | SYMBOL |
| POSITIONAL TOLERANCE       | SYMBOL |
| CONCENTRICITY TOLERANCE    | SYMBOL |
| TIME TOLERANCE             | SYMBOL |
| UNCERTAINTY TOLERANCE      | SYMBOL |
| UNCERTAINTY TOLERANCE      | SYMBOL |
| UNCERTAINTY TOLERANCE      | SYMBOL |

Conform to the Yanmar standard YIS V-0001J  
concerning "Use limitation of the environmental burden material"  
for the use of the environmental burden material of this part.

本製品の環境負荷物質の使用に関しては、  
YIS V-0001J（環境負荷物質の  
使用制限）を遵守すること。

3D-CAD

NOTICE

GEOMETRICAL  
TOLERANCE

KIND OF  
TOLERANCE

SYMBOL

FORM

FLATNESS  
TOLERANCE

PARALLELISM  
TOLERANCE

PERPENDICULARITY  
TOLERANCE

ANGULARITY  
TOLERANCE

POSITIONAL  
TOLERANCE

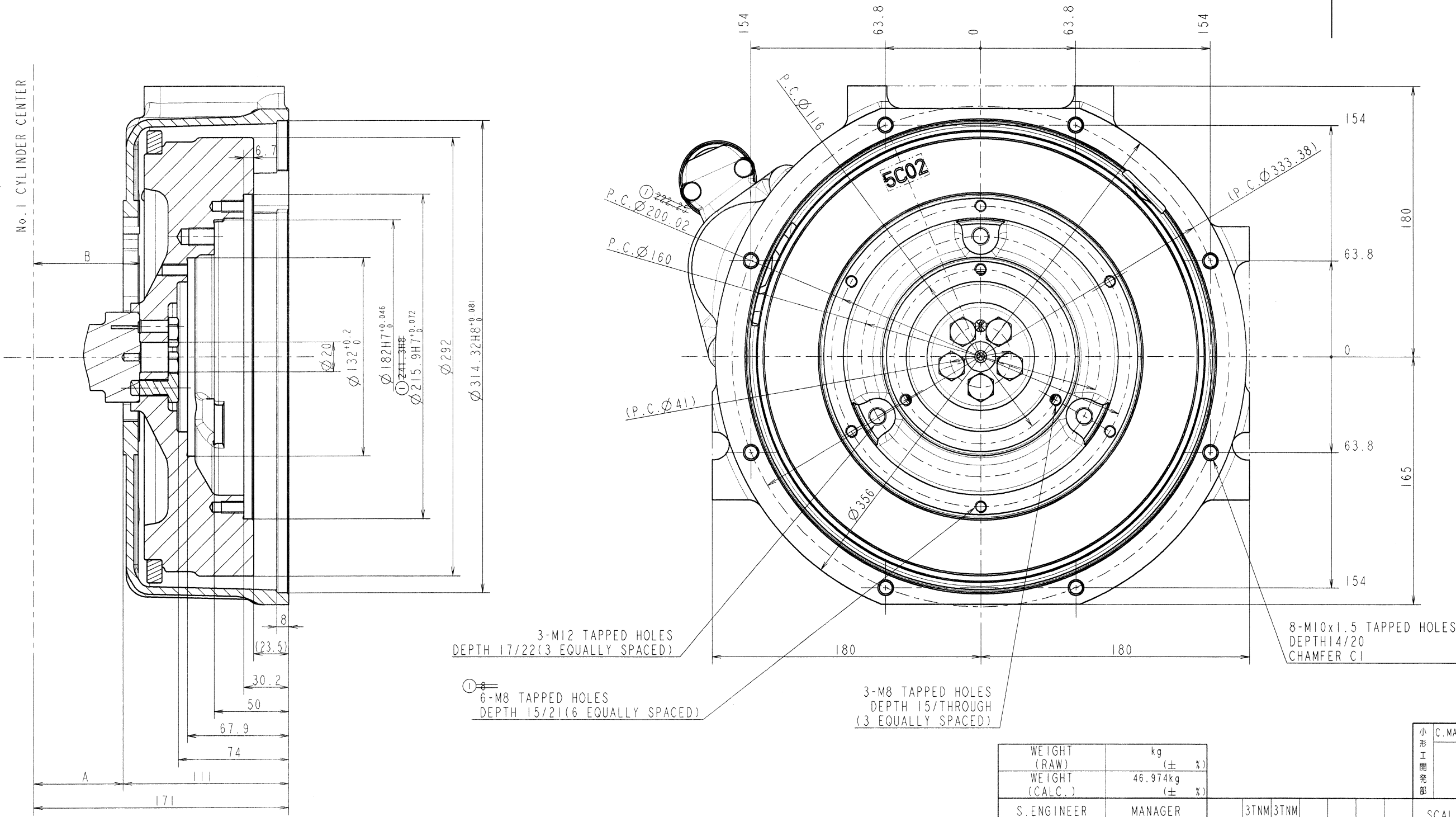
COINCIDENCE  
TOLERANCE

SYMMETRY  
TOLERANCE

STAGGER  
TOLERANCE

TOTAL  
TOLERANCE

|                          |                     |                          |                 |                         |                          |                  |             |                     |             |                |         |                             |               |               |                |                 |              |             |              |                |                 |                  |        |              |        |                      |  |
|--------------------------|---------------------|--------------------------|-----------------|-------------------------|--------------------------|------------------|-------------|---------------------|-------------|----------------|---------|-----------------------------|---------------|---------------|----------------|-----------------|--------------|-------------|--------------|----------------|-----------------|------------------|--------|--------------|--------|----------------------|--|
| NEED                     | ○                   | PURCHASING SPECIFICATION |                 | REQUEST FOR APPROVAL    |                          | DELIVERY DRAWING |             | INSPECTING STANDARD |             | QC-PROCESS     |         | FILE NAME:Z3-19128-0010.DRW |               |               |                |                 |              |             |              |                |                 |                  |        |              |        | 3RD ANGLE PROJECTION |  |
| GEN. TOL.<br>一般公差        | DRAFT ANG.<br>製造角度配 | OUTSIDE<br>2/100         | INSIDE<br>3/100 | CAST WALL THICK<br>鑄造壁厚 | NOMINAL DIM.<br>DIVISION | 5 TO<br>5 MAX    | 10 TO<br>10 | 18 TO<br>18         | 30 TO<br>30 | L-CAST<br>鑄造尺寸 | 120 MAX | 120 TO<br>250               | 250 TO<br>400 | 400 TO<br>800 | 800 TO<br>1600 | 1600 TO<br>3150 | L-CHIP<br>削切 | 0.5 TO<br>6 | ±0.1         | 400 TO<br>1000 | ±0.8            | ANG-CHIP<br>角度削切 | 10 MAX | ±1DEG.       | CAREER |                      |  |
|                          |                     |                          |                 |                         | SANDMOLD                 | ±1.0             | ±1.5        | ±2.0                | ±3.0        |                | ±3.5    | ±1.5                        | ±2.0          | ±3.0          | ±4.0           | ±5.0            |              | ±7.0        | 6 TO<br>30   | ±0.2           | 1000 TO<br>2000 |                  | ±1.2   | 10 TO<br>50  |        | ±30MIN               |  |
|                          |                     |                          |                 |                         | SHELL                    | ±0.8             | ±1.0        | ±1.5                | ±2.0        |                | ±2.0    | ±1.0                        | ±1.5          | ±2.0          | ±3.0           | ±4.0            |              | ±6.0        | 30 TO<br>120 | ±0.3           | 2000 TO<br>4000 |                  | ±2.0   | 50 TO<br>100 |        | ±20MIN               |  |
|                          |                     |                          |                 |                         |                          |                  |             |                     |             |                |         |                             |               |               |                |                 |              |             |              |                |                 |                  |        |              |        |                      |  |
|                          |                     |                          |                 |                         |                          |                  |             |                     |             |                |         |                             |               |               |                |                 |              |             |              |                |                 |                  |        |              |        |                      |  |
| revl(07.11.14)Change the |                     |                          |                 |                         |                          |                  |             |                     |             |                |         |                             |               |               |                |                 |              |             |              |                |                 |                  |        |              |        |                      |  |



| MODEL  | DIMENSION A | DIMENSION B | FW.HOUSING   | FLYWHEEL CMP | FLYWHEEL     |
|--------|-------------|-------------|--------------|--------------|--------------|
| 3TNM68 | 60          | 71          | 119128-01600 | 119128-21591 | 119128-21401 |
| 3TNM72 | 63          | 74          | ↑            | ↑            | ↑            |

|                                                |                |             |            |                    |         |         |          |     |
|------------------------------------------------|----------------|-------------|------------|--------------------|---------|---------|----------|-----|
| WEIGHT (RAW)                                   | kg (± %)       | S. ENGINEER | MANAGER    | MODEL              | 3TNM 68 | 3TNM 72 | SCALE    | 1:2 |
| WEIGHT (CALC.)                                 | 46.974kg (± %) | CHECKED     | SPECIALIST | QTY                | 1       | 1       | MATERIAL | —   |
| DESIGNED                                       | DRAWN          | DATE:Y.M.D  | NAME       | DETAIL OF COUPLING |         |         |          |     |
| M. Sakamoto                                    | n. Wakizaka    | 2007.8.10   |            |                    |         |         |          |     |
| YANMAR                                         |                |             |            | CODE               |         |         |          |     |
| POWER SYSTEM OPERATIONS DIV., YANMAR CO., LTD. |                |             |            | Z3-19128-0010      |         |         |          |     |
|                                                |                |             |            | DRAW SIZE A2       |         |         |          |     |

With respect to the use of environmentally hazardous substances for the parts, the substances in use shall conform to the requirement specified in YIS V-00011, "Restrictions of use for Environmentally Hazardous Substances".

