YANMAR CO.,LTD.

G3-29649-0080

4TNV84T-GGEA

for Generator

SPECIFICATIONS & DRAWINGS FOR MASS PRODUCTION

29.Feb.2008

YANMAR CO.,LTD.

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Contents

G3-29649-0080

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B3-29649-0120		Out line		
E3-29004-0050		Wiring Diagram		
Z3-71301-0031		Detail of Flywheel		
G3-29649-0080		Scope of Supply		
		LOOSE PARTS		
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	129508-44501	RADIATOR ASSY	1	
	124450-44510	TANK ASSY, SUB	1	
	124450-44550	CLAMP, SUB TANK	1	
	129601-44560	GUARD, FAN	1	
	121256-44600	BRACKET, SUB TANK	1	
	119255-44660	RUBBER, RADIATOR	2	
	129602-49010	PIPE, COOLING WATER	1	upper
	129508-49020	CW-T (B	1	lower
	119225-52102	PUMP, FUEL FEED	1	
	119802-55700	SEPARATOR ASSY	1	
	119643-66900	DIODE	1	
	119650-77910	RELAY ASSY, GLOW	1	
	129211-77920	TIMER, SECTION 1	1	
	23010-038000	CLAMP, HOSE 38	2	
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	0ATNV-G00101	OPERATION MANUAL	1	

Note :

①Since the durability of electric parts basically apply to R2 level of JIS D0203,please inform the customer not to clean with steam or high pressure water.
②Electric parts should not mounted on the engine directly (relay, timer etc.) must be kept free from wet & high humidity and be kept with good air ventilation.
Regarding the vibration of the electrical components, these vibration level must be kept less than 4G.
③Since there is the possibility of corrosion problem on engine cylinder liner or other parts,please do not sell and use the engine with EGR valve in other than emission regulated area.(Emission regulated area means North America,Europe and Japan)

	For Conference	For Apporval	For Installation	Final Drawing
Customer				
Branch				
Exp.Dept.				
Copy				
Total				

Engine Development Dept.

Manager

Sec.Manager

Checked	Drawn
	Sakamoto

	W.No.	4TNV84T-GGEA

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ENGINE SPECIFICATIONS

G3-29649-0080

No	Model name			4TNV84T-GGEA		Remarks
1	Type			4 cycle, Inline,Water-cooled Diesel		
2	No.of cylinders-Bore×stroke			mm	4-φ84×90	
3	Combustion system				Direct Injection	
4	Compression ratio				18.9	
5	Displacement			litter	1.995	
6	Rated output			kW(PS)	21(28.6)/26.8(36.4)	
				min^{-1}	1500/1800	
7	Continuous rating			kW(PS)	19.1(26)/24.2(32.9)	
				min^{-1}	1500/1800	
8	Max.torque			N・m	～	
				min^{-1}	(+/)	
9	Specific fuel consumption			g/kW-h(g/PS-h)	245(180)	at rated output
10	Ambient condition				25℃、750mmHg、30%	
11	Engine speed at no load		Max.	min^{-1}	1925	+25/-25
			Min.	min^{-1}	1500	+25/-25
12	Governorbility	Governor type			centrifugal-all speed governor	
		Temporary		%	max.10	load 100% ↓ 0%
		Permanent		%	max.5	
		Recovery time		sec	max.5	
		Stability		min^{-1}	max.15	
13	Gradients	Longitudinal		deg	30(25)	intermitted
		Lateral		deg	30(25)	( ) : continuous
14	Firing order				1-3-4-2-1	order from F.W.
15	Direction of rotation				counterclockwise	viewed from F.W.
16	Engine dry weight			kg	approx.180	
17	Fuel injection timing			deg	FIT18(+1/-1)	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		liter	7.4	max.
				liter	3.4	effective.
		Oil pressure		kgf/cm^2	3.4	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			6-φ380	
		Coolant capacity		liter	2.7	

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ENGINE SPECIFICATIONS

G3-29649-0080

No	Model name			4TNV84T-GGEA	Remarks
21	Air cleaner			6inchi double Element Type	
22	Breather system			open	
23	Muffler			none	
24	Starting system	Starter		12V-1.4kW	
		Battery		95D31	
		Starting aid		air heater 400W	
25	Generator			12V-40A	
26	Engine color			Silver	
27	Applied regulation				

＜Career＞

	W.No.	4TNV84T−GGEA

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SCOPE OF SUPPLY

G3-29649-0080

No	ENGEN MODEL	4TNV84T-GGE/	Parts number	Remarks
FUEL SYSTEM				
1	Fuel Injection Pump	installed	729649-51390	
2	Fuel Injection Nozzle	installed	729649-53100	Mark"WCQ"
3	Fuel Transfer Pump	provided	119225-52102	As loose parts
4	Fuel Filter	installed	119802-55801	5μ、2000cm²
5	Fuel Filter Bracket	installed	129004-55612	
6	Fuel Injection Line	installed	129508-59800	
7	Fuel Line(Filter to Pump)	installed	129210-59110	L=315
8	Fuel Pipe (Pump to Filter)	installed	129210-59160	L=430
9	Water Separator	provided	119802-55700	As loose parts
10	Throttle Lever	installed	129246-61441	
LUB,OIL SYSTEM				
11	Oil Pan	installed	129400-01770	DEEP
12	Oil filler Extension pipe	installed	124160-01751	
13	Breather Pipe	installed	129150-03090	
14	Switch ,lub .oil pressure	installed	114250-39450	0.5kg/cm2 (CA104)
15	LO pressure sender	installed	119773-91501	
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	provided	129508-44501	As loose parts
21	Rubber Isolaters	provided	119255-44660	As loose parts
22	Pipe A,radiator	provided	129602-49010	As loose parts
23	Pipe B,radiator	provided	129508-49020	As loose parts
24	Sub tank(radiator)	provided	124450-44510	As loose parts
25	Water Pump	installed	129508-42001	
26	Cooling Fan	installed	129612-44700	Mark"UN" φ380push
27	Spacer ,fan	installed	121267-44760	t=18mm
28	Guide ,fan	provided	129601-44560	As loose parts
29	Pully ,fan	installed	129155-42350	D=90mm
30	V-Belt	installed	119831-42290	A37.5inch
31	Switch, water temp.	installed	121250-44901	110℃
32	Sender, water temp.	installed	124250-49351	
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	129407-77010	12V-1.4kW(DENSO)
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	
42	Starting Aid	installed	129120-77502	
43	Diode ,solenoid relay	provided	119643-66900	As loose parts
44	Timer, air heater (glow)	not provided	none	
45	Relay, air heater (glow)	not provided	none	
46	Current Limiter	not provided	none	
47	Safety relay, starter	not provided	none	

