



YANMAR CO.,LTD.

G3-29285-0021

3TNV88-BDSA

for Industry

SPECIFICATIONS & DRAWINGS FOR MASS PRODUCTION

3.Mar.2008

YANMAR CO.,LTD.

ENGINE SPECIFICATIONS

G3-29285-0021

No	Model name	3TNV88-BDSA		Remarks	
1	Type	4 cycle, Inline, Water-cooled Diesel			
2	No. of cylinders-Bore×Stroke	mm	3-φ88×90		
3	Combustion system		Direct Injection		
4	Compression ratio		19.1		
5	Displacement	litter	1.642		
6	Rated output	kW(PS)	26.9(36.6)		
		min ⁻¹	3000		
7	Gross output	kW(PS)	28.2(38.3)		
		min ⁻¹	3000		
8	Intermediate torque	N·m	98.8~107.7		
		min ⁻¹	1800(+100/-100)		
9	Specific fuel consumption	g/kW-h(g/PS-h)	263(194)	at rated output	
10	Ambient condition		25°C、750mmHg、30%		
11	Engine speed at no load	Max.	min ⁻¹	3210	+25/-25
		Min.	min ⁻¹	1000	+25/-25
12	Governorability	Governor type		centrifugal-all speed governor	
		Temporary	%	max.12	load
		Permanent	%	max.7	100%
		Recovery time	sec	max.6	↓
		Stability	min ⁻¹	max.22	0%
13	Gradients	Longitudinal	deg	35(30)	intermitted
		Lateral	deg	35(30)	() : 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	approx.148		
17	Fuel injection timing	deg	FIT13.5(+1.0/-1.0)	FIT b.T.D.C	
18	Fuel system	Fuel type		Diesel oil	
		Fuel injection pump		Distributortype(YPD-MP2), Yanmar made	
		Fuel injection nozzle		hole type	
		Fuel filter		paper element	
19	Lubrication system	System		forced feed	
		Oil grade		API class CD, SAE grade 10W30	
		Oil pump		trochoid pump	
		Oil filter		paper element	
		Oil capacity	litter	6.7	max.
			litter	2.8	effective.
		Oil pressure	kgf/cm ²	4	at rated output
kgf/cm ²	0.6		at low idle		
20	Cooling system	Heat exchanger		none	
		Pressure cap	kgf/cm ²	0.9	
		Fan		7-φ360	
		Coolant capacity	litter	2	

3TNV88-BDSA

ENGINE SPECIFICATIONS

G3-29285-0021

No	Model name	3TNV88-BDSA	Remarks
21	Air cleaner	none	
22	Breather system	closed	
23	Muffler	none	
24	Starting system	Starter	12V-1.7kW
		Battery	80D26
		Starting aid	glow plug(super quick glow)
25	Generator	12V-40A	
26	Engine color	Silver	
27	Applied regulation	EPA Int4,EC(NRMM)Stage III A,ARB-OR-Int4	

<Career>

	W.No.	3TNV88-BDSA
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3TNV88-BDSA

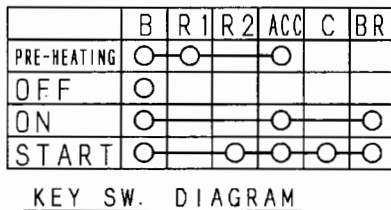
SCOPE OF SUPPLY

G3-29285-0021

No	ENGINE MODEL	3TNV88-BDSA	Parts number	Remarks
FUEL SYSTEM				
1	Fuel Injection Pump	installed	729285-51300	
2	Fuel Injection Nozzle	installed	729604-53200	in basic, Mark "RDK"
3	Fuel Transfer Pump	provided	119225-52102	Electric, As loose parts
4	Fuel Filter	installed	119802-55801	
5	Fuel Filter Bracket	installed	129004-55612	
6	Fuel Injection Line	installed	129004-59801	
7	Fuel Line(Filter to Pump)	installed	129044-59010	L=220mm
8	Fuel Pipe (Pump to Filter)	installed	129950-59311	L=300mm
9	Water Separator	provided	129242-55700	As loose parts
10	Throttle Lever	installed	158552-61441	
LUB,OIL SYSTEM				
11	Oil Pan	installed	129100-01760	Drain: Inlet side
12	Oil filler Extension pipe	installed	124160-01751	2 places
13	Breather Pipe	installed	129004-03080	
14	Return Joint,breather	not provided	none	
15	Switch ,lub .oil pressure	installed	114250-39450	0.5kg/cm2 (CA104)
16	Dipstick	installed	129004-34802	
17	Guide ,dipstick	installed	121520-34810	
18	Oil filter	installed	129150-35160	
19	Oil Cooler	installed	129508-33010	
COOLING SYSTEM				
20	Radiator	not provided	none	
21	Rubber Isolaters	not provided	none	
22	Pipe A,radiator	not provided	none	
23	Pipe B,radiator	not provided	none	
24	Sub tank(radiator)	not provided	none	
25	Water Pump	installed	129004-42001	Low position type
26	Cooling Fan	installed	121267-44741	Puller- ϕ 360_Mark "T"
27	Spacer ,fan	installed	171353-44760	T=25mm
28	Guide ,fan	not provided	none	
29	Pully ,fan	installed	129403-42380	D=110mm
30	V-Belt	installed	119865-42290	36.5 inch
31	Switch, water temp.	installed	121250-44901	110°C
32	Sender, water temp.	not provided	none	
33	Thermostat	installed	129155-49801	71deg
34	Thermostat Cover	installed	129350-49530	
35	Water Drain Fitting	installed	171056-49120	Plug
36	3-Way Plug ,cooling water	not provided	none	
ELECTRIC SYSTEM				
37	Starter	installed	129242-77010	12V-1.7kW_HITACHI
38	Alternator	installed	129423-77200	12V-40A (DENSO)
39	Relay ,solenoid	provided	119650-77910	As loose parts
40	Timer ,solenoid	provided	129211-77920	As loose parts

41	Engine Shut Off	installed	119653-77950	coupler
42	Starting Aid	installed	129008-77800	
43	Diode ,solenoid relay	provided	119643-66900	As loose parts
44	Timer, air heater (glow)	provided	128300-77920	As loose parts
45	Relay, air heater (glow)	not provided	none	
46	Current Limiter	not provided	none	
47	Safety relay, starter	not provided	none	
PTO SYSTEM				
48	Flywheel Housing or Back plate	installed	119888-01601	SAE #5 (124)
49	Flywheel	installed	129188-21590	8-M8_PCφ222.5
50	Bearing ,retainer	installed	119888-21450	
51	Pully ,crankshaft	installed	129004-21650	D=110 mm
52	Gear case	installed	129604-01500	
53	Hydraulic Pump	not provided	none	
54	Device, hydraulic pump	not provided	none	
INTAKE/EXHAUST SYSTEM				
55	Air Cleaner	not provided	none	
56	Bracket ,air cleaner	not provided	none	
57	Manifold ,intake	installed	129004-12100	Lateral
58	Joint	installed	129486-12581	Flywheel side
59	Muffler	not provided	none	
60	Gasket ,muffler	provided	129004-13200	As loose parts
61	Manifold ,exhaust	installed	129004-13109	Upward
62	Bend ,exhaust	not provided	none	
63	EGR Pipe	not provided	none	
64	EGR Valve	not provided	none	
65	EGR Cooler	not provided	none	
66	Turbine	not provided	none	
ELECTRIC CONTROLL SYSTEM				
67	ECU	not provided	none	
68	Main Relay	not provided	none	
69	Lack Actuator Relay	not provided	none	
70	Starter Relay	not provided	none	
GAUGE				
71	Drive Unit ,tachometer	not provided	none	
72	Cable ,tachometer	not provided	none	
73	Tachometer	not provided	none	
74	Key Switch	not provided	none	
75	Cover ,terminals	not provided	none	
76	Pilot lamp	not provided	none	
77	Gauge ,oil/water temp	not provided	none	
78	Gauge ,oil pressure	not provided	none	
OTHERS				
79	Filter Wrench ,lub .oil	not provided	none	
80	Filter Wrench ,fuel .oil	not provided	none	