本部品の環境負荷物質の使用に関しては、YIS V-00011 J (環境負荷物質の使用規制)の規定を遵守すること。

|                 |    |
|-----------------|----|
| 重要度<br>Priority | ②  |
| 精度/種類/記号        |    |
| 種類              | 記号 |
| 真直度             | —  |
| 真円度             | ○  |
| 線形              | —  |
| 平面度             | □  |
| 円筒度             | ○  |
| 面形              | △  |
| 平行度             | ∥  |
| 直角度             | ⊥  |
| 傾斜度             | ∠  |
| 位置度             | ⊕  |
| 同軸度             | ◎  |
| 対称度             | ≡  |
| 円筒偏し            | ∕  |
| 全偏し公差           | ∕  |

|   |   |       |  |       |         |        |            |
|---|---|-------|--|-------|---------|--------|------------|
| 要 | ○ | 購買仕様書 |  | 検査基準書 | 品質管理工程図 | 特別管理部品 | 量産初期安定管理部品 |
|---|---|-------|--|-------|---------|--------|------------|

|      |             |
|------|-------------|
| MARK | COLOR       |
| B    | Black       |
| W    | White       |
| R    | Red         |
| L    | Blue        |
| G    | Green       |
| Y    | Yellow      |
| Br   | Brown       |
| Lg   | Light Green |
| Sb   | Sky blue    |
| O    | Orange      |
| P    | Pink        |
| Gr   | Gray        |
| R/W  | Red/White   |

|             |    |    |    |    |    |
|-------------|----|----|----|----|----|
|             | 19 | 30 | 17 | 50 | AC |
| PRE-HEATING | ○  | ○  |    |    | ○  |
| OFF         |    | ○  |    |    |    |
| ON          |    | ○  |    |    | ○  |
| START       |    | ○  | ○  | ○  | ○  |

KEY SW. DIAGRAM

TABLE 1

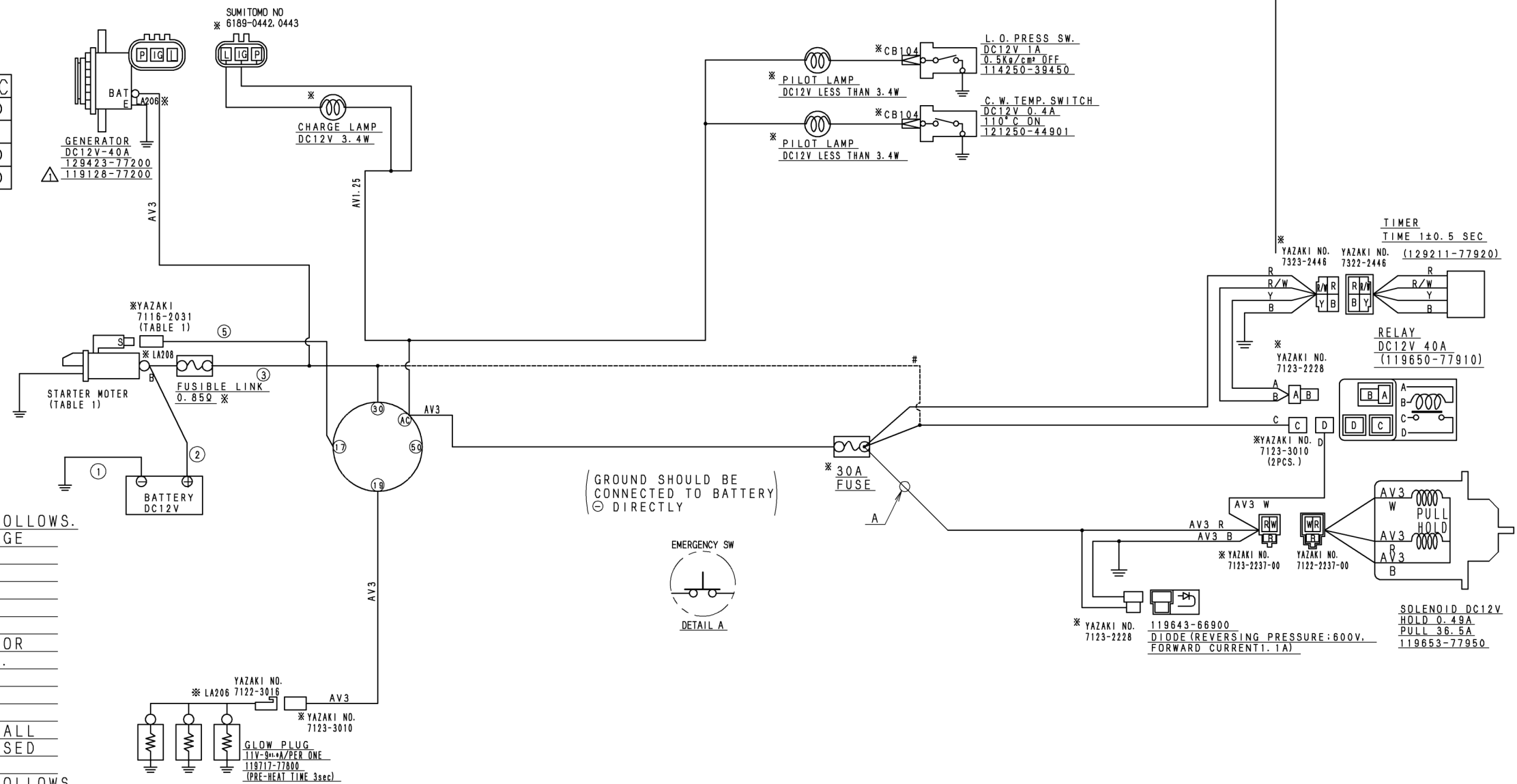
| MODEL                       | STARTER                     |
|-----------------------------|-----------------------------|
| 3TNV70-HB                   | DC12V-1.0kW<br>119515-77010 |
| 3TNV76-GA, GB<br>-HB<br>-CS | DC12V-1.1kW<br>119717-77010 |

NOTES

1. WIRING OF STARTER MUST BE OBSERVED AS FOLLOWS. OTHERWISE IT CAUSES MIS-STARTING OR DAMAGE OF STARTER MOTOR.
  - 1-1. TOTAL ELECTRIC RESISTANCE OF BATTERY CABLE (①+②) SHOULD BE LESS THAN 2/1000Ω.  
REFERENCE: AV15: ≤1.4m, AV20: ≤2.2m  
AV30: ≤3.8m, AV40: ≤4.6m
  - 1-2. TOTAL ELECTRIC RESISTANCE OF WIRING FOR STARTER (③~⑤) SHOULD BE LESS THAN 5/1000Ω.  
REFERENCE OF TERMINAL RESISTANCE  
: 15/1000Ω PER COUPLER  
0Ω PER SCREW SETTING
  - 1-3. BATTERY EARTH CABLE (①) CONNECTION SHALL BE ENSURED. PAINTED SURFACE MAY NOT BE USED (FOR EARTHING) AVOIDING THE MISS CONTACT.
2. BATTERY TREATMENT MUST BE OBSERVED AS FOLLOWS. OTHERWISE IT MAY CAUSE BURNING OF ELECTRIC EQUIPMENTS OR COMPONENTS. ALTERNATOR (DIODES) BURNING CAUSED BY BATTERY CABLE CONNECTION REVERSELY IS NOT WARRANTED.
  - 2-1. BATTERY SHOULD BE FIXED BY FITTING. (NOT TO MOVE)
  - 2-2. BATTERY CABLE LENGTH SHOULD BE ADJUSTED PROPERLY AND CLAMPED NOT TO BE CONNECTED REVERSELY.
  - 2-3. NOT LOOSE THE BATTERY CABLE TERMINAL, NOR TURN THE BATTERY SWITCH OFF DURING THE ENGINE RUNNING.
3. ONLY THE SPECIFIED LOAD SHOULD BE APPLIED ON THE ALTERNATOR "L" AND "P" LINE. IT IS NOT ALLOWED TO CONNECT ANY LOAD UNSPECIFIED WITHOUT YANMAR APPROVAL.
4. CHECK ANY SURGE CURRENT OR VOLTAGE OCCURED UNDER NORMAL OPERATIONS AND EXPECTIVE ERRONEOUS OPERATIONS, AND CONFIRM THE CIRCUIT NO SURGE OCCURS. ESPECIALLY PROVIDE THE FLYWHEEL DIODE FOR "C-LOAD" AND DIODE FOR "L-LOAD".

REMARKS

1. \* MARKED PARTS ARE NOT PROVIDED BY YANMAR.



NOTES FOR ENGINE STOP SOLENOID

1. PERMISSIBLE RESISTANCE OF SOLENOID CIRCUIT SHOULD BE LESS THAN 0.07Ω TO GUARANTEE PERMISSIBLE LOWEST VOLTAGE 9V TO WORK SOLENOID (PULL COIL).  
(TERMINAL RESISTANCE : 15/1000Ω PER COUPLER.  
0Ω PER SCREW SETTING.)  
COUPLER RESISTANCE OF SOLENOID DOESN'T NEED TO BE COUNTED)  
REFERENCE : AV2 (0.0088Ω/m) : ≤8.0m... WITHOUT TERMINAL RESISTANCE  
AV3 (0.0056Ω/m) : ≤12.5m... SAME AS ABOVE  
WHEN YOU EXCEED PERMISSIBLE RESISTANCE, ADOPT THE CIRCUIT IMPRESSED FROM THE POWER SUPPLY TO THE SOLENOID DIRECTLY USING A RELAY ... REFER TO #
2. HIGH TEMPERATURE PARTS, SUCH AS AN EXHAUST PIPE, SHOULD NOT APPROACH FOR THE PULL POWER FALL OF SOLENOID, AND HEATING PREVENTION OF INNER COIL TEMPERATURE. (PERMISSIBLE AMBIENT TEMPERATURE: -30~100℃)
3. INSTALL FUSE TO PROTECT THE HARNESS AGAINST TROUBLES SUCH AS SHORT CIRCUIT OR CONTINUOUS DRIVE OF PULL-COIL.
4. THE POWER SUPPLY OF SOLENOID MAY NOT BE COMMON WITH THE LINE OF ALTERNATOR INITIAL EXCITATOR AS SHOWN IN THIS DRAWING. (OTHERWISE, SOLENOID MAY LOOSE STOP FUNCTION DUE TO THE POWER SUPPLY FROM ALTERNATOR "L" TERMINAL.)
5. IN CASE OF WATERPROOF CONNECT OR APPLICATION, CONNECTOR SHOULD BE FIXED BY FITTING TO PREVENT LEAD WIRE BREAK.
6. IN CASE OF EMERGENCY STOP OF MACHINE FOR SAFETY WILL BE APPLIED, SWITCH LOCATION SHOULD BE SHOWN AS A.
7. IN CASE OF THE SOLENOID CIRCUIT RESISTANCE WOULD BE LIMIT, # WIRING IS APPLICABLE.

|              |  |          |  |
|--------------|--|----------|--|
| 形状寸法コード      |  | G.T.CODE |  |
| 真円度・円筒度八、半径法 |  |          |  |