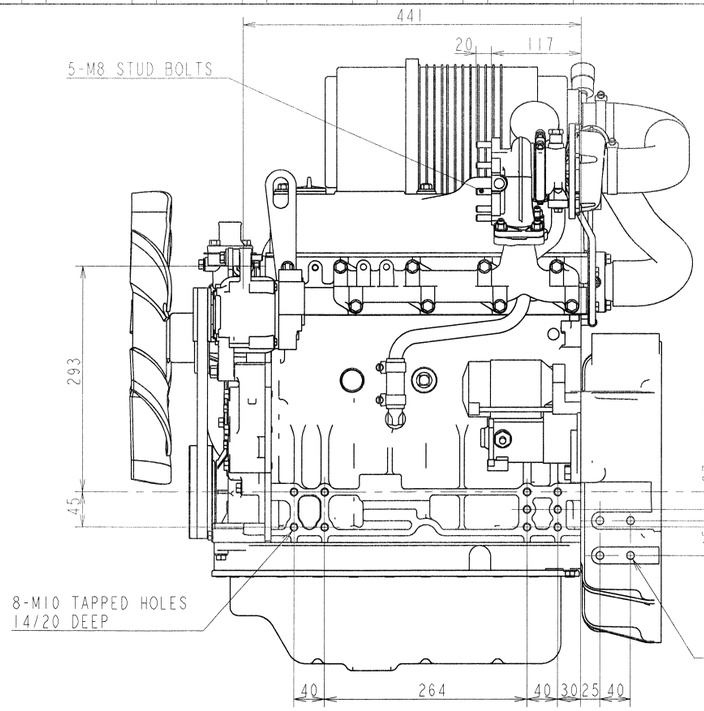
PTO SYSTEM				
48	Flywheel Housing or Back plate	installed	171420-01600	SAE #4
49	Flywheel	installed	171420-21590	SAE #4
50	Bearing ,retainer	not provided	none	
51	Pully ,crankshaft	installed	119802-21660	D=120mm
52	Gear case	installed	729533-01500	
53	Hydraulic Pump	not provided	none	
54	Device ,hydraulic pump	not provided	none	
INTAKE/EXHAUST SYSTEM				
55	Air Cleaner	installed	129946-12510	
56	Bracket ,air cleaner	installed	129508-12560	
57	Manifold ,intake	installed	129508-12100	
58	Joint	not provided	none	
59	Muffler	not provided	none	
60	Gasket ,muffler	provided	129508-18090	As loose parts
61	Manifold ,exhaust	installed	129403-13120	
62	Bend ,exhaust	not provided	none	
63	Turbine	not provided	none	
GAUGE				
64	Drive Unit ,tachometer	not provided	none	
65	Cable ,tachometer	not provided	none	
66	Tachometer	not provided	none	
67	Key Switch	not provided	none	
68	Cover ,terminals	not provided	none	
69	Pilot lamp	not provided	none	
70	Guage ,oil/water temp	not provided	none	
71	Guage ,oil pressure	not provided	none	
OTHERS				
72	Filter Wrench ,lub .oil	not provided	none	
73	Filter Wrench ,fuel .oil	not provided	none	

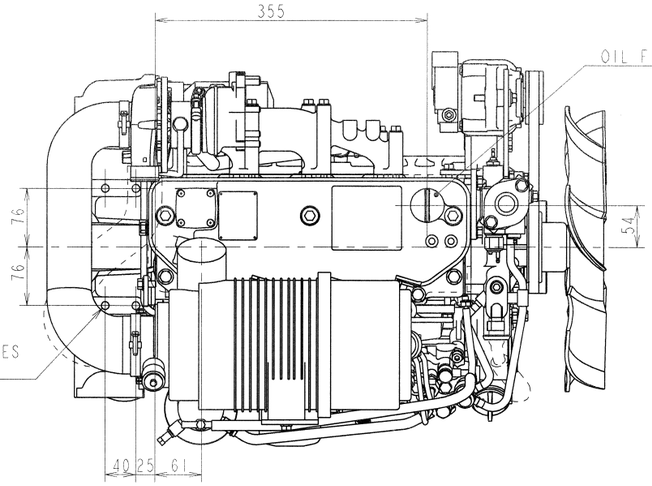
NEED ○ | PURCHASING SPECIFICATION | REQUEST FOR APPROVAL | DELIVERY DRAWING | INSPECTING STANDARD | QC-PROCESS