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
R/B	Red/Black



形状寸法コード GT.CODE 真円度・円筒度八、半径法

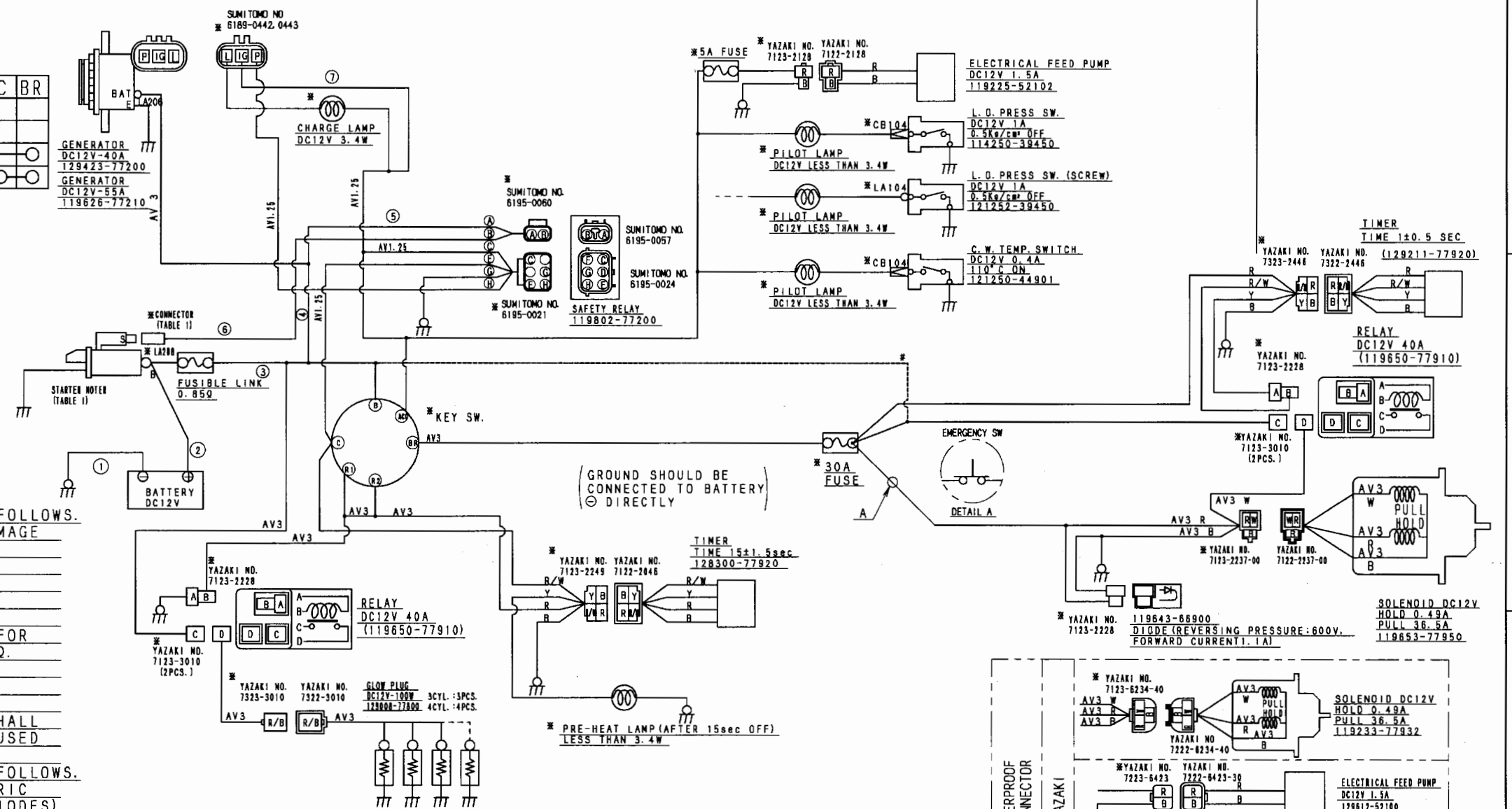
面来歴 CAREER

TABLE 1 STARTER STARTER S TERMINAL CONNECTOR

DC12V-1.2kW 129129-77010	YAZAKI 7116-3060 (TERMINAL) 7123-3215-60 (TERMINAL HOUSING)
DC12V-1.4kW 129407-77010	YAZAKI 7116-2033 (TERMINAL) 7123-2010 (TERMINAL HOUSING)
DC12V-1.7kW 129242-77010	or AMP 170234 (TERMINAL) 171809-2 (TERMINAL HOUSING)
DC12V-2.3kW 129136-77011	LA204

- NOTES
1. WIRING OF STARTER MUST BE OBSERVED AS FOLLOWS. OTHERWISE IT CAUSES MISS STARTING OR DAMAGE OF STARTERMOTOR.
 - 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 (③-⑥) SHOULD BE LESS THAN 5/100Ω. 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".

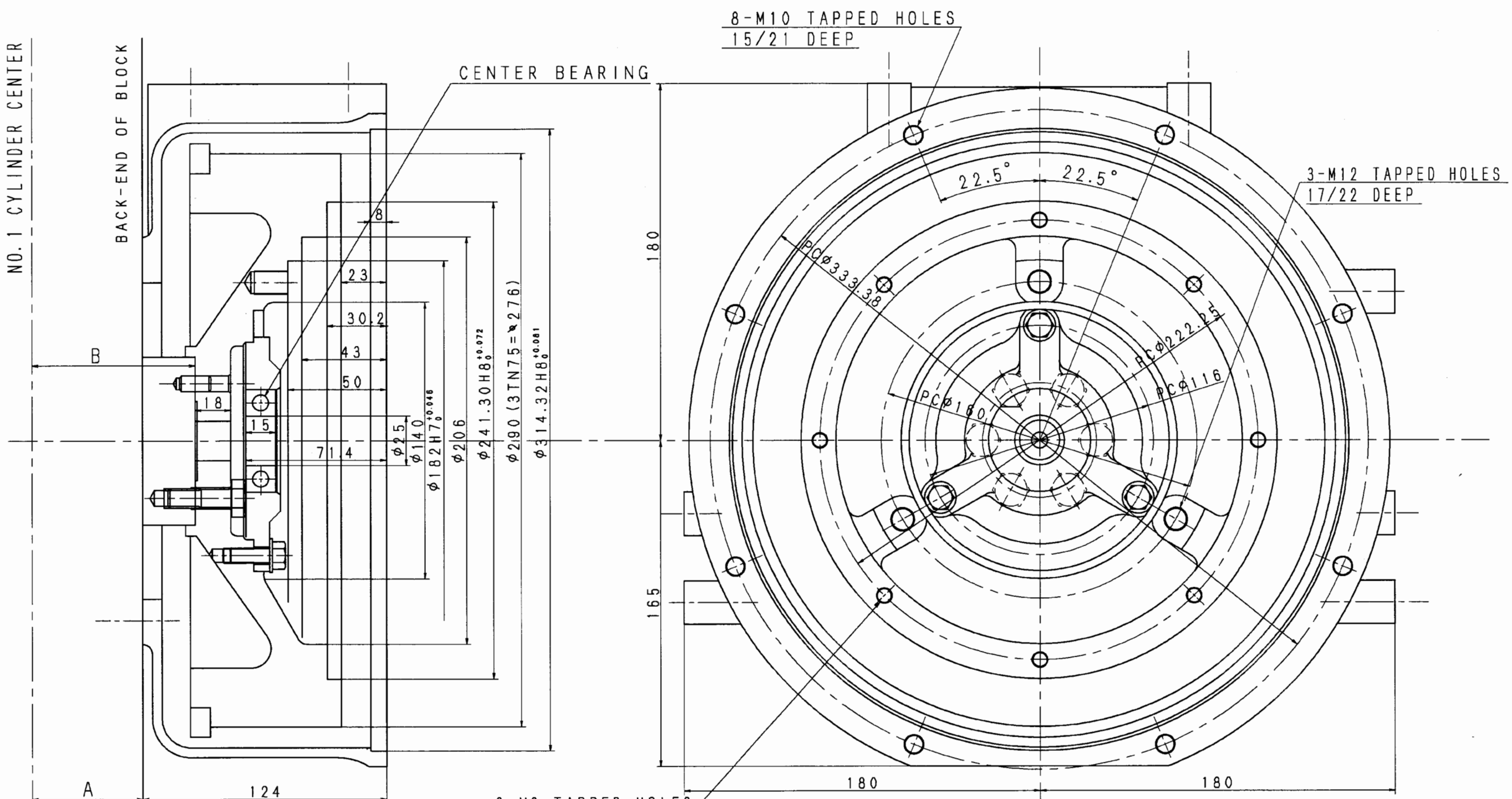
REMARKS 1. * MARKED PARTS ARE NOT PROVIDED BY YANMAR.