三角法  
3RD ANGLE PROJECTION

面来歴  
CAREER

REV. 1 (2010. 2. 17) ADD THE ALTERNATOR (YDSTX-10019)

|                              |  |                     |  |                        |  |                                      |  |                   |  |                |  |
|------------------------------|--|---------------------|--|------------------------|--|--------------------------------------|--|-------------------|--|----------------|--|
| 素材質量<br>WEIGHT (RAW)         |  | (± %)               |  | 水圧試験<br>HYDRAULIC TEST |  | MPa                                  |  | 小形工<br>G. MANAGER |  | 技部長<br>MANAGER |  |
| 完成質量<br>WEIGHT (精度%)         |  | (± %)               |  | 空圧試験<br>PNEUMATIC TEST |  | MPa                                  |  |                   |  |                |  |
| 主 席                          |  | 長<br>SEC. MANAGER   |  | 機種<br>MODEL            |  | 3TNV 70-HB 3TNV 76-GA, GB 3TNV 76-CS |  | 尺 度<br>SCALE      |  | SCALE OUT      |  |
| 検 図<br>CHECKED               |  | 機能担当者<br>SPECIALIST |  | 個 数<br>QTY.            |  | 1 1 1 1                              |  | 材 質<br>MATERIAL   |  |                |  |
| 設 計<br>DESIGNED              |  | 製 図<br>DRAWN        |  | 年 月 日<br>DATE          |  | 2006 3. 10                           |  | 名 称<br>NAME       |  | WIRING DIAGRAM |  |
| M. Sakamoto                  |  | I. Kondo            |  |                        |  |                                      |  |                   |  | WIRING DIAGRAM |  |
| YANMAR CO., LTD.             |  |                     |  |                        |  |                                      |  | REV. 1            |  | A2             |  |
| POWER SYSTEM OPERATIONS DIV. |  |                     |  |                        |  |                                      |  | コード<br>CODE       |  | E3-19746-0010  |  |

**Fig. 3TNM74F-NH Engine performance curve**

n-BxS : 3-74x77

Displacement : 0.993L

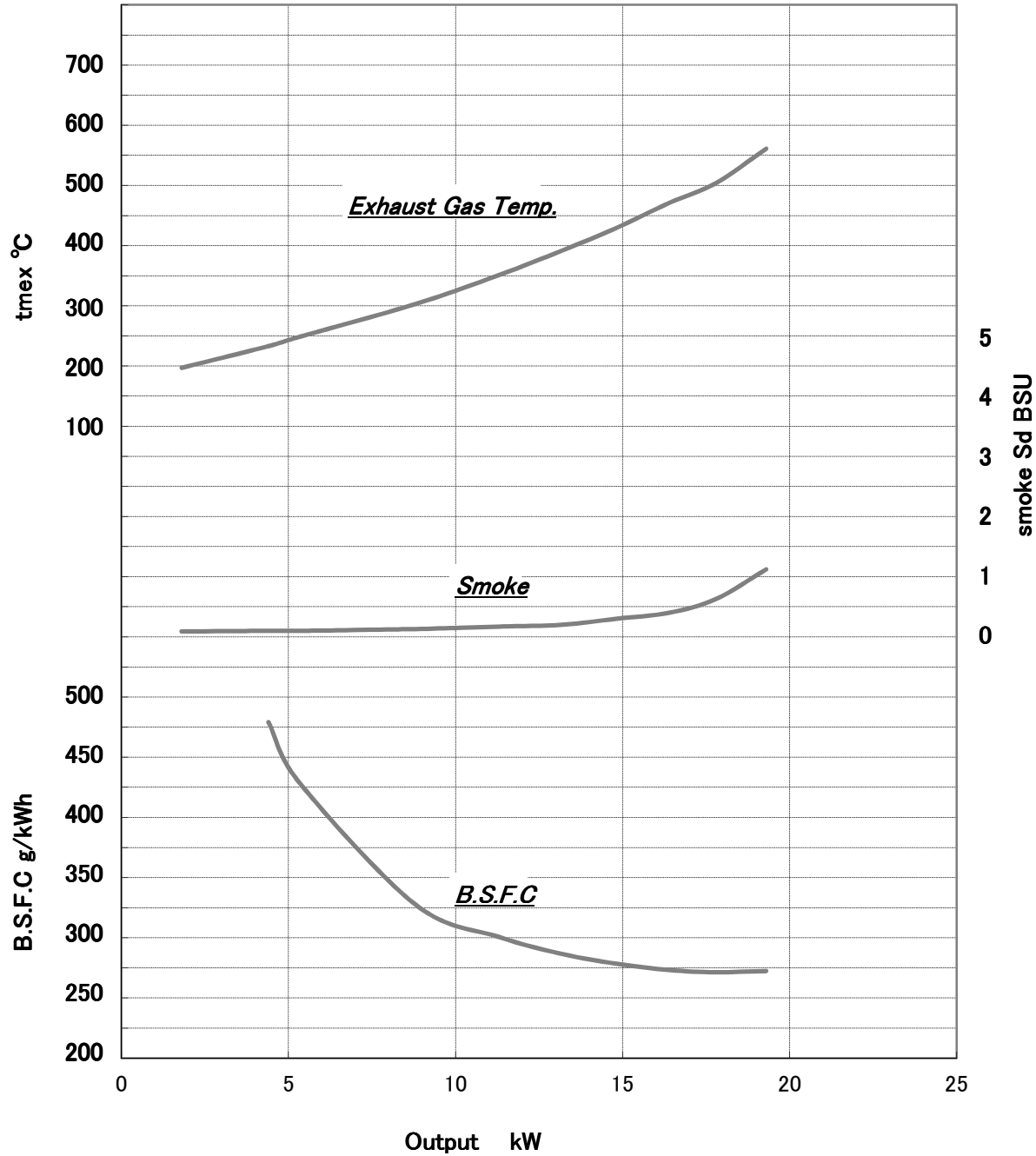
Rated power

Gross: 17.8 kW / 3600 min-1

CW fan

none

|              |   |
|--------------|---|
| Crank pulley | - |
| Fan puley    | - |
| φ-           | - |



# SCOPE OF SUPPLY

G3-19D28-0040

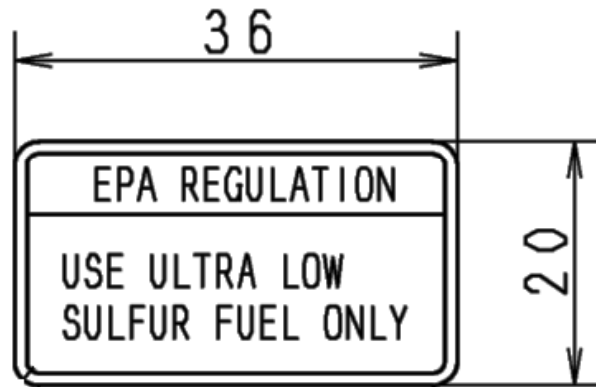
| No                    | ENGINE MODEL                     | 3TNM74F-NHGE | Parts number | Remarks                |
|-----------------------|----------------------------------|--------------|--------------|------------------------|
| <b>FUEL SYSTEM</b>    |                                  |              |              |                        |
| 1                     | Fuel Injection Pump              | installed    | 719D28-51490 | In-line(Yanmar MC)     |
| 2                     | Fuel Injection Nozzle            | installed    | 119C10-53010 | MARK "E"               |
| 3                     | Fuel Transfer Pump               | installed    | 129100-52000 | Mechanical feed pump   |
| 4                     | Fuel Filter                      | installed    | 119E20-55600 |                        |
| 5                     | Fuel Filter Bracket              | installed    | 119028-55650 |                        |
| 6                     | Fuel Injection Line              | installed    | 119D00-59800 |                        |
| 7                     | Fuel Line(to Filter)             | installed    | 129210-59140 | L=380                  |
| 8                     | Fuel Line(Filter to Pump)        | installed    | 129210-59230 | L=205                  |
| 9                     | Fuel Pipe return (from Injector) | installed    | 119125-59570 |                        |
| 10                    | Fuel Pipe return (from Pump)     | installed    | 129210-59140 | L=380                  |
| 11                    | Fuel Pipe return (from CR )      | not provided |              |                        |
| 12                    | Fuel Pipe return (to filter)     | not provided |              |                        |
| 13                    | Water Separator                  | provided     | 119741-55700 | INLET&OUTLET DOWNWARD  |
| 14                    | Throttle Lever                   | installed    | 119746-61440 |                        |
| <b>LUB,OIL SYSTEM</b> |                                  |              |              |                        |
| 15                    | Oil Pan                          | installed    | 119025-01760 | DEEP DRAIN INT. SIDE   |
| 16                    | Oil filler Extension pipe        | not provided |              | Cap, filler (2 places) |
| 17                    | Breather Pipe                    | not provided |              |                        |
| 18                    | Return Joint,breather            | not provided |              |                        |
| 19                    | Switch ,lub .oil pressure        | installed    | 114250-39450 | CA104_TYPE             |
| 20                    | Sender, lube oil pressure        | not provided |              |                        |
| 21                    | Dipstick                         | installed    | 119025-34810 | DEEP STICK TYPE        |
| 22                    | Guide ,dipstick                  | installed    | 119125-34810 | DEEP STICK TYPE        |
| 23                    | Oil filter                       | installed    | 119305-35160 |                        |
| 24                    | Oil Cooler                       | not provided |              |                        |
| <b>COOLING SYSTEM</b> |                                  |              |              |                        |
| 25                    | Radiator                         | not provided |              |                        |
| 26                    | Rubber Isolaters                 | not provided |              |                        |
| 27                    | Pipe A,radiator                  | not provided |              |                        |
| 28                    | Pipe B,radiator                  | not provided |              |                        |
| 29                    | Hose Clamp                       | not provided |              |                        |
| 30                    | Sub tank(radiator)               | not provided |              |                        |
| 31                    | Water Pump                       | installed    | 119025-42001 | LOW POSITION           |
| 32                    | Cooling Fan                      | installed    | 119265-44740 | φ310push(UI)           |
| 33                    | Spacer ,fan                      | installed    | 129457-44760 | t=30                   |
| 34                    | Guard ,fan                       | not provided |              |                        |
| 35                    | Pully ,fan                       | installed    | 119740-42350 | D90                    |
| 36                    | V-Belt                           | installed    | 25132-003450 | 34.5inch               |
| 37                    | Switch, water temp.              | installed    | 121250-44901 | 110-On                 |
| 38                    | Sender, water temp.              | not provided |              |                        |
| 39                    | Thermostat                       | installed    | 119717-49100 | 71 DEG                 |
| 40                    | Thermostat Cover                 | installed    | 129350-49530 | COVER UPPER            |
| 41                    | Water Drain Fitting              | installed    | 171056-49120 | PLUG                   |
| 42                    | 3-Way Plug, cooling water        | not provided |              |                        |