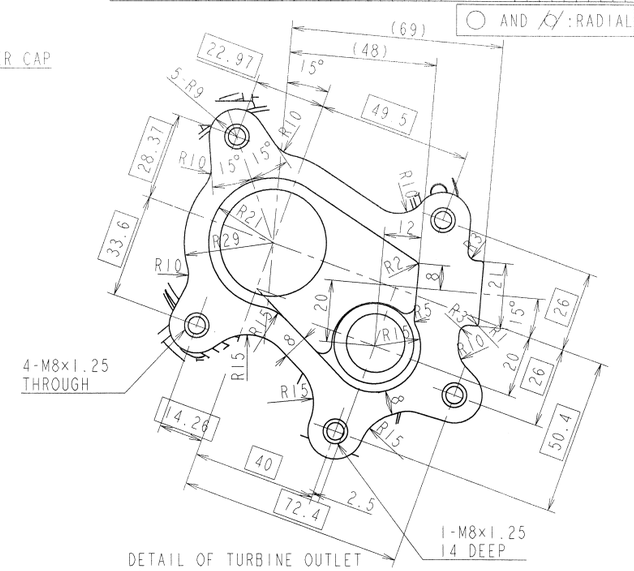
3RD ANGLE PROJECTION

CAREER

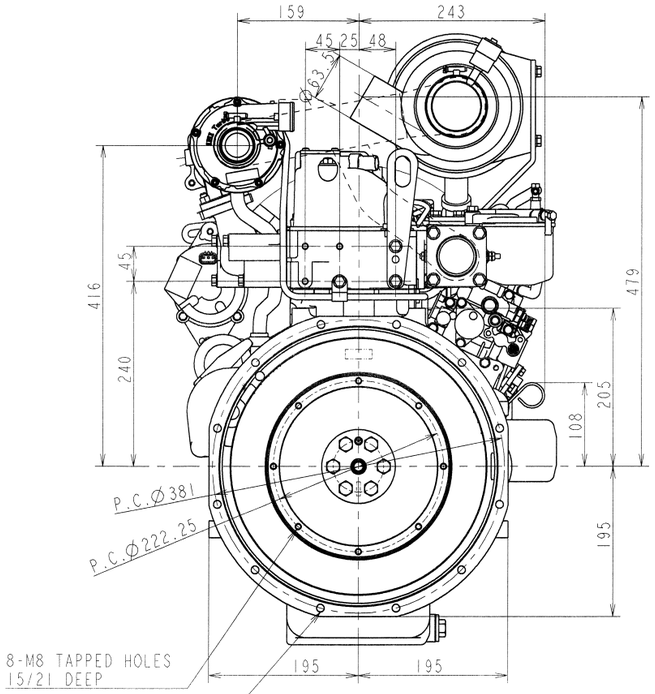
FIGURE DIMENSION | GT.CODE | ○ AND ⌭ : RADIAL