- 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.

素材質量 WEIGHT (RAW) (±%)	水圧試験 HYDRAULIC TEST (MPa)	小形工開発部	部長 G. MANAGER	技部長 MANAGER
完成質量 WEIGHT (精査) (±%)	空圧試験 PNEUMATIC TEST (MPa)	機種 MODEL	3TNV 3TNV 4TNV	尺 寸 SCALE
主 席 横井	機 種 MODEL	個 数 QTY.	82A 88 88	材 質 MATERIAL
機 関 CHECKED 横井	機 能 担 当 者 SPECIALIST 光田	名 称 NAME	ケツセンズ	SCALE OUT
設 計 DESIGNED 横井	製 図 DRAWN	年 月 日 DATE	2006.8.02	WIRING DIAGRAM
YANMAR CO., LTD.				
ENGINE PRODUCT OPERATIONS DIV.				
CODE E3-29005-0010				

縦寸法 横寸法 真円度 円筒度 平行度 垂直度 傾斜度 位置度 同軸度 対称度 円筒全長



重要度	○
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	≡
円筒歪み	∠
全長公差	∠

MODEL	DIMENSION A	DIMENSION B	FLYWHEEL HOOSING	FLYWHEEL	RING GEAR
3TNE68	49	71	119280-01600	119688-21400	119865-21600
3TNE74	43	75	↑	↑	↑
3TNE78A, 82A	56	83.5	119888-01600	119888-21400	↑
3TNE84, 88	61	88	↑	129188-21400	↑
4TNE84 (T), 88	61	88	↑	129488-21400	↑
3TNV82A	56	83.5	↑	129488-21400	↑
3TNV84T, 88	61	88	↑	129188-21400	↑
4TNV84 (T), 88	61	88	↑	129488-21400	↑

素材質量 WEIGHT (RAW)	(± %)
完成質量 WEIGHT (FINISH)	(± %)
SEC. MANAGER <i>R. Handa</i>	CAREER Rev. 1 (Feb. 20. 2004) Add TNV DI
CHECKED <i>K. Yokoi</i>	SPECIALIST
DESIGNED <i>T. Saeki</i>	DRAWN <i>S. Matsumoto</i>
年月日 DATE 2004 2. 20	YANMAR DIESEL ENGINE CO., LTD. ENGINE DEVELOPMENT DEPT.

水圧試験 HYDRAULIC TEST (MPa kg/cm ²)	MPa	エンジニア G. MANAGER
空圧試験 PNEUMATIC TEST (MPa kg/cm ²)	MPa	検査員 J. Maki
機種 MODEL	TNE IDI	TNE DI
数量 QTY.	1	1
名称 NAME	DIMENSIONS OF COUPLING 直結部詳細部	
寸法 SCALE	1/2	
材料 MATERIAL		
コード CODE	Rev. 1 23-19822-0450	A3 (B)

Fig. 3TNV88-B Engine performance curve

3000rpm

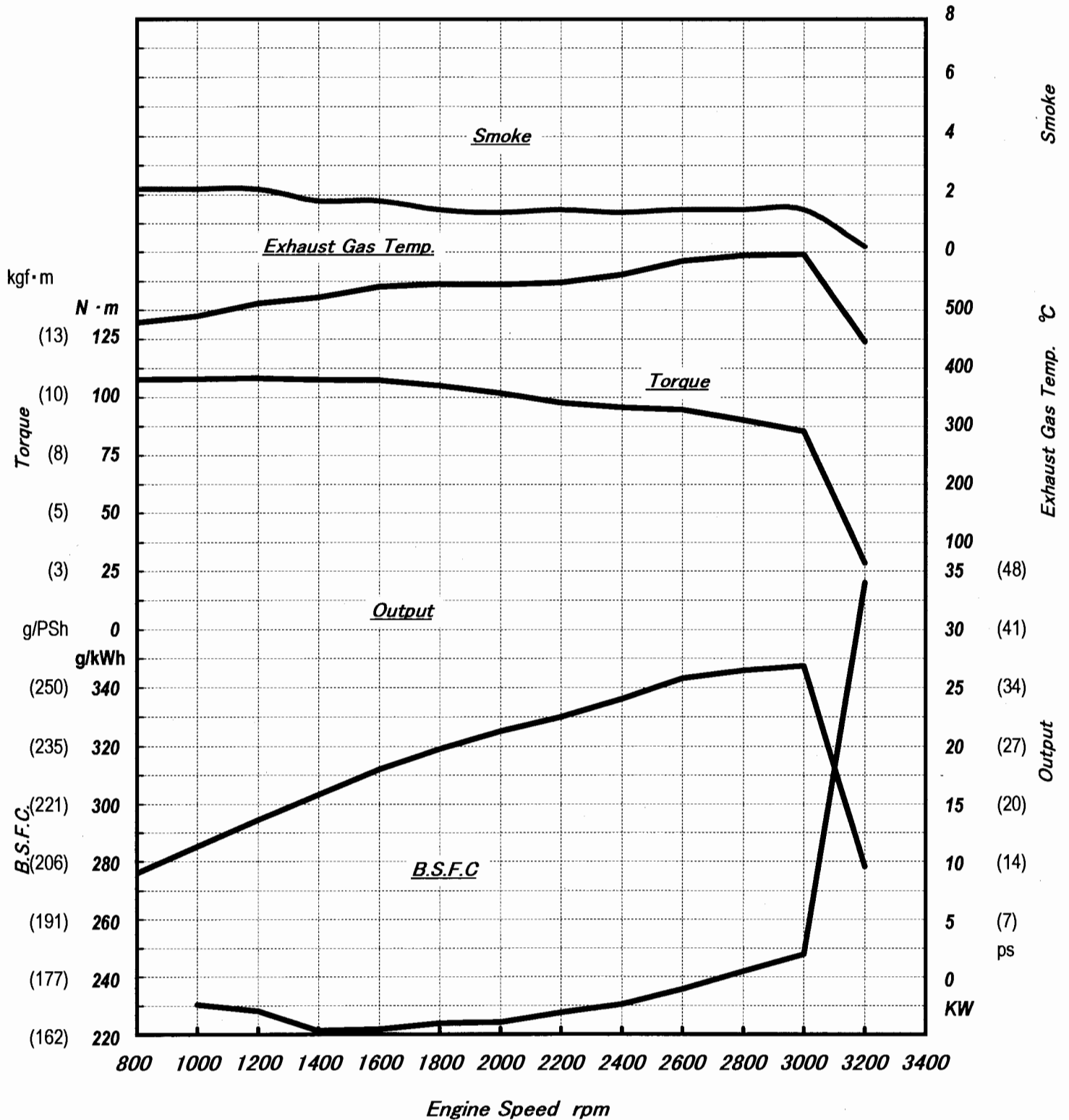
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Displacement: 1.642L

Rated power

26.9 kW / 3000 rpm

Silencer	129004-13500	Crank pulley	D=110
Air cleaner	5inch	Fan puley	D=110
CW fan	121267-44741	φ360	PullF



The engine operating environment and driven machine conditions must be studied carefully when selecting an engine in order to make the most of the engine performance, extend the service life and improve the machine capacity.

This manual describes the items that must be considered when selecting an engine and determining the specifications to ensure that the engine is not used beyond its capacity.