# SCOPE OF SUPPLY

G3-19D28-0040

| No                             | ENGINE MODEL                   | 3TNM74F-NHGE | Parts number | Remarks                      |
|--------------------------------|--------------------------------|--------------|--------------|------------------------------|
| <b>PTO SYSTEM</b>              |                                |              |              |                              |
| 43                             | Flywheel Housing or Back plate | installed    | 119D00-01600 | SAE#5 t=111                  |
| 44                             | Flywheel                       | installed    | 119D00-21580 | SAE#5 for 6-1/2 Clutch       |
| 45                             | Bearing, retainer              | not provided |              |                              |
| 46                             | Pully, crankshaft              | installed    | 119125-21650 | D100                         |
| 47                             | Gear case                      | not provided |              |                              |
| 48                             | Cover gear case                | installed    | 119025-01530 |                              |
| 49                             | Hydraulic Pump                 | not provided |              |                              |
| 50                             | Device, hydraulic pump         | not provided |              |                              |
| <b>INTAKE/EXHAUST SYSTEM</b>   |                                |              |              |                              |
| 51                             | Air Cleaner                    | not provided |              |                              |
| 52                             | Bracket, air cleaner           | not provided |              |                              |
| 53                             | Throttle, intake               | not provided |              |                              |
| 54                             | Manifold, intake               | not provided |              |                              |
| 55                             | Joint                          | not provided |              |                              |
| 56                             | Muffler                        | not provided |              |                              |
| 57                             | DPF                            | not provided |              |                              |
| 58                             | Sensor Unit, Pressure          | not provided |              |                              |
| 59                             | Manifold, exhaust              | installed    | 119717-13109 | UPPER W/STAY                 |
| 60                             | Gasket ,Manifold ,exhaust      | provided     | 119515-13200 | PC□ 52 As loose parts        |
| 61                             | Bend, exhaust                  | not provided |              |                              |
| 62                             | Gasket ,muffler or DPF         | not provided |              |                              |
| 63                             | Throttle, exhaust              | not provided |              |                              |
| 64                             | EGR Pipe                       | not provided |              |                              |
| 65                             | EGR Valve                      | not provided |              |                              |
| 66                             | EGR Cooler                     | not provided |              |                              |
| 67                             | Turbine                        | not provided |              |                              |
| <b>ELECTRIC SYSTEM</b>         |                                |              |              |                              |
| 68                             | Starter                        | installed    | 119515-77010 | 12V-1.0kW_DENSO              |
| 69                             | Alternator                     | installed    | 129423-77200 | 12V-40A                      |
| 70                             | Relay ,solenoid                | provided     | 119650-77911 | DC12V/40A 10MIN FOR SOLENOID |
| 71                             | Timer ,solenoid                | provided     | 129211-77920 | FOR SOLENOID 1 S             |
| 72                             | Engine Shut Off                | installed    | 129630-77910 | NON-WATER PROOF COUPLER      |
| 73                             | Starting Aid                   | installed    | 119717-77801 | GLOW                         |
| 74                             | Harness (Glow Plug             | installed    | 119717-77820 | NON-WATER PROOF COUPLER      |
| 75                             | Diode, solenoid relay          | provided     | 119643-66900 | 600V/1.1A                    |
| 76                             | Relay, air heater (glow)       | not provided |              |                              |
| 77                             | Relay, starter                 | not provided |              |                              |
| 78                             | Relay, EGR valve               | not provided |              |                              |
| 79                             | Current Limiter                | not provided |              |                              |
| 80                             | Safety relay, starter          | not provided |              |                              |
| <b>ELECTRIC CONTROL SYSTEM</b> |                                |              |              |                              |
| 81                             | ECU or DRIVER, Solenoid        | not provided |              |                              |
| 82                             | Main Relay                     | not provided |              |                              |
| 83                             | Rack Actuator Relay            | not provided |              |                              |
| 84                             | Accelerator Sensor             | not provided |              |                              |
| 85                             | Harness(A                      | not provided |              |                              |
| 86                             | Harness(B                      | not provided |              |                              |
| 87                             | Harness(C                      | not provided |              |                              |

| SCOPE OF SUPPLY |                          |              |              | G3-19D28-0040 |
|-----------------|--------------------------|--------------|--------------|---------------|
| No              | ENGINE MODEL             | 3TNM74F-NHGE | Parts number | Remarks       |
| <b>GAUGE</b>    |                          |              |              |               |
| 88              | Drive Unit ,tachometer   | installed    | 121023-01551 | COVER(TACHO   |
| 89              | Cable ,tachometer        | not provided |              |               |
| 90              | Tachometer               | not provided |              |               |
| 91              | Key Switch               | not provided |              |               |
| 92              | Cover ,terminals         | not provided |              |               |
| 93              | Pilot lamp               | not provided |              |               |
| 94              | Gauge, oil / water temp. | not provided |              |               |
| 95              | Gauge, oil pressure      | not provided |              |               |
| <b>OTHERS</b>   |                          |              |              |               |
| 96              | Filter Wrench ,lub .oil  | not provided |              |               |
| 97              | Filter Wrench ,fuel .oil | not provided |              |               |



$t = 0.05$

#### 字体寸法及ビ色

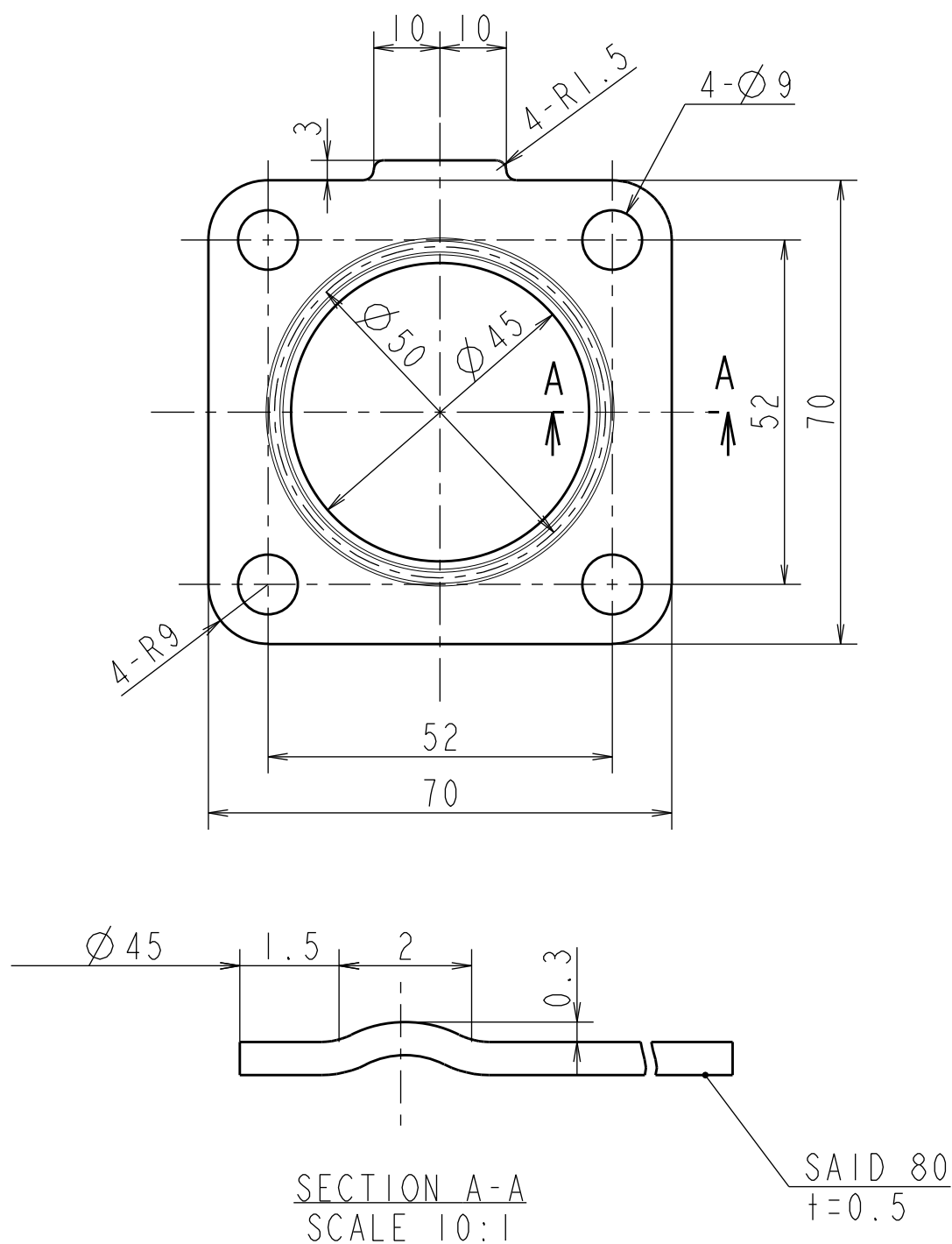
|     |                                      |
|-----|--------------------------------------|
| 字 体 | ブロックレター (sans serif, upper-case) トスル |
| 大キサ | 上図ヲ参照ノコト                             |
| 色   | 文字ハ黒、下地ハ白トスル                         |

#### LETTER SIZE AND COLOR

|       |                                       |
|-------|---------------------------------------|
| TYPE  | BLOCK LETTER (sans serif, upper-case) |
| SIZE  | REFER TO UPPER FIGURE                 |
| COLOR | LETTER: BLACK    OTHERS: WHITE        |

| <b>YANMAR</b><br>ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD. |              |
|-------------------------------------------------------------------|--------------|
| MODEL                                                             | TN SERIES    |
| NAME                                                              | LABEL        |
| PART No.                                                          | 114110-07761 |

3D-CAD



GASKET, SILENCER

カスケットPK(サイレンサ)

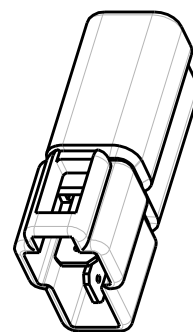
**YANMAR**

ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.

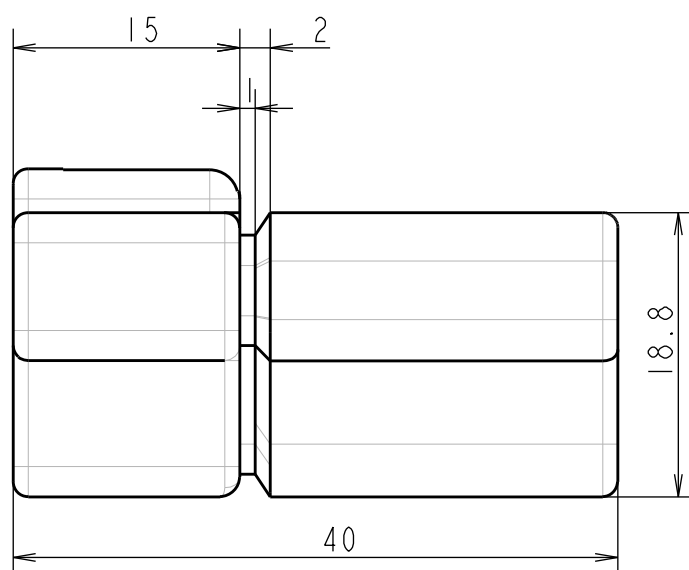
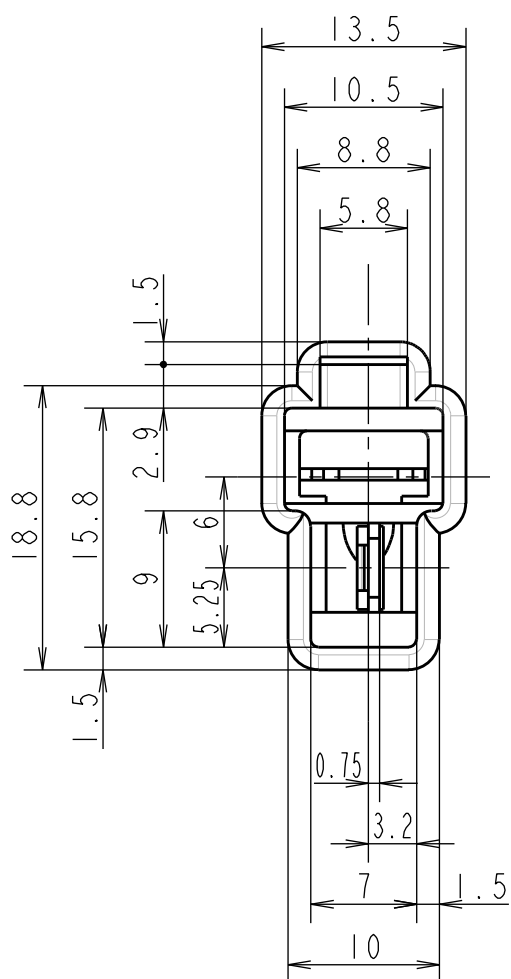
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SEPARATOR,WATER