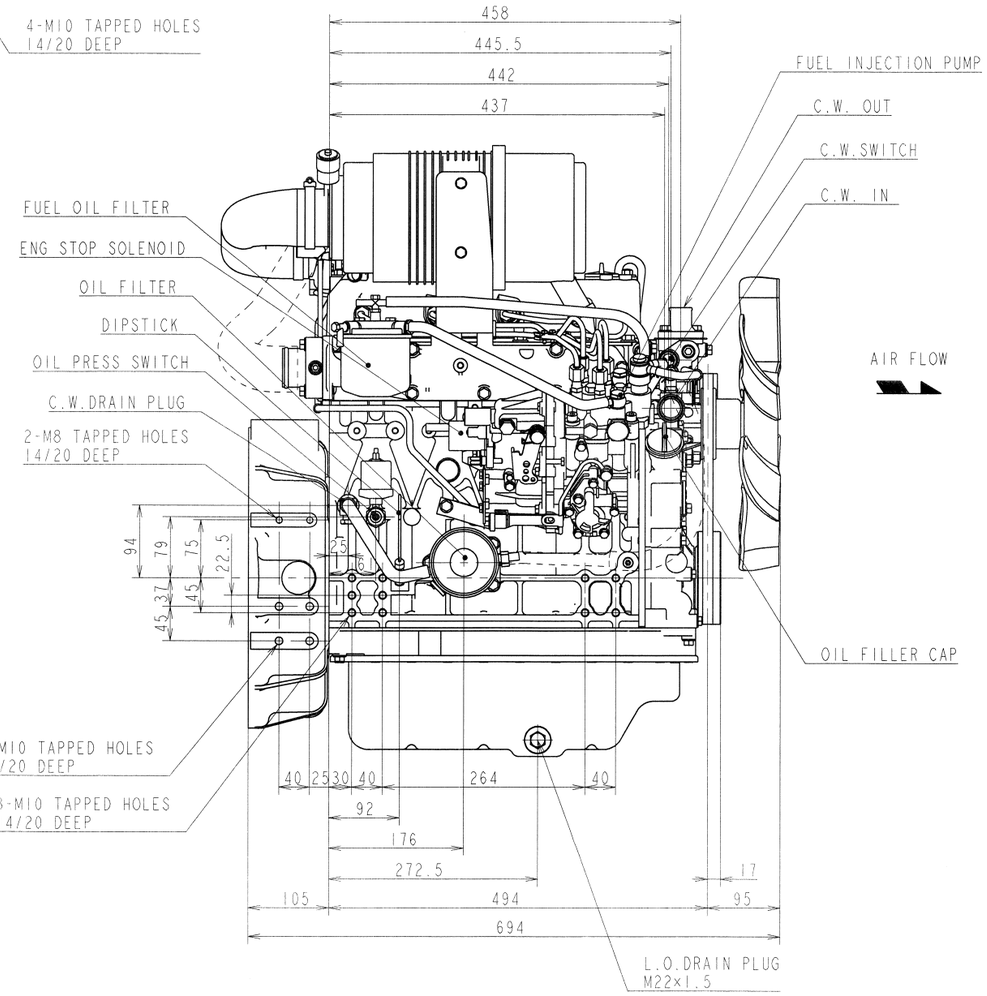


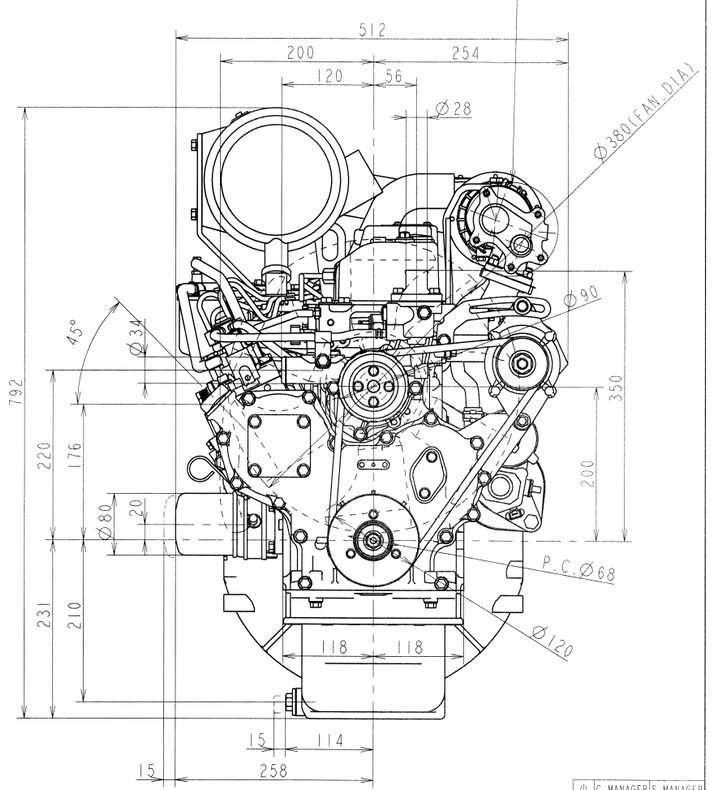




DETAIL OF TURBINE OUTLET
スケール 1:1







WEIGHT (RAW)	kg (± %)			小数点以下四捨五入	C.MANAGER / S.MANAGER
WEIGHT (CALC.)	kg (± %)				
S.ENGINEER	MANAGER	MODEL	4TNV 84T-GGEA	SCALE	1:4
CHECKED	SPECIALIST	QTY	1	MATERIAL	
DESIGNED	DRAWN	DATE: Y.M.D	NAME	クミタテカ゛イケイス゛	
		2008.1.15		OUTLINE	

YANMAR
POWER SYSTEM OPERATIONS DIV., YANMAR CO., LTD.

CODE B3-29649-0120 | DRAW SIZE A1

3D-CAD

NOTICE

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.

本図の環境負荷物質の使用は、YIS V-0001J(環境負荷物質の使用制限)を満足すること。

GEOMETRICAL TOLERANCE

KIND OF TOLERANCE		SYMBOL
FORM	STRAIGHTNESS TOLERANCE	—
	CIRCULARITY TOLERANCE	○
	PROFILE OF LINE TOLERANCE	⌒
	FLATNESS TOLERANCE	▱
	CYLINDRICITY TOLERANCE	⌭
	PROFILE TOLERANCE OF SURFACE	⌓
ORIENTATION	PARALLELISM TOLERANCE	//
	PERPENDICULARITY TOLERANCE	⊥
	ANGULARITY TOLERANCE	∠
LOCATION	POSITIONAL TOLERANCE	⌖
	COAXIALITY OR CONCENTRICITY TOLERANCE	◎
	SYMMETRY TOLERANCE	⌯
RUN-OUT	CIRCULAR RUN-OUT TOLERANCE	↗
	TOTAL RUN-OUT TOLERANCE	⌰

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

三　角　法
3RD ANGLE PROJECTION

形状寸法コード　　G.T.CODE

真円度・円筒度ハ、半径法

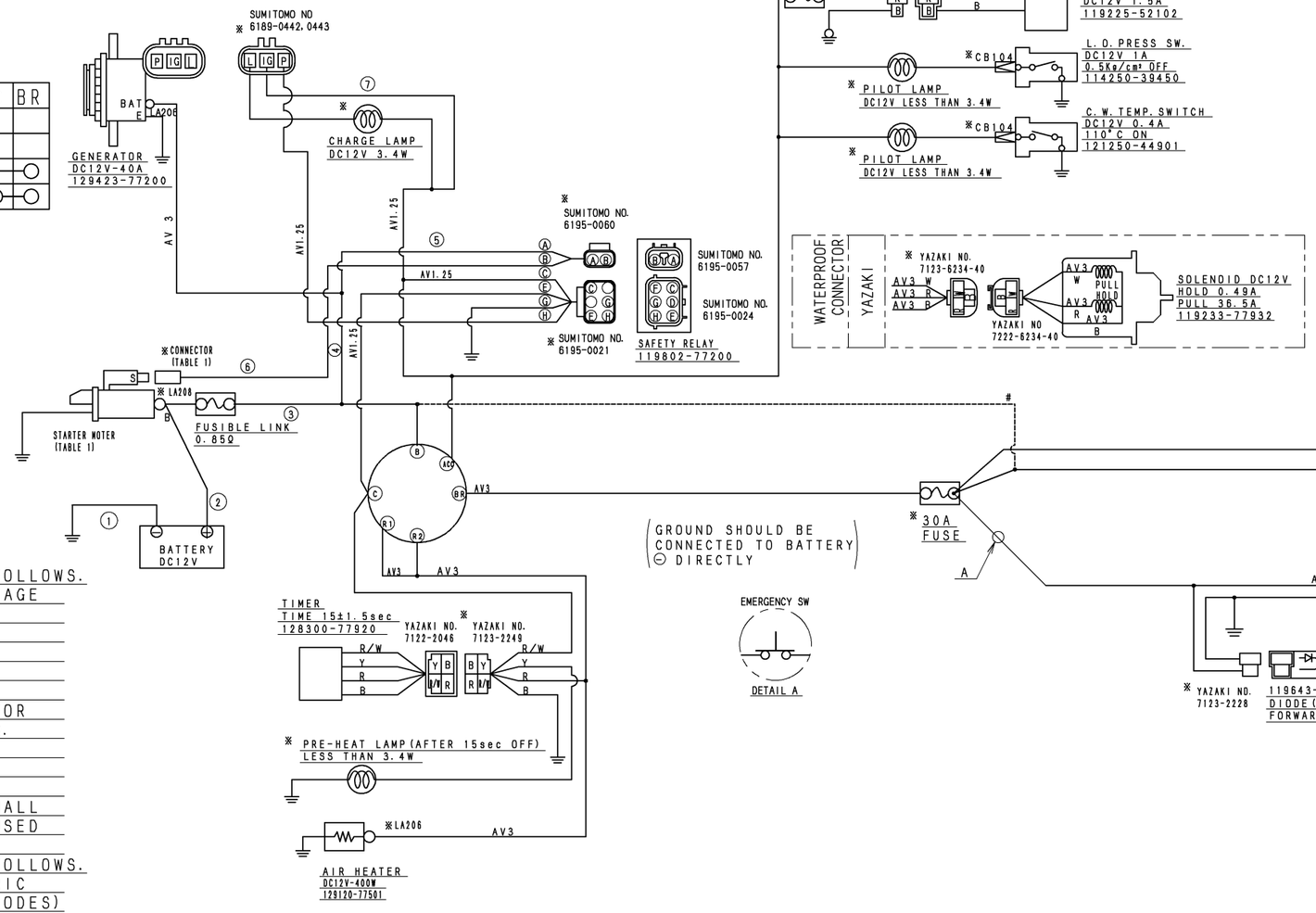
MARK	COLOR
B	Black
W	White
R	Red
L	Blue
G	Green
Y	Yellow
Br	Brown
Lg	Light Green
Sb	Sky blue
O	Orange
P	Pink
Gr	Gray
R/W	Red/White