APPLICATION STANDARD

No.	Item	Application Standard		Remarks	
1	Engine type	Special swirl combustion chamber system engines (IDI engines)	Engines with cylinder bore of 76 mm or less	TNV series	
		Direct injection system engines (DI engines)	Engines with cylinder bore of 82 mm or more		
2	Output/rpm	Output rpm	See <i>Specifications on page 3-5. Engine Specifications</i>		
		Output Setting conditions	Ambient temperature	25°C (77°F)	Same as in JIS and ISO
			Atmospheric pressure	100 kPa (750 mmHg)	
			Relative humidity	30%	
Output power correction	See <i>Power Corrections on page 4-3.</i>				
3	Special operating environment	Precautions against sand dust	See <i>Special Operating Environment on page 1-5.</i>		
		Precautions for outdoor installation			
		Precautions against sea air and snow melting agents			
		Precautions against cold environment			
		Precautions against hot environment			
4	Fuel oil	Fuel oil	Ambient temperature °C (°F)	Equivalent fuel	See <i>Standard Diesel Fuel Line Layout on page 10-7</i> for the fuel specifications in each country.
		Diesel fuel	≥ -5 (23)	JIS No. 2	
			15 to -20 (59 to -4)	JIS No. 3	
			<-20 (<-4)	JIS special No. 3	
		Kerosene	Not allowed		
		Heavy oil	Not allowed		
		JP-4	Not allowed		
JP-8, JP-5	Contact Yanmar for consideration				
5	Engine oil	See <i>Engine oil on page 11-5.</i>			The initial replacement of the lubricating oil and lubricating oil filter should be done at 50 hours of service.
		Lubricating oil class	Lubricating oil replacement interval (hr)	Lubricating oil filter replacement interval (hr)	
		CD, CF, CF-4, CI-4 E-3, E-4, E-5, DH-1	Every 250	Every 250	
		Allowable maximum engine oil temperature	≤120°C (248°F)		
6	Engine coolant	Allowable cooling water temperature at engine outlet	≤105°C (221°F)	See <i>Cooling System on page 9-1.</i>	At the specified maximum ambient temperature.
		Water quality	Soft water		See <i>Engine Coolant on page 9-4.</i>
		Antifreeze mixing ratio%	Atmospheric temperature °C (°F)		See <i>Radiator on page 9-8.</i>
		30	0 to -15 (32 to 5)		
		40	-15 to -25 (5 to -13)		
50	-25 to -40 (-3 to -40)				

APPLICATION STANDARD

No.	Item	Application Standard				Remarks
7	Power take-off (PTO)	See <i>P.T.O. Systems</i> on page 15-1.				
8	Low-temperature startability	See <i>Low-temperature startability</i> on page 1-7.				
9	Allowable inclination angle	Continuous operation	All directions	IDI	$\leq 25^\circ$	See <i>Crankcase Breather System</i> on page 11-18.
				DI	$\leq 30^\circ$	
		Instantaneous operation (within 3 minutes)	All directions	IDI	$\leq 30^\circ$	
				DI	$\leq 35^\circ$	
10	Allowable exhaust back pressure	See <i>Allowable Air Intake Restriction and Exhaust Back Pressures</i> on page 1-30.				
11	Allowable air restriction at intake manifold					

SPECIAL OPERATING ENVIRONMENT

The engine performance depends greatly on the operating and environmental conditions.

Please consult with Yanmar when unusual operating conditions exist.

Precautions Against Dusty Conditions

Condition	Part	Countermeasure
Wear due to dusty or sandy condition	Air cleaner	The following measures and cleaning are necessary to prevent dust from entering the engine: Use double element (safety element) Use evacuator valve Use dust indicator
	Alternator	Dust-proof type may be required for preventing entry of sand and dust.
	Starting motor	
	Breather air reservoir (for turbocharged engine only)	Since dust can enter from the breather pipe while the engine is stopped, an air reservoir may be installed at the end of the breather pipe.
	Cooling fan	to improve the wear resistance, a fan made of nylon 6 (reinforced with glass fiber) or steel may be required.
	V pulley	To improve the wear resistance, a hardened pulley may be required.
	V-belt	To counteract belt wear, a larger type V-belt may be required.
	Radiator	Changing the core type and fin material may be required. Heat balance check after the modification is required.

Precautions for Outdoor Installation

Condition	Part	Countermeasure
Rain, snow, etc.	Rain cap (for both air cleaner and exhaust silencer)	Entry of rainwater, snow, etc. must be prevented.
	Electrical parts	Since electrical parts correspond to level R2(*) in JIS D 0203, either install them where they will not be splashed with water, or provide covers.
Location	-----	Flat, well-ventilated place

(*) Level R2: A water spraying test level for checking the performance of the portion subject to indirect exposure to rainwater or splashing water.

Precautions Against Salty Conditions (Air, Sea Water, Road Salt)

Condition	Part	Countermeasure
Location exposed to salt air or road salt	Electrical parts	Since corrosion may occur, careful maintenance is necessary.
	Speed control lever shaft	
	Stop lever shaft	
	Exhaust manifold bolts	
	Stop lever return spring	
	Radiator	
Location where salt water may splash directly onto the engine	-----	Do not install engine where it can be splashed with salt water.

APPLICATION STANDARD

Precautions Against Cold Environment

Environmental temperature	Part	Countermeasure	Remarks
-30°C (-22°F) or above	Battery (high CCA)	Specification must be changed.	See <i>Low-temperature startability on page 1-7</i> for startability.
	Starting motor		
-30°C to -40°C (-22°F to -40°F)	Cooling water hose	Special rubber may be required to prevent rubber parts from being damaged by hardening. Choose components that will maintain flexibility at this temperature range.	
	Intake air hose		
	O-rings		
	Oil seal		
	Fuel hose		
-40°C (-40°F) or below	Fuel feed pump	An electric feed pump is required.	
	Starting aid	A block heater should be used.	
		Not recommended.	

Precautions Against Hot Environment

Environmental temperature	Part	Countermeasure
Below 40°C (104°F)	Electrical parts	The temperature inside the engine hood must be kept below 80°C (176°F) to protect the electrical parts. Provide ventilation around electrical parts.
Above 40°C (104°F)	Radiator	A large capacity radiator and fan must be used to prevent the cooling water and lubricating oil temperatures from getting too hot.
	Cooling fan	
	Oil cooler	Increase capacity or install as standard equipment.
	Electrical parts	The temperature inside the engine hood must be kept below 80°C (176°F) to protect the electrical parts. Provide ventilation around electrical parts.

Others

Condition	Part	Countermeasure
Location where explosive, flammable or toxic gas exists	-----	Engine is not designed for installation where explosive, flammable or toxic gas exists.

DIESEL FUEL SYSTEM

Layout for DI Engines with MP2 or MP4 Type Fuel Injection Pump

Fuel Line Layout for DI Engines.

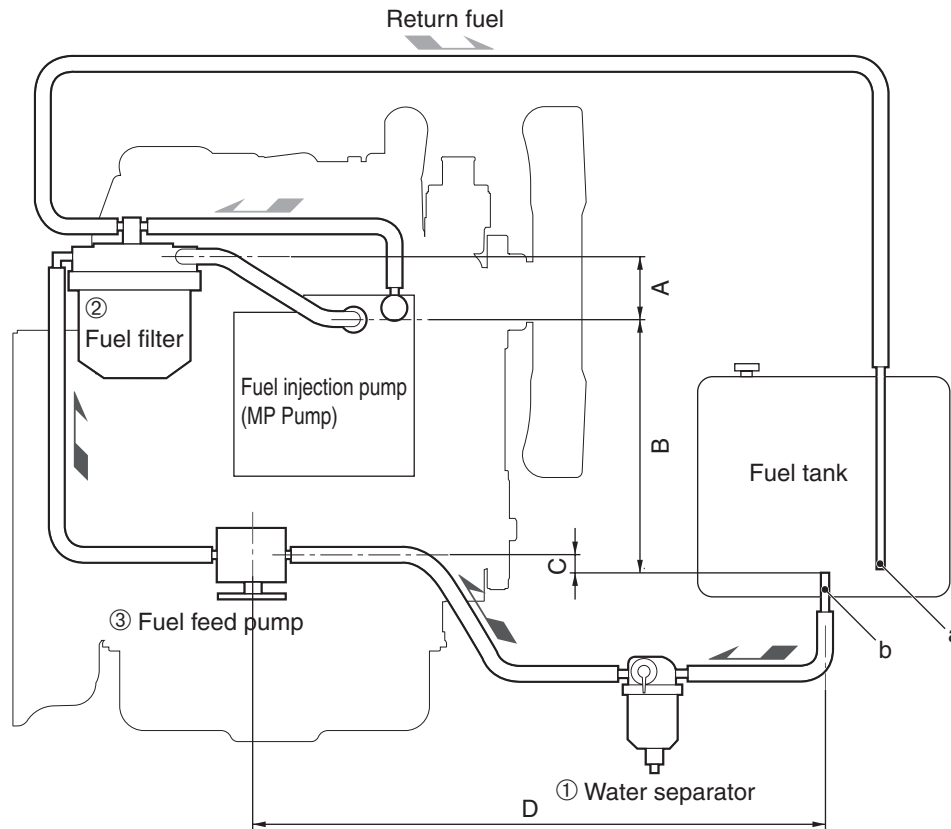


Figure 10-5

Note: Keep return line (a) away from diesel fuel outlet (b) to prevent the diesel fuel line from drawing in air and / or hot diesel fuel. NEVER connect return line (a) to the inlet line.