3D-CAD



SCALE 1:1

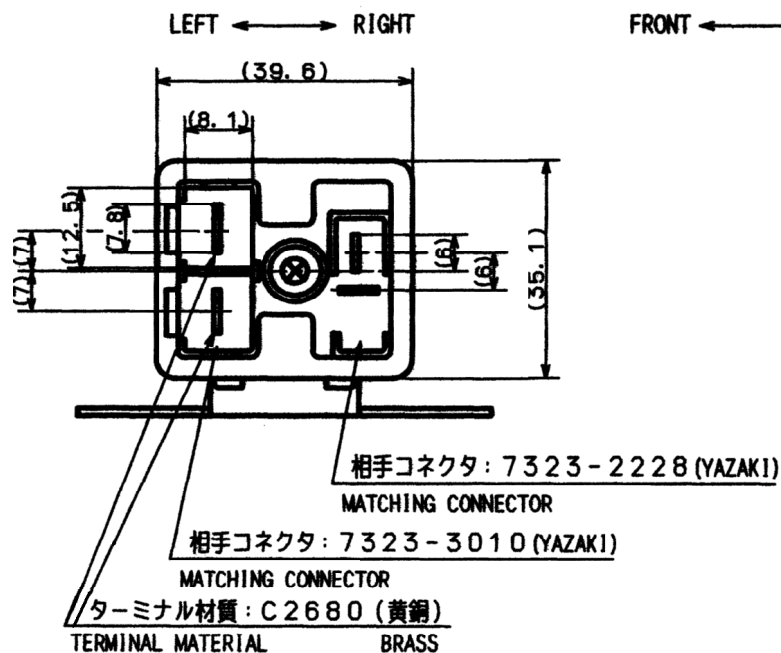
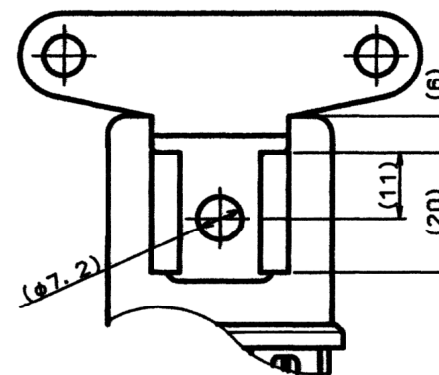
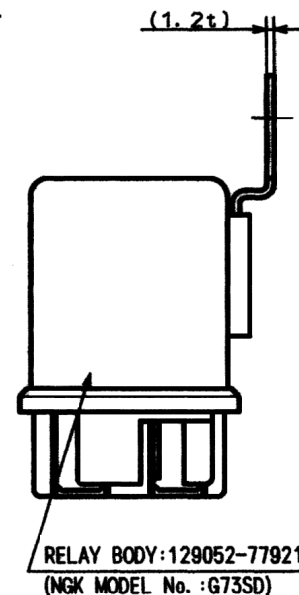
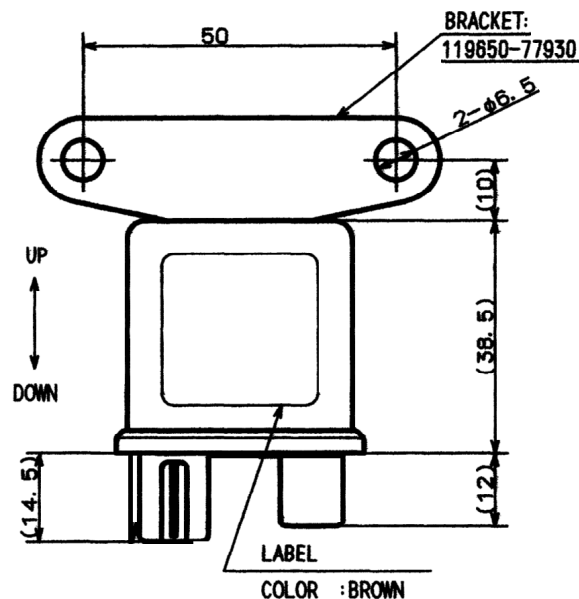
DIODE  
ダイオード**YANMAR**

ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.

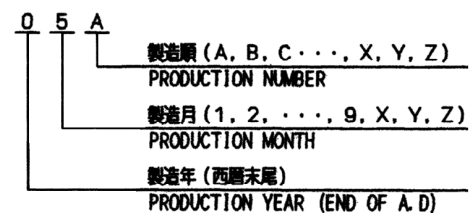
CODE

119643-66900

ENG. MODEL

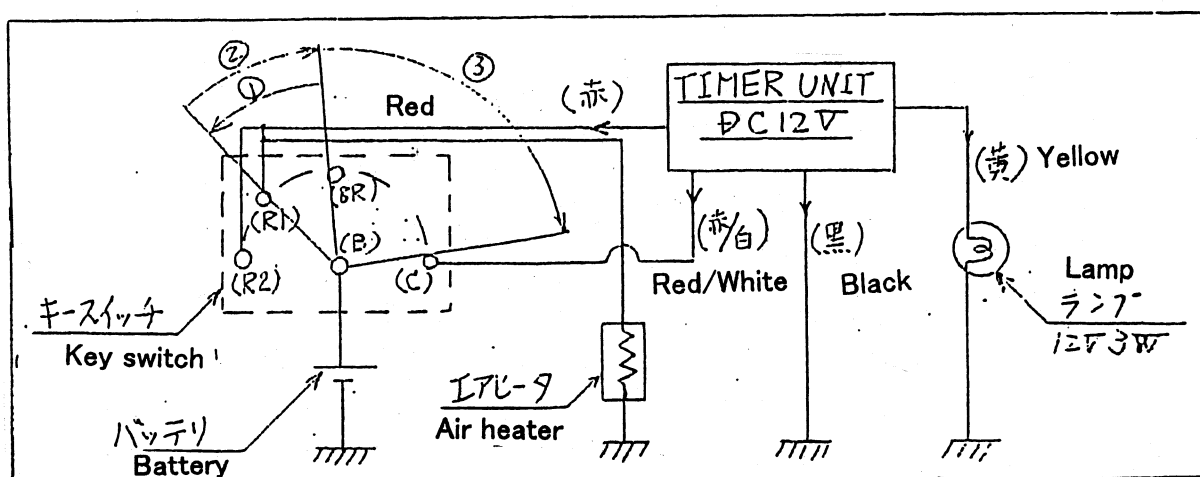
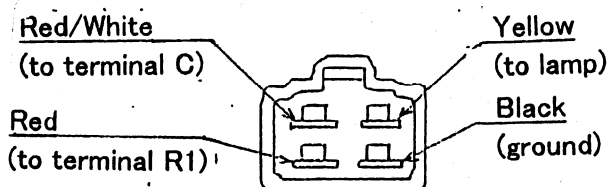
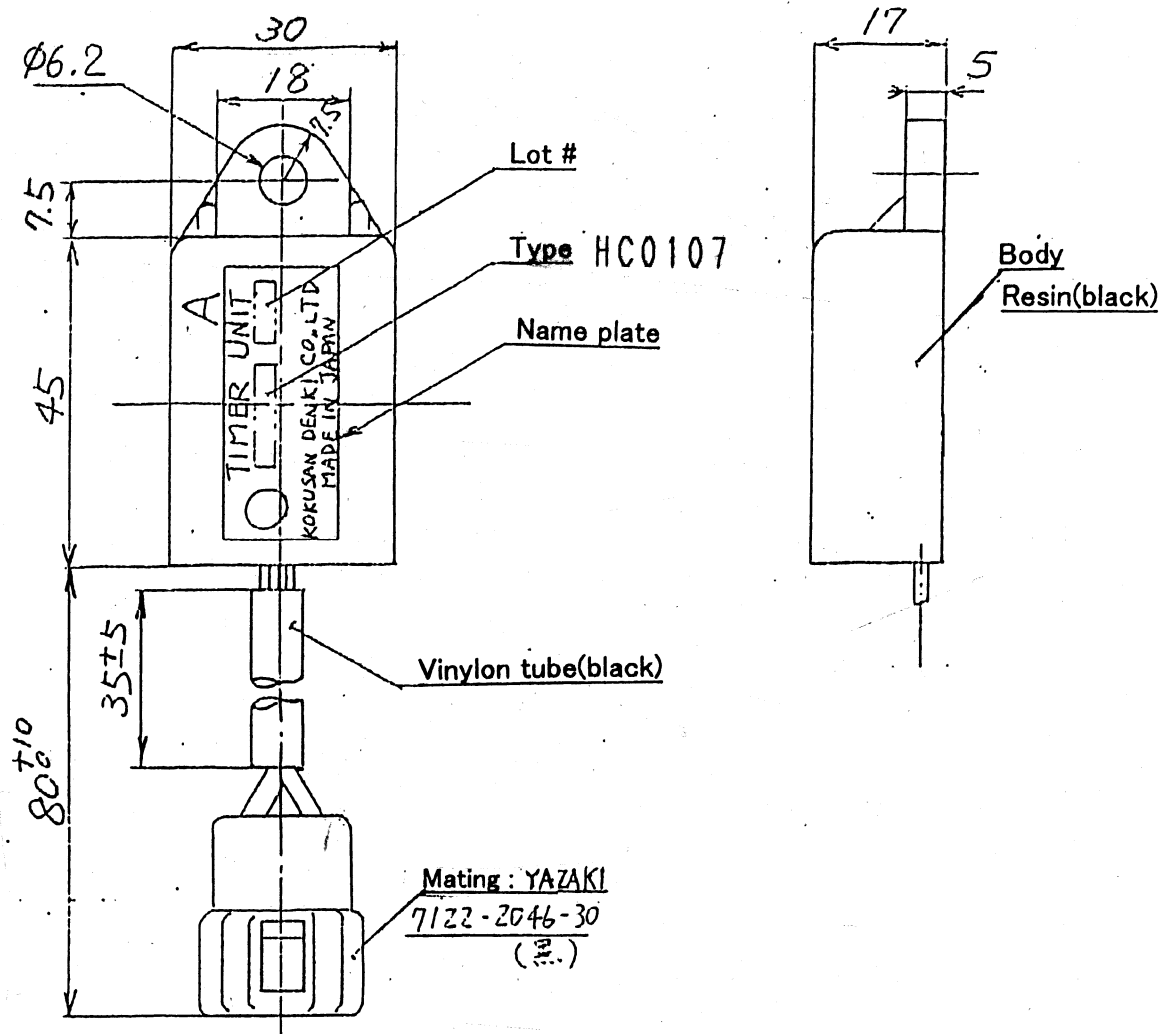