	B	R1	R2	ACC	C	BR
PRE-HEATING	○	○		○		
OFF	○					
ON	○			○		○
START	○		○	○	○	○

KEY SW. DIAGRAM

TABLE 1

STARTER	STARTER S TERMINAL CONNECTOR
DC12V-1.2kW 129129-77010	YAZAKI 7116-3060(TARMINAL) 7123-3215-60(TERMINAL HOUSING)
DC12V-1.4kW 129407-77010	
DC12V-1.7kW 129242-77010	YAZAKI 7116-2033(TARMINAL) 7123-2010(TERMINAL HOUSING) 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 2/1000Q.
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 5/100Q.
REFERENCE OF TERMINAL RESISTANCE
: 15/1000Q PER COUPLER
0Q PER SCREW SETTIG
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 0.07Q TO GUARANTEE PERMISSIBLE LOWEST VOLTAGE 9V TO WORK SOLENOID(PULL COIL).
(TERMINAL RESISTANCE :15/1000Q PER COUPLER.
0Q PER SCREW SETTING.
COUPLER RESISTANCE OF SOLENOID DOESN'T NEED TO BE COUNTED)
REFERENCE :AV2(0.0088Q/m):≦8.0m···WITHOUT TERMINAL RESISTANCE
AV3(0.0056Q/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 EMARGENCY 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.

図　面　来　歴
CAREER

Rev. 1 (30May. 2002)
CHANGE THE NOTES FOR ENGINE STOP SOLENOID
ADD ELECTRICAL FEED PUMP
ADD STARTER MOTER FOR 4TNV SERIES (TE-02136)
Rev. 2 (20. Sep. 2002)
ADD DIODE FOR RELAY
CHANGE S-TERMINAL CONNECTOR TO CORRECT
Rev. 3 (24. Dec. 2002)
CHANGE SOLENOID
ADD RELAY AND TIMER
Rev. 4 (10. Jan. 2003)
Delete Relay (119646-77900)
Rev. 5 (5. Jun. 2003)
CHANGE FUSE 20A→30A
Rev. 6 (4. Nov. 2004)
CORRECT STARTER CONNECTOR No.

重要チェックポイント	
精度／種類ト記号	
種類	記号
形状公差 真直度	—
真円度	○
線形	⌒
平面度	▱
円筒度	⌭
面形	⌓
姿勢公差 平行度	//
直角度	⊥
傾斜度	∠
位置公差 位置度	⌖
同軸度	◎
対称度	⌯
振れ公差 円振れ	↗
全振れ公差	⌰

素材質量 WEIGHT(RAW)		(± %)	水圧試験 HYDRAULIC TEST	MPa (kg/cm²)	小形工開発部	部長 G. MANAGER	技部長 MANAGER			
完成質量 WEIGHT(精度%)		(± %)	空圧試験 PNEUMATIC TEST	MPa (kg/cm²)						
主席	長 SEC. MANAGER		機種 MODEL	3TN V84 (T)	3TN V82A	3TN V88	4TN V84 (T)	4TN V88	尺度 SCALE	SCALE OUT
検図 CHECKED	機能担当者 SPECIALIST		個数 QTY.						材質 MATERIAL	
設計 DESIGNED	製図 DRAWN	年月日 DATE	名称 NAME	ケッセンス WIRING DIAGRAM						
H. Yokoi	H. Shimizu	2002 1. 29								

YANMAR CO., LTD.
ENGINE PRODUCT OPERATIONS DIV.