Diesel Fuel System Part Names and Functions for DI Engines

No.	Part name	Function
(1)	Diesel Fuel Filter / Water separator	Same as IDI engine.
(2)	Diesel fuel filter	Has 5 μm mesh paper element inside. Capacity to resist pressure is 7 kg/cm ² . There is a valve on the inlet of the fuel filter for air bleeding.
(3)	Diesel fuel pump	Sends fuel to the fuel injection pump from fuel tank.
	Electric	Mounted off the engine. Consult Yanmar before using a non-Yanmar fuel pump. An additional check valve is not necessary on the Yanmar electric fuel pump since it has one built in. Note: On a bench test, diesel fuel injection pump performance was not influenced by a minimum voltage of 10 V.

Note: Mechanical feed pump is not available for DI engines.

Fuel Line Layout (DI engines)

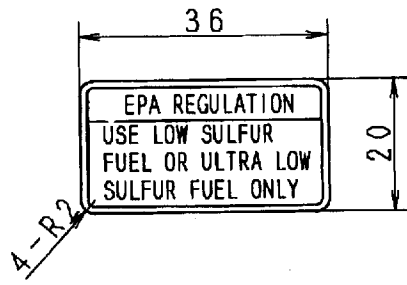
Position	Standard value	Content
A	50 ~ 150 mm	From fuel filter outlet to fuel injection pump inlet. For air bleeding, fuel filter outlet position should be higher than the fuel injection pump inlet position.
B	≤ 1000 mm	Total head of diesel fuel pump (from diesel fuel tank outlet to injection pump inlet)
C	≤ 400 mm	Suction head in dry conditions (from diesel fuel tank outlet to diesel fuel pump inlet)
D	≤ 2000 mm	Suppression of the suction side resistance at of the fuel feed pump (from diesel fuel tank outlet to diesel feed pump inlet)

Parts Specification for Engine

Engine model	3TNV82A ~ 4TNV98	
Diesel fuel pump	Electric type:	119225-52102 (standard), 129612-52100 (with water proof coupler)
Diesel fuel filter / water separator	Standard : Filter mesh: Water reservoir:	129242-55700 (fuel inlet & outlet horizontal) 100 mesh (with valve) 150 cc
Diesel fuel filter	Bracket: Filter: Filter mesh: Filtration size:	129004-55612 (with automatic air bleeding hole φ0.7) 119802-55800 5 μm 2000 cm ²
Engine model	4TNV98T	
Diesel fuel pump	Same as 3TNV82A ~ 4TNV98	
Diesel fuel filter / water separator	Same as 3TNV82A ~ 4TNV98	
Fuel filter	Bracket: Filter: Filter mesh: Filtration size:	123907-55610 123907-55800 5 μm 5000 cm ²

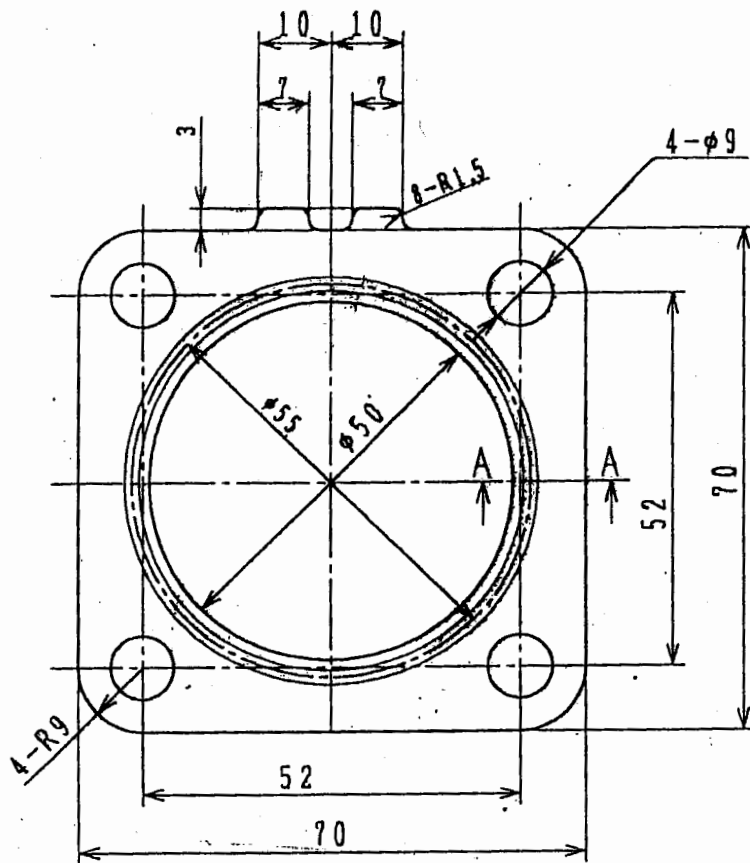
For poor quality fuel

3TNV82A to 4TNV98	Filter Filter mesh Filtration size	129004-55800 1 μm 1650 cm ²	129907-55800 1 μm 4000 cm ²
4TNV98T	Filter Filter mesh Filtration size	129907-55800 1 μm 4000 cm ²	

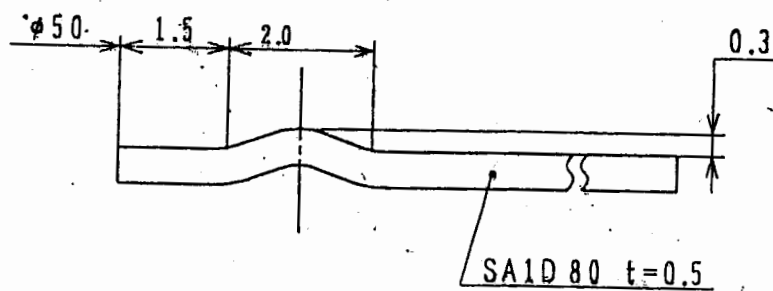


t = 0.05

LABEL		
ネンリョウチュウイラベル		
ENG. MODEL	YANMAR ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.	CODE 114110-07760



A-A 10:1



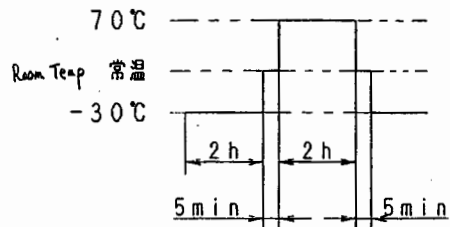
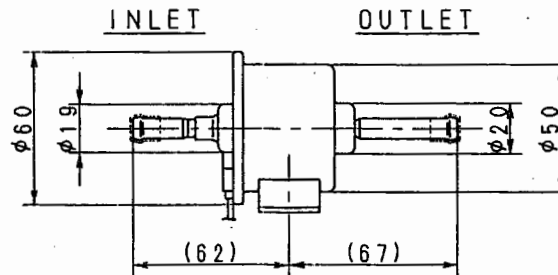
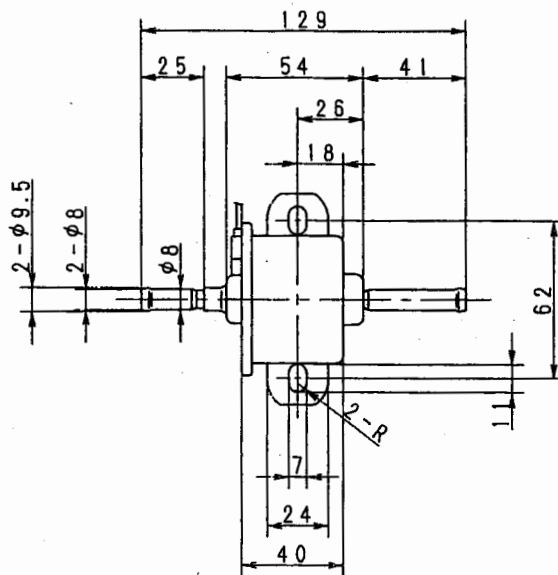
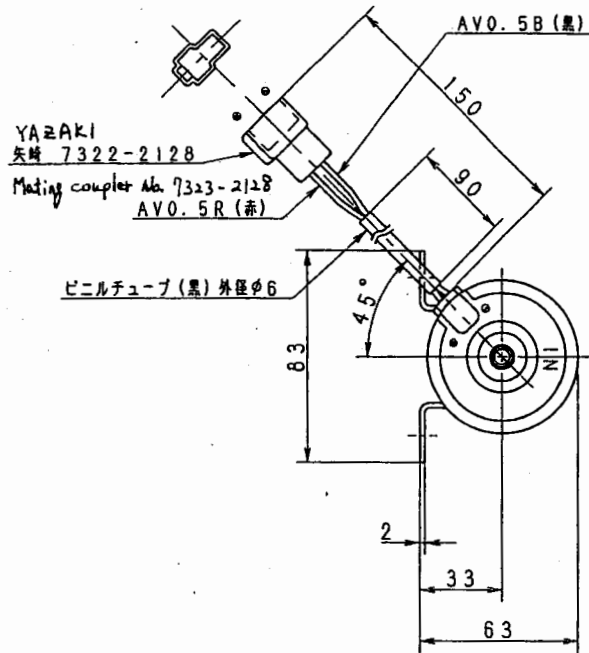
SA1080 t=0.5