ロットNo. 表示方法  
METHOD OF LOT NUMBER MARKING



|                           |                |
|---------------------------|----------------|
| 定格電圧<br>RATED VOLTAGE     | DC 12 V        |
| 連続定格<br>CONTINUOUS RATED  | 10 MIN         |
| コイル抵抗値<br>COIL RESISTANCE | 37Ω            |
| インダクタンス<br>INDUCTANCE     | 66mH (at 1kHz) |

| <b>YANMAR</b><br><small>ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.</small> |                              |
|----------------------------------------------------------------------------------|------------------------------|
| MODEL                                                                            | TN SERIES                    |
| NAME                                                                             | グローリレーCMP<br>RELAY ASSY,GLOW |
| PART No.                                                                         | 119650-77911                 |



Wiring Diagram

YANMAR DIESEL

|            |              |
|------------|--------------|
| PARTS NAME | TIMER 4SEC.  |
| PARTS CODE | 129155-77925 |

**YANMAR DIESEL ENGINE CO., LTD.**

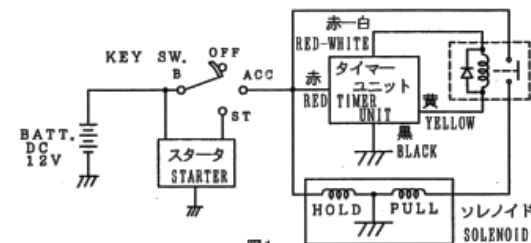
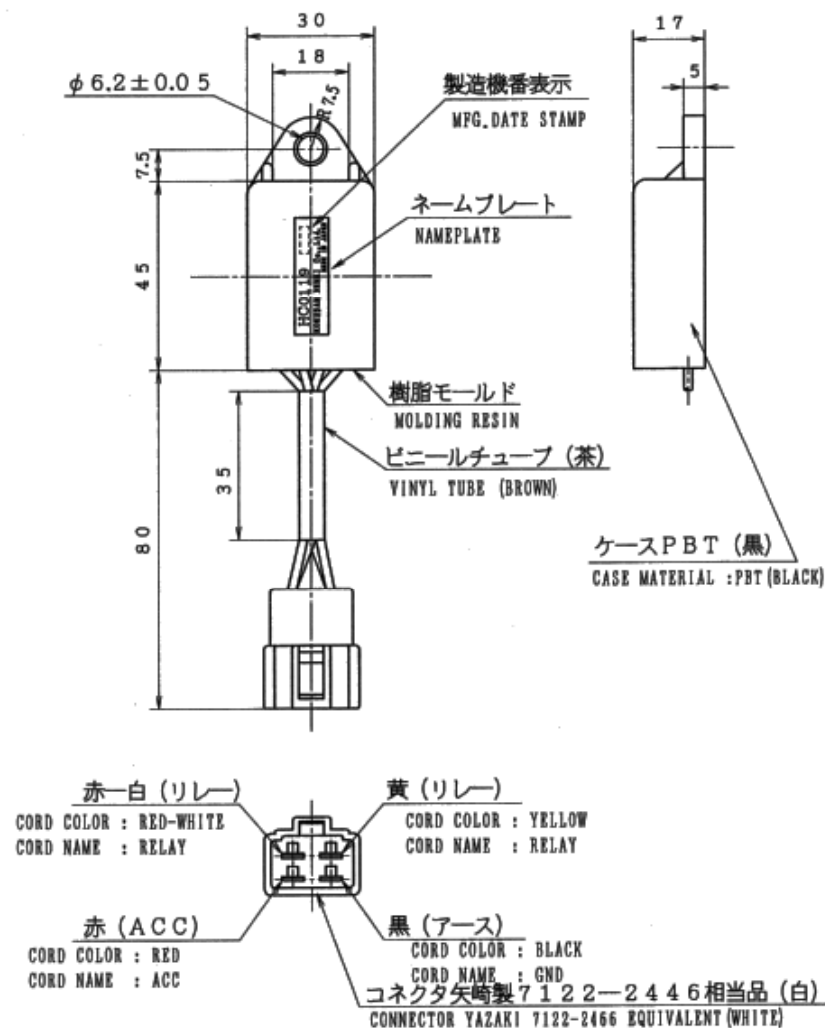


図1  
FIG.1

| 工程 PROCESS | B | ACC | ST |
|------------|---|-----|----|
| OFF        |   |     |    |
| ON         |   |     |    |
| ST         |   |     |    |

図2  
FIG.2

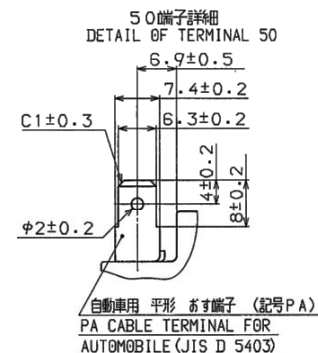
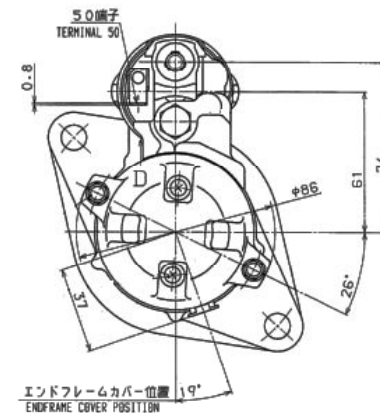
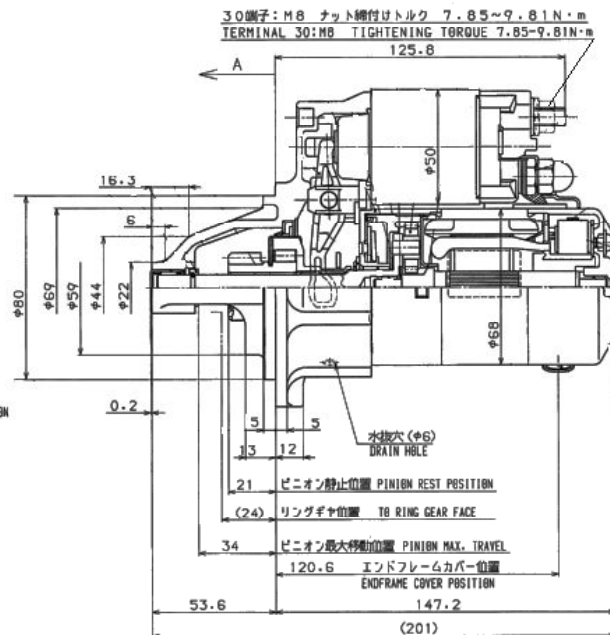
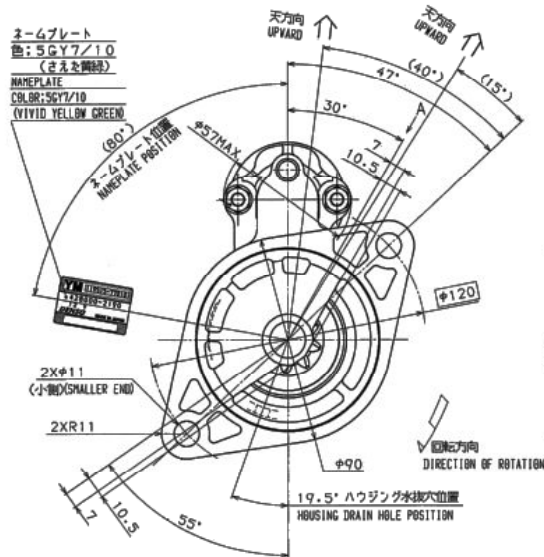
| 項目 ITEM                   | 動作シーケンス OPERATION SEQUENCE |
|---------------------------|----------------------------|
| キー<br>スイッチ<br>KEY SWITCH  | OFF ON ST                  |
| グローリレー<br>GLOW RELAY      | OFF ON OFF<br>1.0±0.5sec   |
| ソレノイド<br>SOLENOID<br>PULL | OFF ON OFF                 |
| ソレノイド<br>SOLENOID<br>HOLD | OFF ON                     |
| スタータ<br>STARTER           | OFF ON                     |

図3  
FIG.3

**YANMAR**

ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.

|          |                 |
|----------|-----------------|
| MODEL    | TN SERIES       |
| NAME     | TIMER,SECTION 1 |
| PART No. | 129211-77920    |

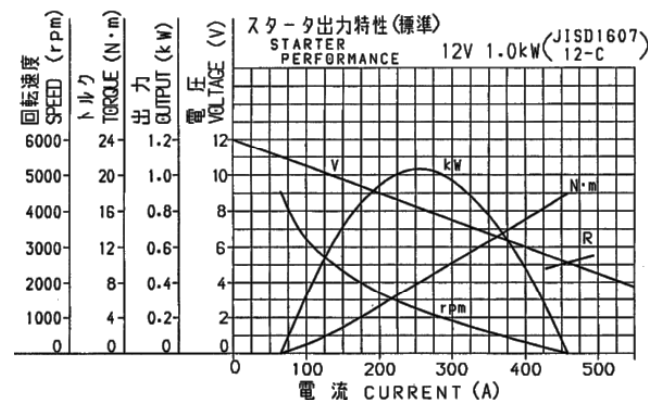


| スタータ性能 (20℃) |                    |               |
|--------------|--------------------|---------------|
| 無負荷          | 電圧11.5Vにて 電流90A以下  | 回転速度3000rpm以上 |
| 負荷           | 電圧8V 回転速度1240rpm以上 | トルク4.71N・m以上  |
| 拘束           | 電圧2.5Vにて 電流260A以下  | トルク4.91N・m以上  |
| 作動電圧         | リングギヤ位置にて 8V 以下    |               |