コードCODE E3-29004-0050　図面サイズ A2 (C)

Rev. 2 | Rev. 3 | Rev. 4 | Rev. 5 | Rev. 6

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

普通許容差 長サ(面取り) (mm)						
	1以上	4以下	±0.1	250ヲコエ	1000以下	±0.8
	4ヲコエ	16以下	±0.2	1000ヲコエ	2000以下	±1.2
	16ヲコエ	63以下	±0.3	2000ヲコエ	4000以下	±2.0
	63ヲコエ	250以下	±0.5			

普通許容差 角度(面取り)		
	10以下	±1度
10ヲコエ	50以下	±30′
50ヲコエ	120以下	±20′
120ヲコエルモノ		±10′

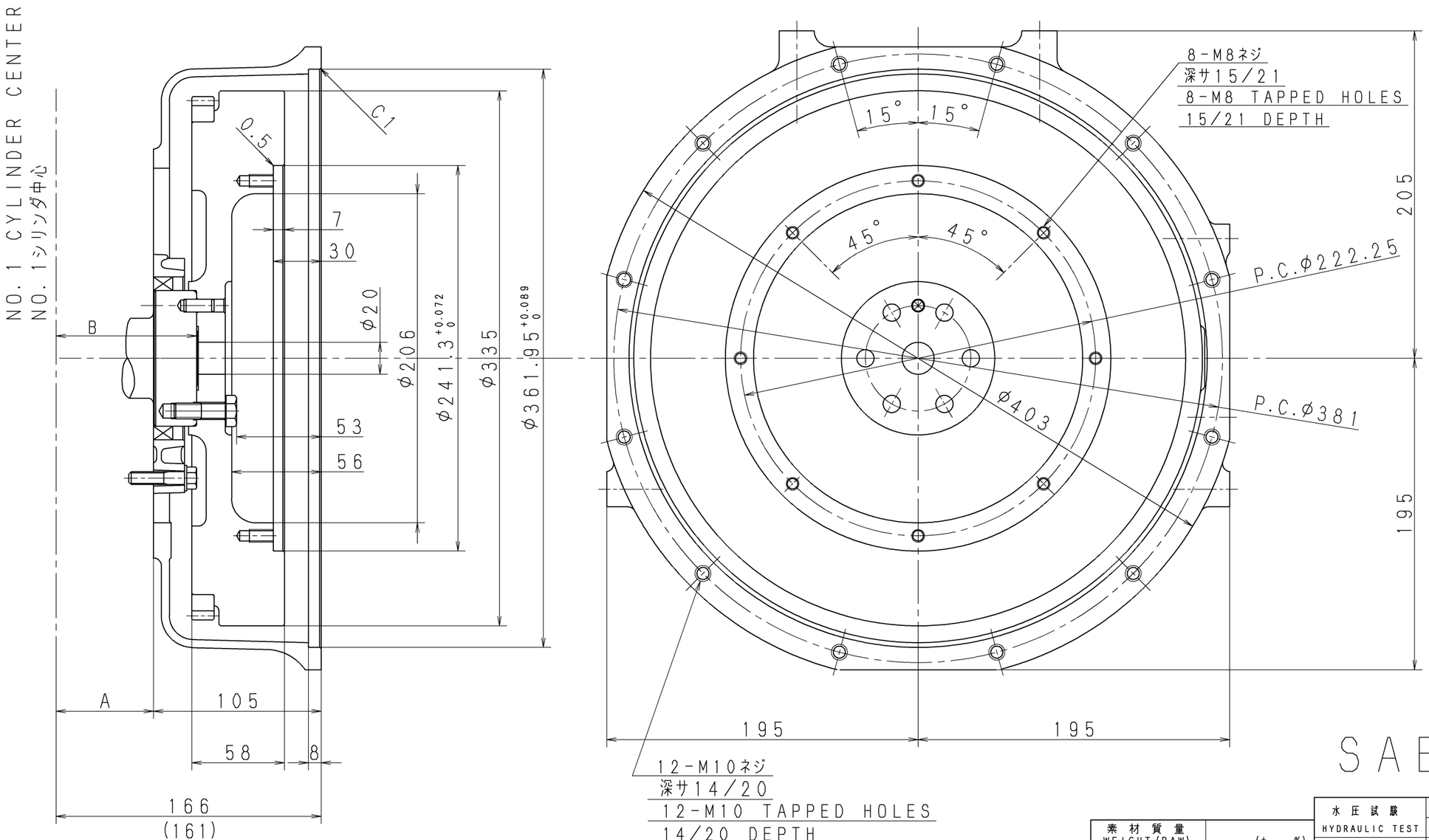
形状寸法コード | G.T.CODE M

真円度・円筒度八、半径法

三角法
3RD ANGLE PROJECTION

図面来歴
CAREER

(2003.10.24)
CAD化新調スル。
Rev.1(04.3.3)
Add TNV DI(YDSTX-04025)



SAE#4

MODEL	DIMENSION A	DIMENSION B	FLYWHEEL HOUSING	FLYWHEEL CMP	FLYWHEEL	RING GEAR
3TNE78A, 82A	56	83.5	171420-01600	171301-21590	171301-21400	124550-21600
3TNE84, 88	61	88	↑	171340-21590	171340-21400	↑
4TNE84(T), 88	61	88	↑	171420-21590	171420-21400	↑
3TNV82A	56	83.5	↑	171420-21590	171420-21400	↑
3TNV84(T), 88	61	88	↑	171340-21590	171340-21400	↑
4TNV84(T), 88	61	88	↑	171420-21590	171420-21400	↑

重要チェックポイント	
精度ノ種類ト記号	
種類	記号
形状公差 真直度	—
真円度	○
線形	⌒
平面度	▱
円筒度	⌭
面形	⌓
姿勢公差 平行度	//
直角度	⊥
傾斜度	∠
位置公差 位置度	⌖
同軸度	◎
対称度	⌯
振れ公差 円筒振れ	↗
全振れ公差	⌰

素材質量 WEIGHT(RAW)	(± %)	水圧試験 HYDRAULIC TEST	MPa (kg/cm²)	小形工開発部	部長 G.MANAGER	技部長 MANAGER
完成質量 WEIGHT(精度%)	(± %)	空圧試験 PNEUMATIC TEST	MPa (kg/cm²)			西田

主幹	長 SEC.MANAGER	機種 MODEL	TNE DI	TNV DI					尺度 SCALE	1/2
山崎	野村								材質 MATERIAL	別記
検図 CHECKED	機能担当者 SPECIALIST	個数 QTY.	1	1						
野村		名称 NAME	チョッケツフ゛ ショウサイス゛							
設計 DESIGNED	製図 DRAWN	年月日 DATE	直結部詳細図							
野村	清水	2003 10.24	DETAIL OF COUPLING							

YANMAR CO., LTD.
ENGINE PRODUCT OPERATIONS DIV.