YANMAR DIESEL

PARTS NAME	GASKET, SILENCER
PARTS CODE	129004-13200

FOR 3TNV84/88

YANMAR DIESEL ENGINE CO., LTD.



☒ 1

NOTES FOR OPERATING FUEL PUMP

1. USE A 100 MESH FILTER (PAPER TYPE) BETWEEN PUMP AND FUEL TANK
2. FIX A PUMP INLET & OUTLET PIPES HORIZONTALLY OR VERTICALLY (OUTLET IS UP SIDE)
3. PUT A CLIP AT HOSE INSERTING PLACE
4. DON'T OPERATE WITHOUT FUEL

SPECIFICATIONS

(ROOM TEMPERATURE CHARACTERISTIC, MEASUREMENT METHOD AND EQUIPMENT ARE BASED ON JIS D3606)

1. RATED VOLTAGE: 12V DC
2. OPERATING VOLTAGE RANGE: 8.5-16.5V
3. OPERATING CURRENT: MAX 1.5A
4. DELIVERY: MIN 400cc/min AT FREE FLOW (0.1kgf/cm² TOTAL PRESSURE)
5. TOTAL PRESSURE (DELIVERY + SUCTION): MAX 0.38kgf/cm² AT ZERO DELIVERY
6. SUCTION PRESSURE AT DRY CONDITION: MAX -30mmHg
7. AIR TIGHTNESS: SHOULD HAVE NO LEAKAGE UNDER A PRESSURE OF 1kgf/cm² APPLIED TO INLET AND OUTLET FOR 15 SECONDS
8. OPERATING TEMP. RANGE: -30-70°C
9. TEST FUEL: JIS K2203 OR K2201
10. FIXING DIRECTION FOR TEST: INLET & OUTLET PIPES HORIZONTALLY
11. WEIGHT: 600g
12. SURFACE TREATMENT: SEE BELOW
13. FUEL TIGHTNESS OF CHECK VALVE: THE AMOUNT OF LEAK TO OUT SIDE SHALL BE MAX 5cc/min WHEN PRSSURIZED 0.06kgf/cm² FROM IN PORT WITH GASOLINE

AFTER EACH TEST (NO.14-24) AS FOLLOWS, PUMP MUST OPERATE NOMALLY

14. VIBRATION: JIS D1601 5.3(1) STEP4
15. WATER PROOF: JIS D0203 D1 SHOULD BE NO WATER INSIDE OF PUMP
16. THERMAL SHOCK:
 - a) PATTERN: SEE FIG 1
 - b) CYCLES: 4
17. THERMAL RESISTANCE:
 - PATTERN: 70°C 240hrs AND -20°C 240hrs
18. HIGH TEMP. PERFORMANCE:
 - a) VOLTAGE: 14V DC
 - b) FUEL TEMP.: 50°C
 - c) ENVIRONMENT TEMP.: 70°C
 - d) OPERATING TIME: 96hrs
19. FALLING TOUGHNESS:
 - FALL FROM 300mm HEIGHT TO THE CONCRETE
20. SURGE VOLTAGE: JASO D001-A-1, 2 B-1, 2 ALL
21. REVERSAL VOLTAGE APPLING:
 - JASO D001-A, 13V FOR 1min
22. DURABILITY TEST: AFTER TEST AS FOLLOWS, DROP OF DELIVERY SHOULD BE LESS THAN 10%
 - a) VOLTAGE: 14V
 - b) THERMAL ENVIRONMENT: ROOM TEMPERATURE
 - c) OPERATING TIME: 1000hrs

23. DRY PUMPING DURABILITY:

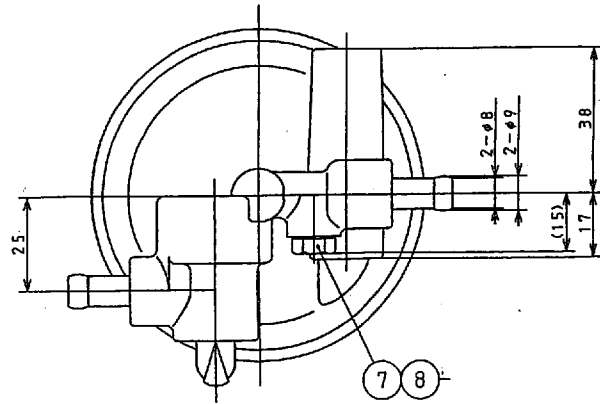
- a) VOLTAGE: 14V DC
- b) PATTERN: 5min ON-OFF
- c) CYCLES: 10

24. WATER PROOF DURABILITY TEST

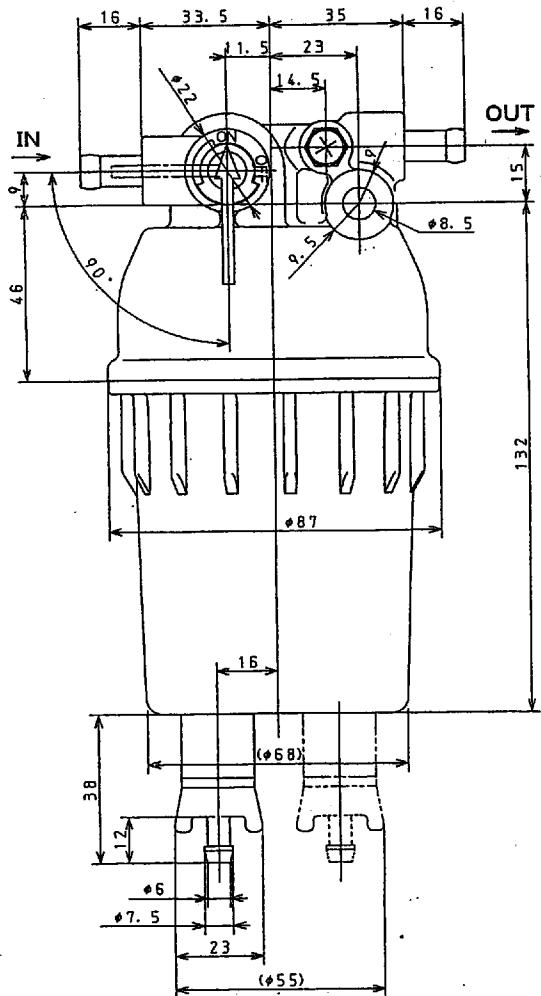
- a) OPERATING IN THE AIR: 1hr
- b) STOPPING IN THE WATER: 1hr
- c) CYCLES: 350