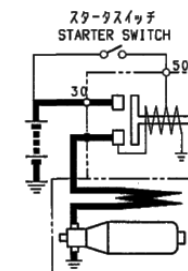
| STARTER PERFORMANCE (20℃) |                           |                                               |
|---------------------------|---------------------------|-----------------------------------------------|
| NO LOAD                   | AT 11.5V                  | CURRENT : 90A MAX.<br>SPEED : 3000rpm MIN.    |
| LOAD                      | AT 8V<br>200A             | SPEED : 1240rpm MIN.<br>TORQUE : 4.71N・m MIN. |
| STALL                     | AT 2.5V                   | CURRENT : 260A MAX.<br>TORQUE : 4.91N・m MIN.  |
| OPERATING VOLTAGE         | AT RING GEAR FACE 8V MAX. |                                               |

| スタータ仕様                |                                  |
|-----------------------|----------------------------------|
| 定格電圧                  | 12V                              |
| 定格出力                  | 1.0kW (JIS 12-C)                 |
| 定格時間                  | 30秒                              |
| 質量                    | 約2850g                           |
| 回転方向                  | ピニオン側より見て右                       |
| バッテリー                 |                                  |
| STARTER SPECIFICATION |                                  |
| RATED VOLTAGE         | 12V                              |
| RATED OUTPUT          | 1.0kW (JIS 12-C)                 |
| RATED TIME            | 30s                              |
| MASS                  | APPROX. 2850g                    |
| DIRECTION OF ROTATION | CLOCKWISE VIEWED FROM PINION END |
| BATTERY               |                                  |

| ピニオン仕様                          |                                          |
|---------------------------------|------------------------------------------|
| モジュール                           | 2.54                                     |
| 歯数                              | 9                                        |
| 圧力角                             | 20°                                      |
| ピッチ円径                           | φ22.86                                   |
| 外径                              | φ29.64 <sup>+0.21</sup> <sub>-0.15</sub> |
| 歯底径                             | φ20.02 <sup>+0.15</sup> <sub>-0.10</sub> |
| 転位量                             | (1.27)                                   |
| 2枚またぎ歯厚                         | 12.45 <sup>+0.08</sup> <sub>-0.08</sub>  |
| 硬度                              | HRC57~65                                 |
| PINION SPECIFICATION            |                                          |
| MODULE                          | 2.54                                     |
| NUMBER OF TEETH                 | 9                                        |
| PRESSURE ANGLE                  | 20°                                      |
| PITCH DIA.                      | φ22.86                                   |
| OUTSIDE DIA.                    | φ29.64 <sup>+0.21</sup> <sub>-0.15</sub> |
| ROOT DIA.                       | φ20.02 <sup>+0.15</sup> <sub>-0.10</sub> |
| AMOUNT OF ADDENDUM MODIFICATION | (1.27)                                   |
| TOOTH THICKNESS OVER 2 TEETH    | 12.45 <sup>+0.08</sup> <sub>-0.08</sub>  |
| SURFACE HARDNESS                | HRC57~65                                 |

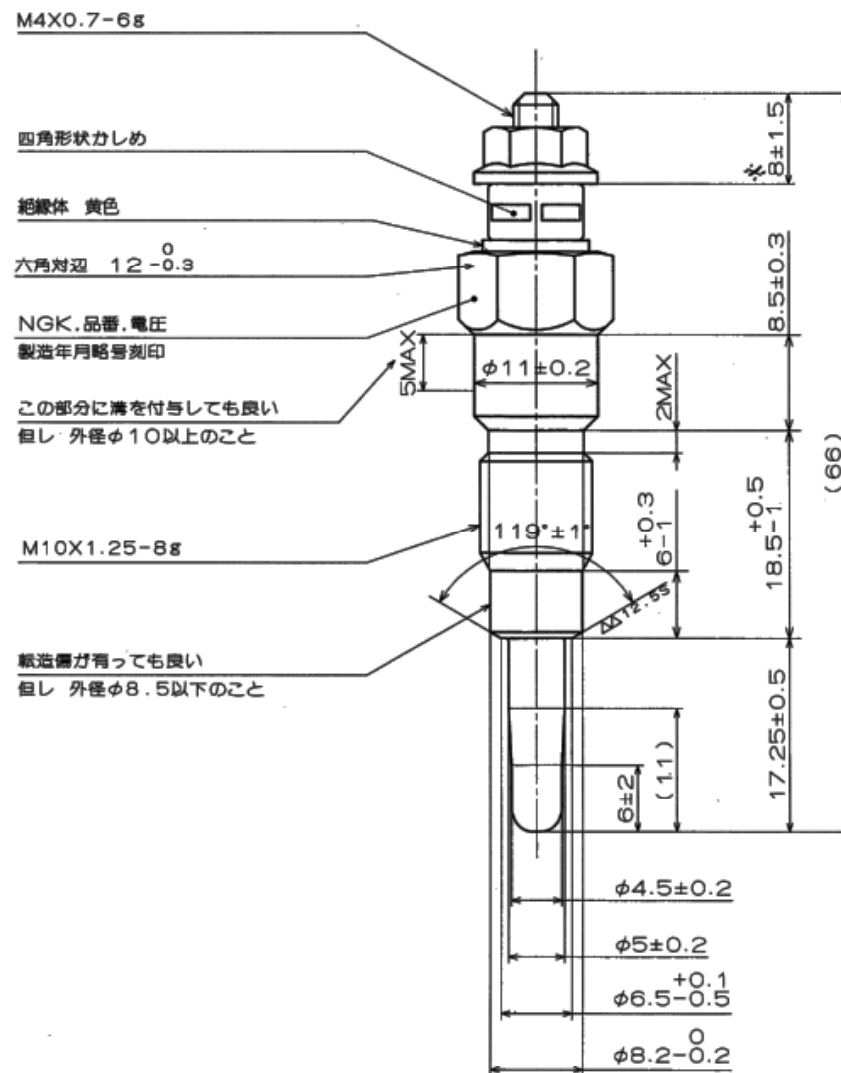


スタータ結線図  
CONNECTING DIAGRAM



| YANMAR<br>ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD. |               |
|------------------------------------------------------------|---------------|
| MODEL                                                      | TN SERIES     |
| NAME                                                       | スタータ(P1.1)    |
|                                                            | STARTER, P1.1 |
| PART No.                                                   | 119515-77010  |

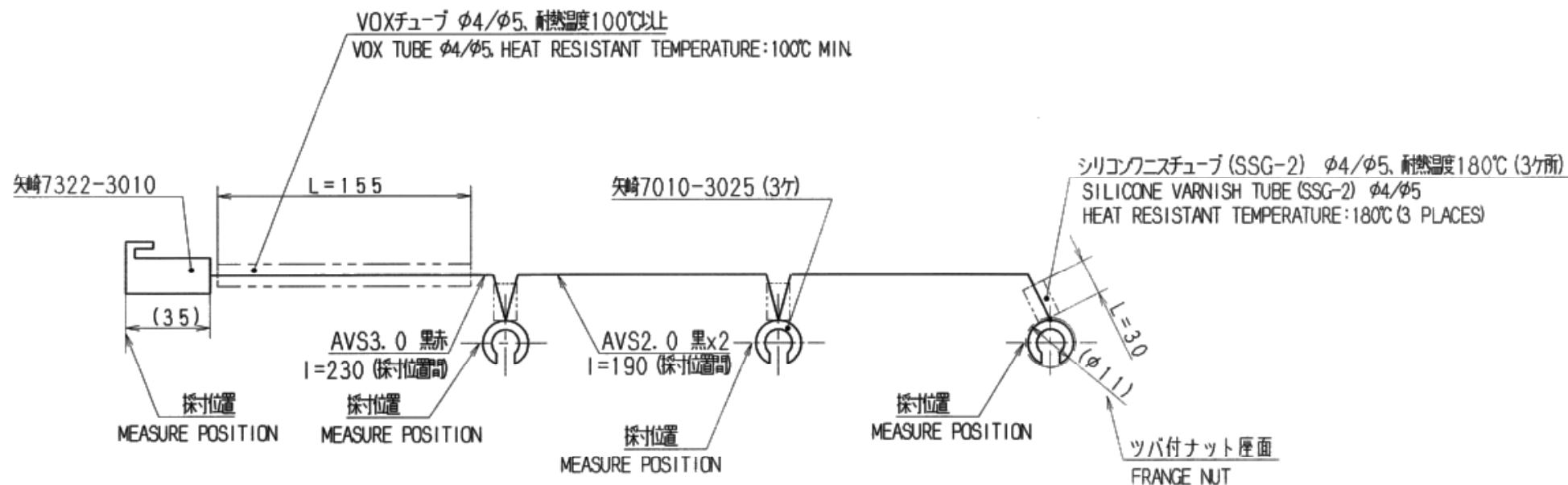




# [仕様]

|          |                                                    |
|----------|----------------------------------------------------|
| 1. 定格電圧  | DC11V                                              |
| 2. 温度上昇  | 定格電圧を印加4秒時の温度は800 <sup>+100</sup> <sub>-50</sub> ℃ |
| 3. 締付トルク | 本体 (M10×1.25) 15~20N・m<br>端子ナット (M4×0.7) 1~1.5N・m  |
| 4. 電流値   | 9.0±1.0A                                           |

| <b>YANMAR</b><br>ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD. |              |
|-------------------------------------------------------------------|--------------|
| MODEL                                                             | TN SERIES    |
| NAME                                                              | プラグ(グロー      |
|                                                                   | PLUG, GLOW   |
| PART No.                                                          | 119717-77801 |



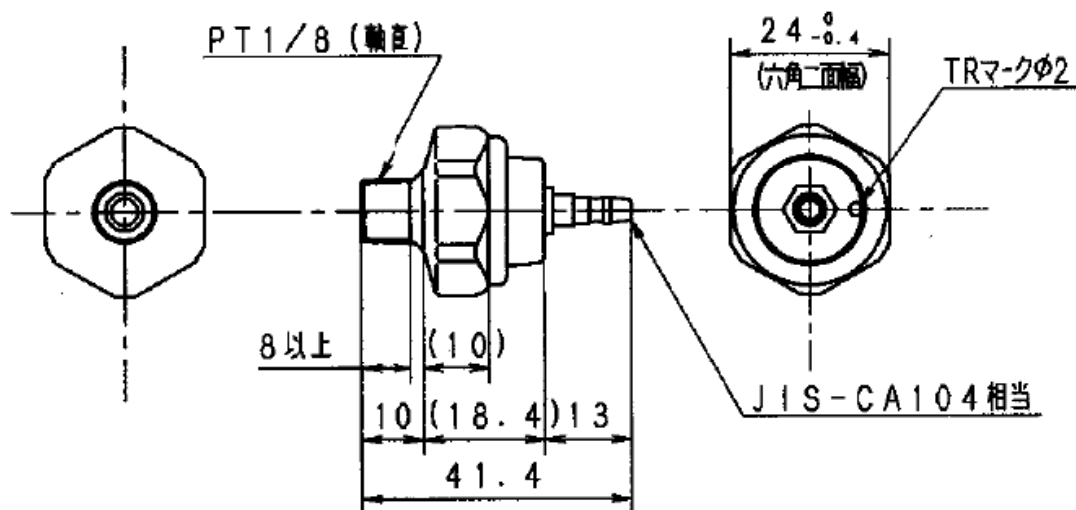
注記

1. 使用電線ハ自動車用薄肉低圧線AVS (耐熱温度:80℃以上) トスル
2. シリコンワニスチューブハM4ツバ付ナット座面 (φ11) ニカカラヌコト

NOTES

CABLES SHALL BE AUTOMOTIVE THIN LOW TENSION CABLE "AVS" (JASO D611)

| <b>YANMAR</b><br>ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD. |                     |
|-------------------------------------------------------------------|---------------------|
| MODEL                                                             | TN SERIES           |
| NAME                                                              | CONNECTOR,GLOW PLUG |
| PART No.                                                          | 119717-77820        |