コード CODE: Rev.1 ZJ-71301-0031 図面サイズ A2 (C)

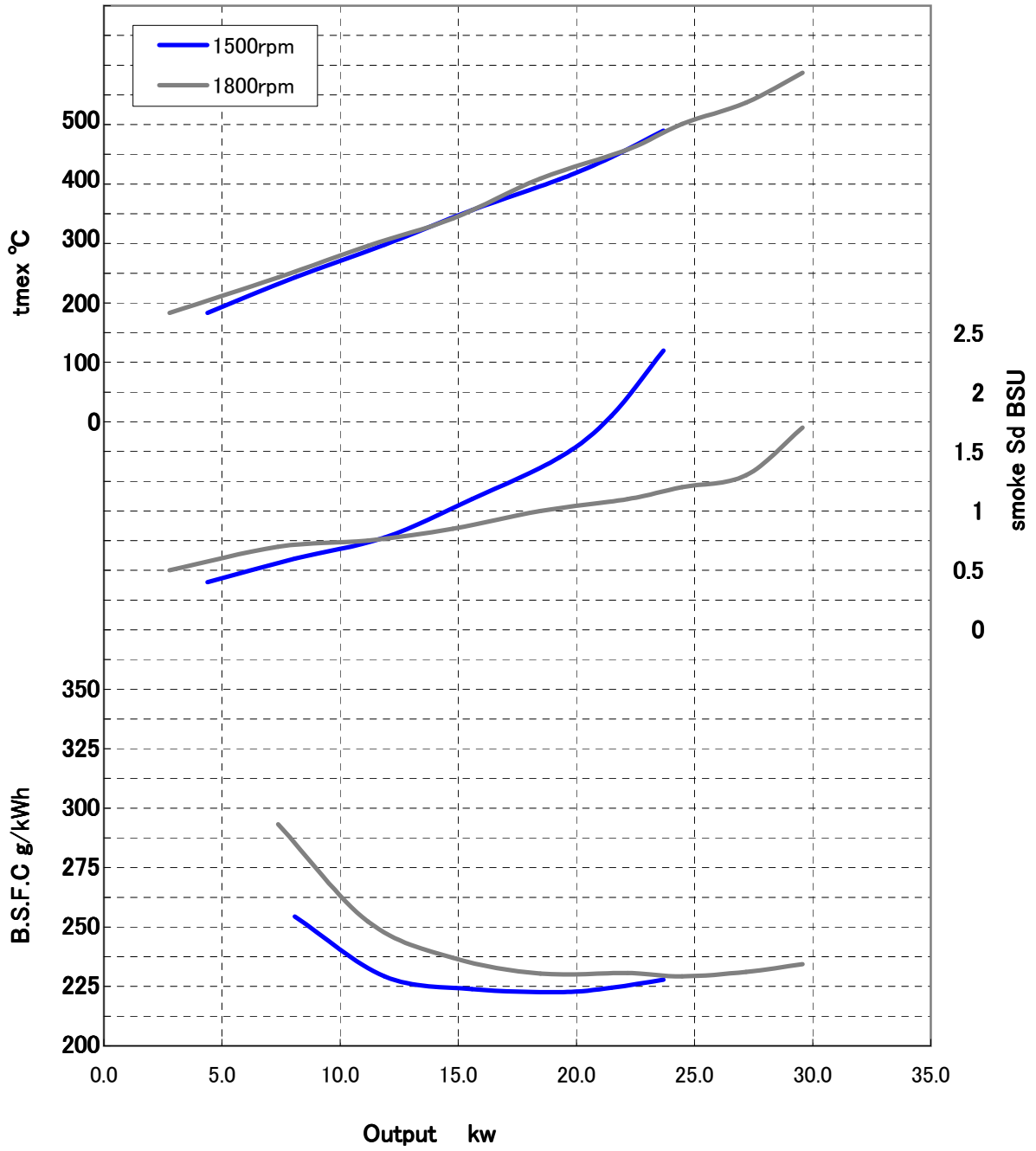
Fig.　4TNV84T Engine performance curve

n-BxS : 4-84x90

Displacement : 1.995L

Silencer	129004-13500
Air cleaner	5inch
CW fan	129612-44700

Crank pulley	D=120
Fan puley	D=90
φ380	PushF



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

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

<table>
<tr><th>No.</th><th>Item</th><th colspan="4">Application Standard</th><th>Remarks</th></tr>
<tr><td>7</td><td>Power take-off (PTO)</td><td colspan="4">See P.T.O. Systems on page 15-1.</td><td></td></tr>
<tr><td>8</td><td>Low-temperature startability</td><td colspan="4">See Low-temperature startability on page 1-7.</td><td></td></tr>
<tr><td rowspan="4">9</td><td rowspan="4">Allowable inclination angle</td><td rowspan="2">Continuous operation</td><td rowspan="2">All directions</td><td>IDI</td><td>≤25°</td><td rowspan="4">See Crankcase Breather System on page 11-18.</td></tr>
<tr><td>DI</td><td>≤30°</td></tr>
<tr><td rowspan="2">Instantaneous operation (within 3 minutes)</td><td rowspan="2">All directions</td><td>IDI</td><td>≤30°</td></tr>
<tr><td>DI</td><td>≤35°</td></tr>
<tr><td>10</td><td>Allowable exhaust back pressure</td><td colspan="4" rowspan="2">See Allowable Air Intake Restriction and Exhaust Back Pressures on page 1-30.</td><td></td></tr>
<tr><td>11</td><td>Allowable air restriction at intake manifold</td><td></td></tr>
</table>

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.

Precautions Against Cold Environment

Environmental temperature	Part	Countermeasure	Remarks
-30°C (-22°F) or above	Battery (high CCA)	Specification must be changed.	See *Low-temperature startability on page 1-7* 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		
	Fuel feed pump	An electric feed pump is required.	
	Starting aid	A block heater should be used.	
-40°C (-40°F) or below		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.