YANMAR DIESEL

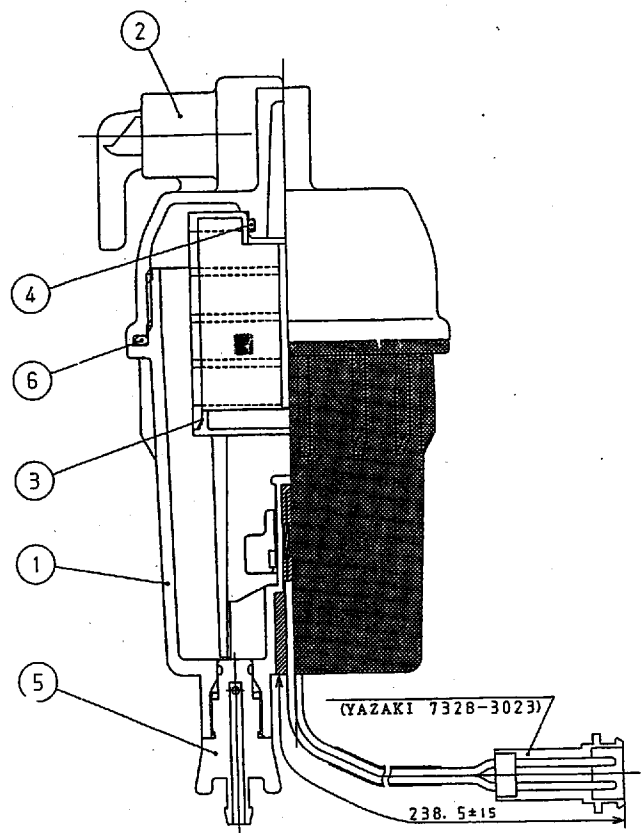
PARTS NAME	FUEL FEED PUMP
PARTS CODE	119225-52102



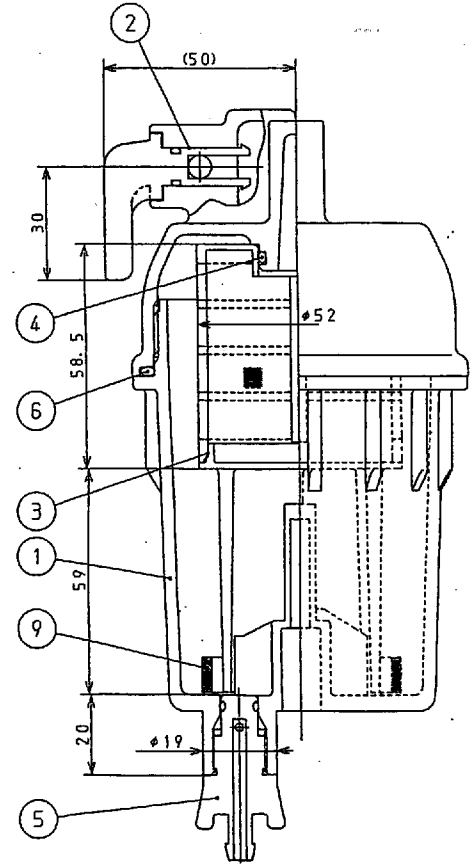
PART CODE	CUP COLOR	ALARM SENSOR
129242-55700	TRANSPARENT	NOT PROVIDE
129245-55700	BLACK	PROVIDE



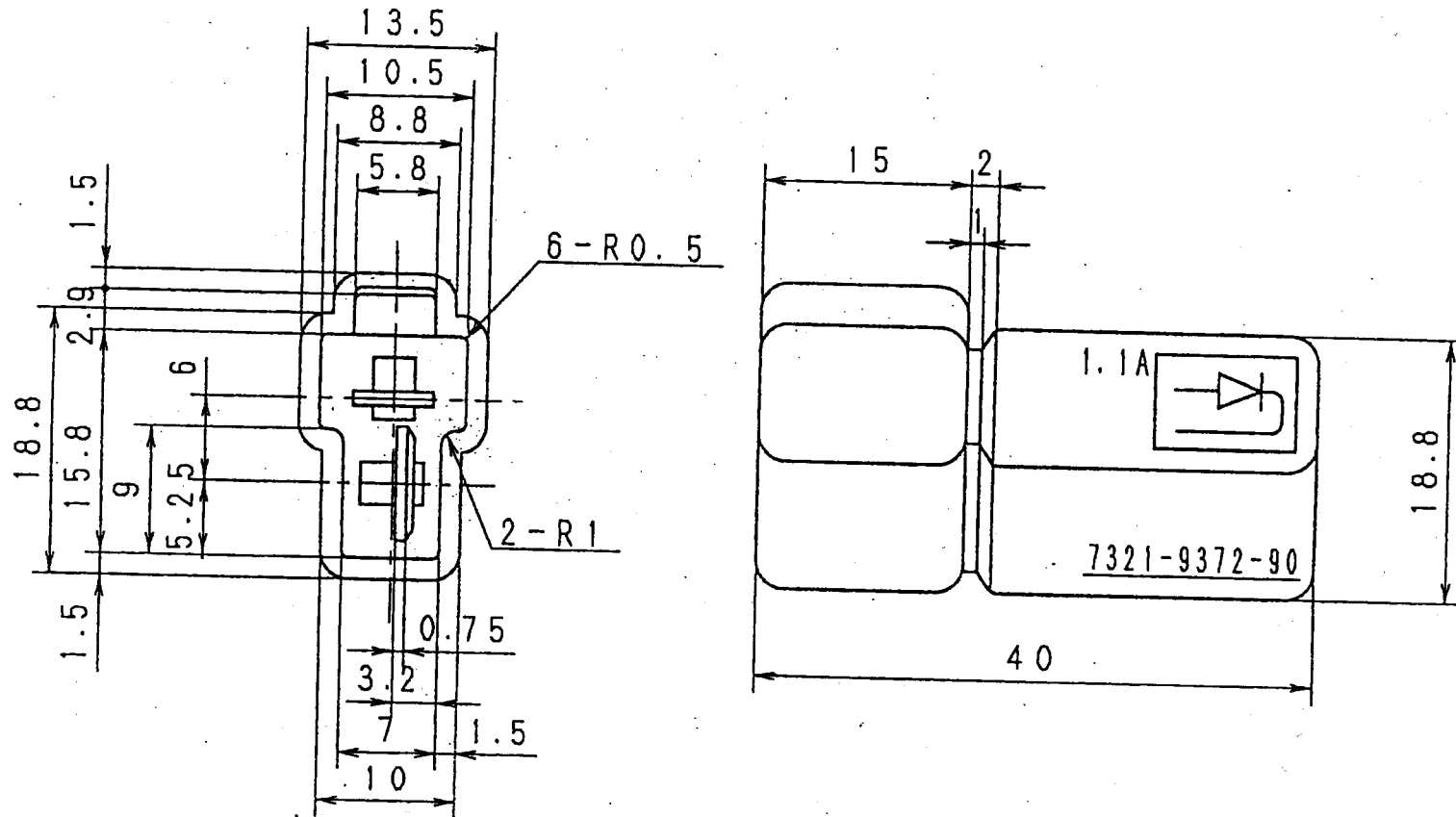
129245-55700 (BLACK CUP)



129242-55700 (TRANSPARENT CUP)



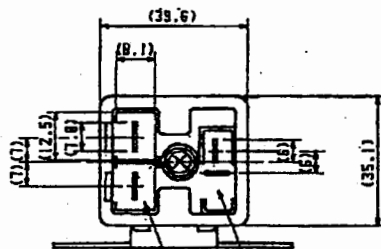
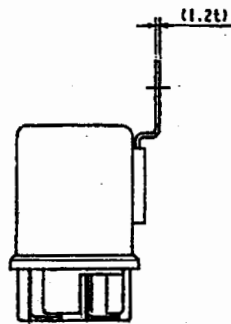
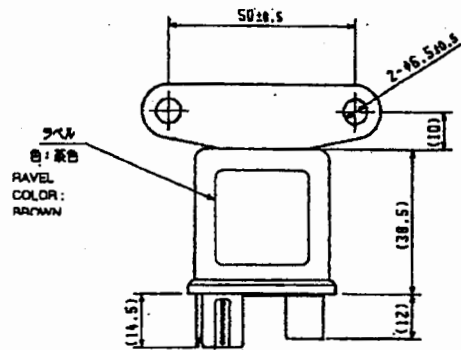
YANMAR CO., LTD	
PARTS NAME	WATER SEPARATOR
PARTS CODE	129242-55700
	129245-55700



Mate coupler : 7123-2228

Mate terminal : 7116-2090

DIODE	
ダイオード	
YANMAR	CODE
ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.	119643-66900