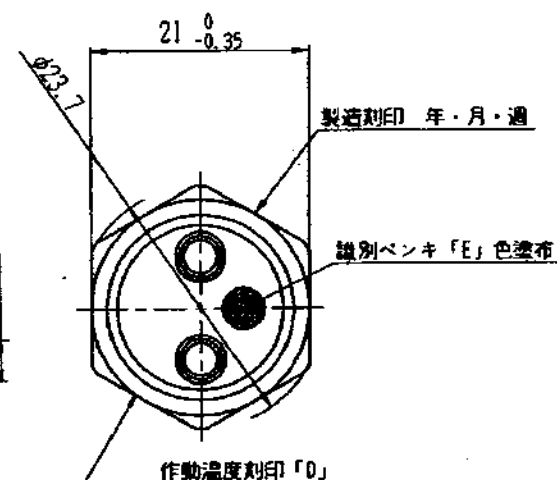
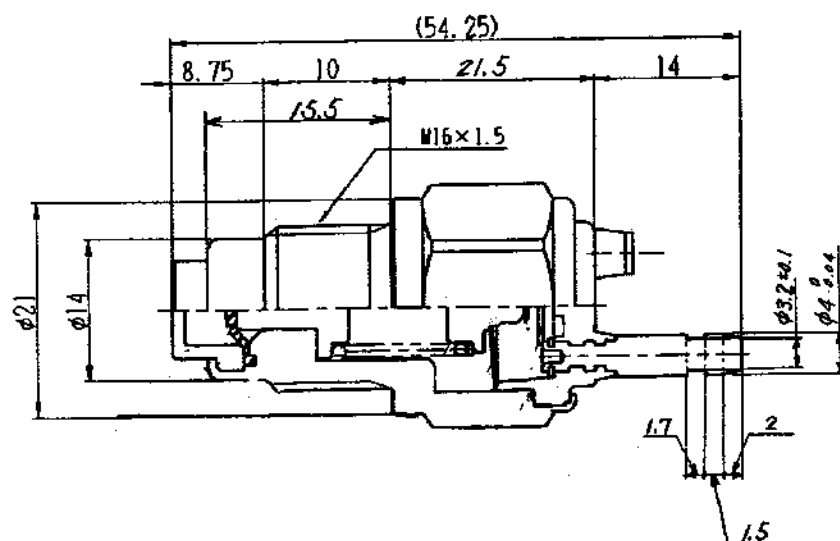


### SPECIFICATION

1. RATED VOLTAGE ; DC6V, 12V, 24V
2. RATED ROAD ; 5W
3. WORKING PRESSURE ;  $0.5 \pm 0.1 \text{ kg/cm}^2$

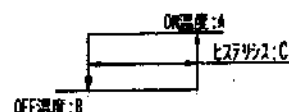
**YANMAR CO., LTD.**

|           |                     |
|-----------|---------------------|
| PART NAME | OIL PRESSURE SWITCH |
| PART CODE | 114250-39450        |



# 仕様

## 1. 作動温度



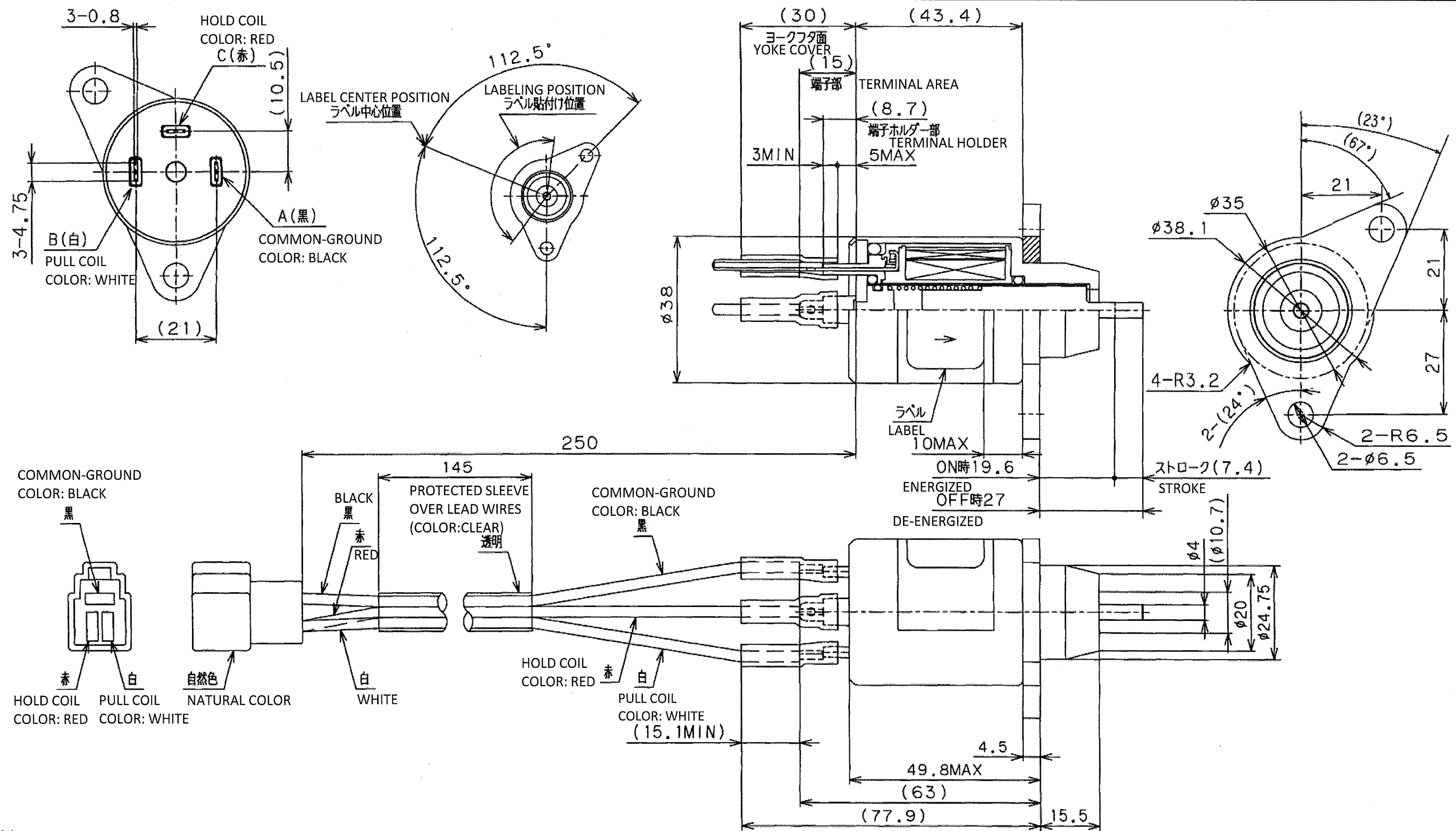
2. 電気容量 DC12V-1A or DC24V-0.5A-
3. 絶縁抵抗 初期100MΩ以上 耐久後10MΩ以上(500V $\times$ 1分にて)
4. 電圧降下 0.5V以下(12V-1A)
5. 耐振性 JIS D 1601にて異常なきこと。(20G)
6. 耐熱性 130℃, 100時間にて異常なきこと。
7. 耐久性 5万回動作後異常なきこと。
8. 締付トルク 27.46 $\pm$ 3.92N $\cdot$ m (280 $\pm$ 40kgf $\cdot$ cm)  
(限界17749.03N $\cdot$ m (500kgf $\cdot$ cm))
9. 使用温度範囲 -40℃ $\sim$ +130℃
10. 耐圧性 130℃, 294.20kPa(3kgf/cm $^2$ )にて異常なきこと。

## SPECIFICATIONS

1. TEMPERATURE : ON 110 $\pm$ 3℃  
OFF 100℃ MIN.
2. CAPACITY : DC12V - 1A or DC24V - 0.5A
3. INSULATION RESISTANCE : MINIMUM 10Mohms  
(AFTER ENDURANCE TESTING)
4. VOLTAGE DROP : 0.5V or LESS
5. VIBRATION RESISTANCE : 20G
6. HEAT RESISTANCE : 130℃ $\times$ 100 hrs
7. DURABILITY : 50000 cycle
8. TIGHTNING TORQUE : 27.46 $\pm$ 3.92N $\cdot$ m (280 $\pm$ 40kgf $\cdot$ cm)  
(LIMIT TORQUE 49.03N $\cdot$ m (500kgf $\cdot$ cm))
9. TEMPERATURE RANGE : -40℃ TO +130℃
10. PRESSURE RESISTANCE : 294.2kPa AT 130℃

## YANMAR DIESEL ENGINE CO., LTD. ENGINE DEVELOPMENT DEPT.

|          |                     |
|----------|---------------------|
| MODEL    | TNEシリーズ             |
| 部品名称     | サーモスイッチ             |
| NAME     | SWITCH, WATER TEMP. |
| PART No. | 121250-44901        |



#### 仕様

1. 定格電圧: 12VDC
2. 定格電流: 吸引コイル: 30.8Amps  
保持コイル: 0.482Amps
3. 仕様周囲温度: -30°C ~ +121°C
4. 吸引力: 電圧9VDC、周囲温度121°Cに於いて保持出来る
5. 保持力: 電圧8VDC、周囲温度121°C及び  
電圧6VDC、周囲温度80°Cに於いて保持出来る

#### SPECIFICATION FOR REFERENCE ONLY:

1. RATED VOLTAGE: 12V DC
2. RATED CURRENT: PULL COIL: 30.8AMPS  
HOLD COIL: 0.482AMPS
3. TEMPERATURE RANGE: -30deg.C TO 121deg.C
4. PULL FORCE: MUST PULL IN AGAINST RETURN SPRING AT 9V DC AND 121deg.C
5. HOLD FORCE: MUST HOLD IN AGAINST RETURN SPRING AT 8V DC AND 121deg.C AND  
MUST HOLD IN AGAINST RETURN SPRING AT 6V DC AND 80deg.C

#### YANMAR CO., LTD.

|                    |                       |
|--------------------|-----------------------|
| 部品コード<br>PART CODE | 129630-77910          |
| 部品名称<br>PART NAME  | ストップソレノイド<br>SOLENOID |