継手コネクタ: 7323-2228 (矢崎)
 CONNECTOR: YAZAKI 7323-2228

継手コネクタ: 7323-3010 (矢崎)
 CONNECTOR: YAZAKI 7323-3010

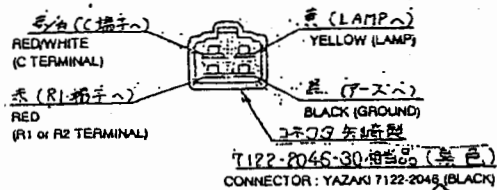
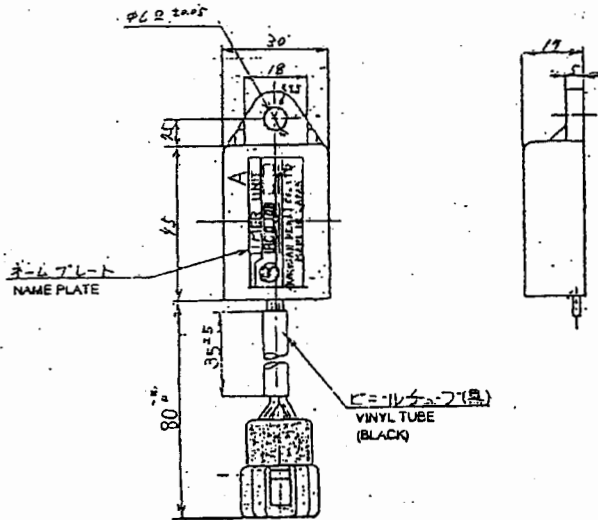
仕様

1. 定格電圧 : DC12V
2. 連続定格 : 10 MIN.
3. コイル抵抗値 : 37Ω
4. インダクタンス : 66mH (at 1kHz)

SPECIFICATIONS

1. RATED VOLTAGE : DC12V
2. MAXIMUM OPERATING TIME : 10 MIN.
3. COIL RESISTANCE : 37 ohm
4. INDUCTANCE : 66mH (at 1kHz)

YANMAR DIESEL ENGINE CO., LTD. ENGINE DEVELOPMENT DEPT.	
MODEL	TNE SERIESE
部品名称	グローリレー
NAME	GLOW RELAY
PART No.	119650-77910



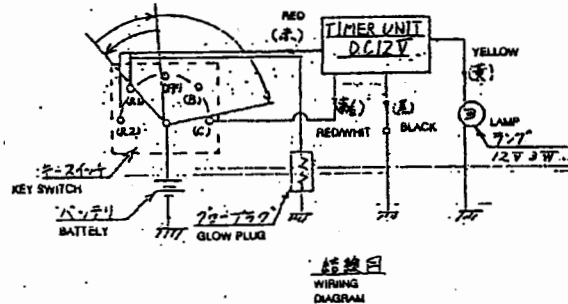
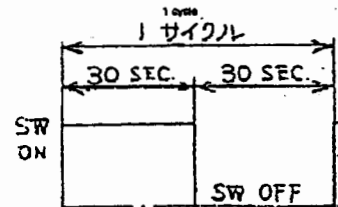
-30-

仕様

1. リレーON時間 : 15±3 (sec.)
2. 使用温度範囲 : -25℃~+80℃
3. 保存温度範囲 : -25℃~+80℃
4. 使用電源電圧範囲 : 8V~15V
5. 適用リレー仕様 : 12V 励磁電流 : 1 A
6. 耐水性 : 清水中10cmノ所ニ24時間保持シタ後、水分ヲ拭キ取り自然乾燥後、性能ニ異常ナキコト。但シ、カブラ及ビコネクタ部分ハ浸水ガ無いヨウニ行ウコト。
7. 耐振性 : 20G一定ニテ100~1000Hz60secスイープニテX, Y, Z方向各 2 Hr 振動ヲ与エ性能ニ異常ナキコト。但シ、ワイヤーハーネスハ共振ナキヨウ取り付ケルコト。
8. 耐久性 : 30000サイクル動作サセタ後性能ニ異常ナキコト。

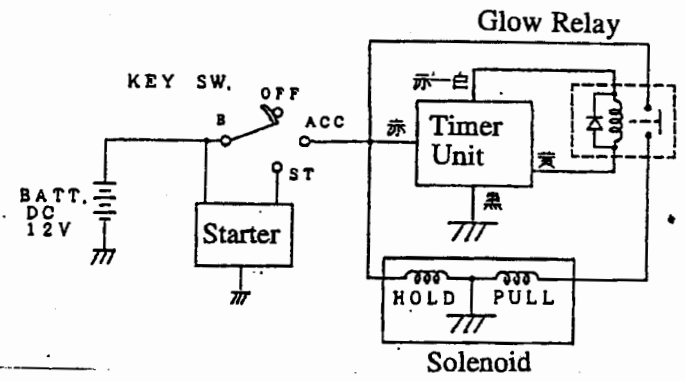
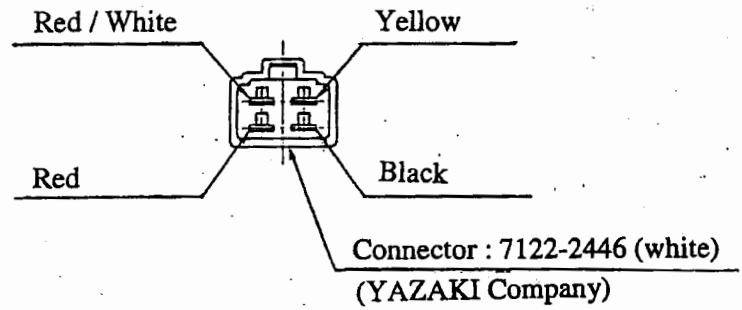
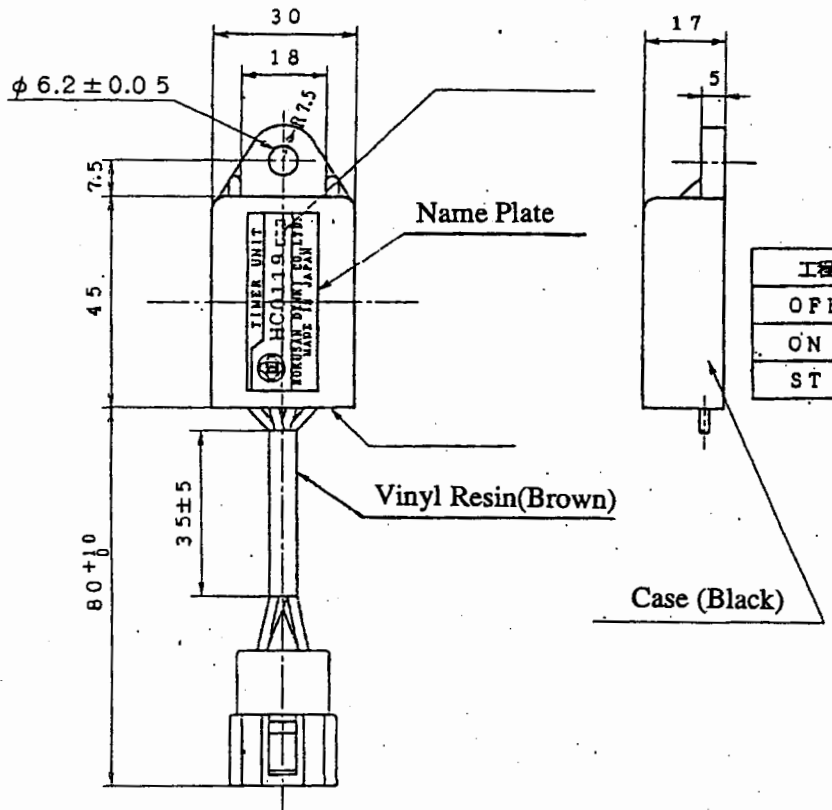
SPECIFICATIONS

1. OPERATION TIME : ON AFTER 15 sec.
2. USABLE TEMPERATURE RANGE : -25℃~+80℃
3. PRESERVE TEMPERATURE RANGE : -25℃~+80℃
4. USABLE VOLTAGE RANGE: 8V~15V
5. APPLICABLE RELAY : 12V
6. WATERPROOFING : DO NOT EXPOSED TO THE RAIN ON CONNECTOR AND TERMINAL.
7. VIBRATION RESISTANCE : 20G
8. DURABILITY : 30000 cycle



MODEL	TNE SERIESE
部品名称	ランプタイマ
NAME	TIMER,GLOW PLUG
PART No.	128300-77920

3D-CAD



工程	B	ACC	ST
OFF			
ON	○	○	
ST	○	○	○

項目	動作シーケンス
Key Switch	OFF ON ST
Glow Relay	OFF ON OFF 1.0±0.5秒
Solenoid Pull	OFF ON OFF
Solenoid Hold	OFF ON
Starter	OFF ON

TIMER (1sec)
 タイマ- (1sec)

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

CODE 129211-77920