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

Fuel Line Layout for DI Engines.

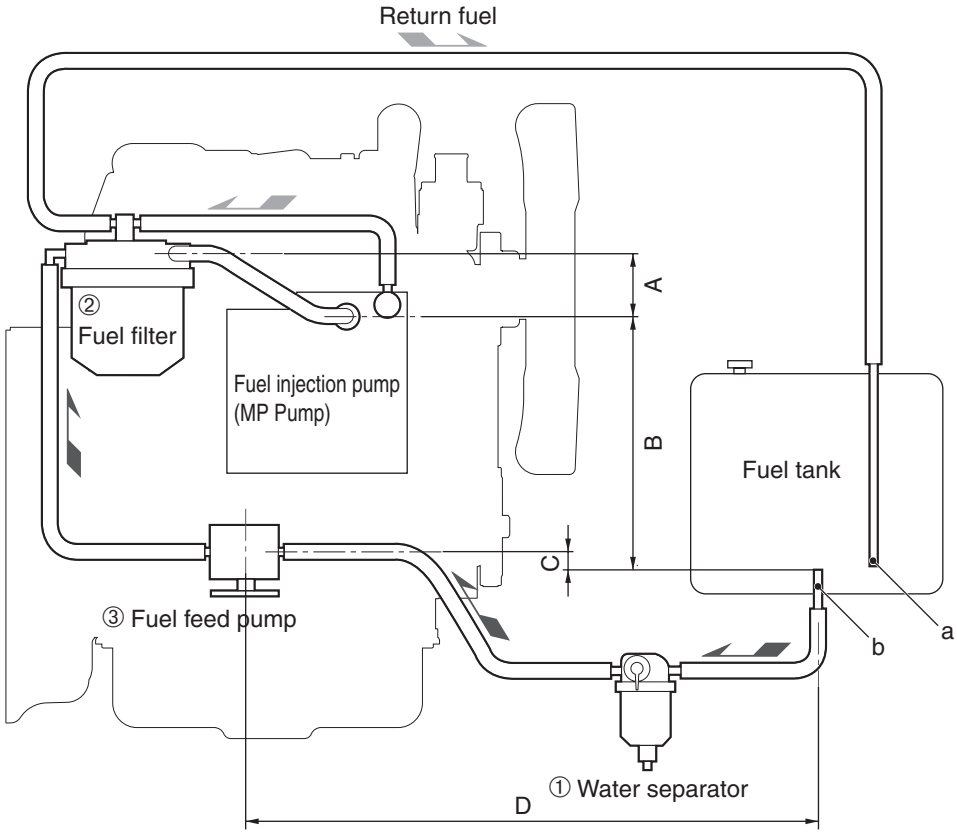


Figure 10-5

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)

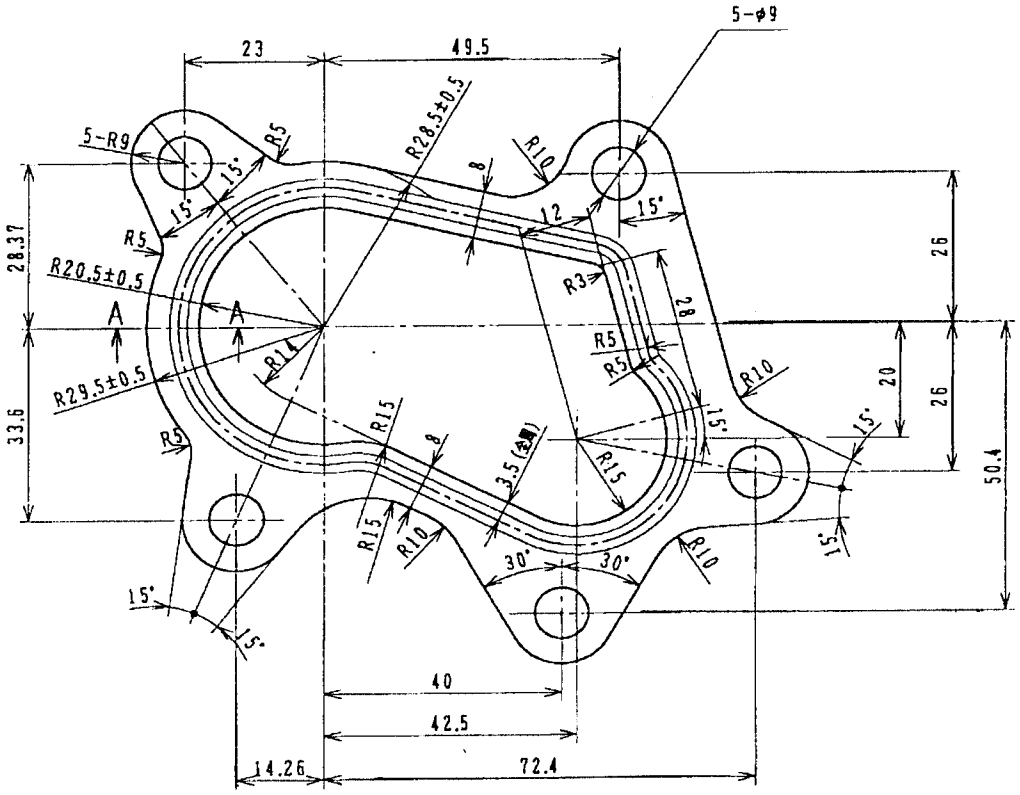
Position	Standard value	Content
A	50 ~ 150 mm	From fuel filter outlet to fuel injection pump inlet. For air bleeding, fuel filter outlet position should be higher than the fuel injection pump inlet position.
B	≤ 1000 mm	Total head of diesel fuel pump (from diesel fuel tank outlet to injection pump inlet)
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	



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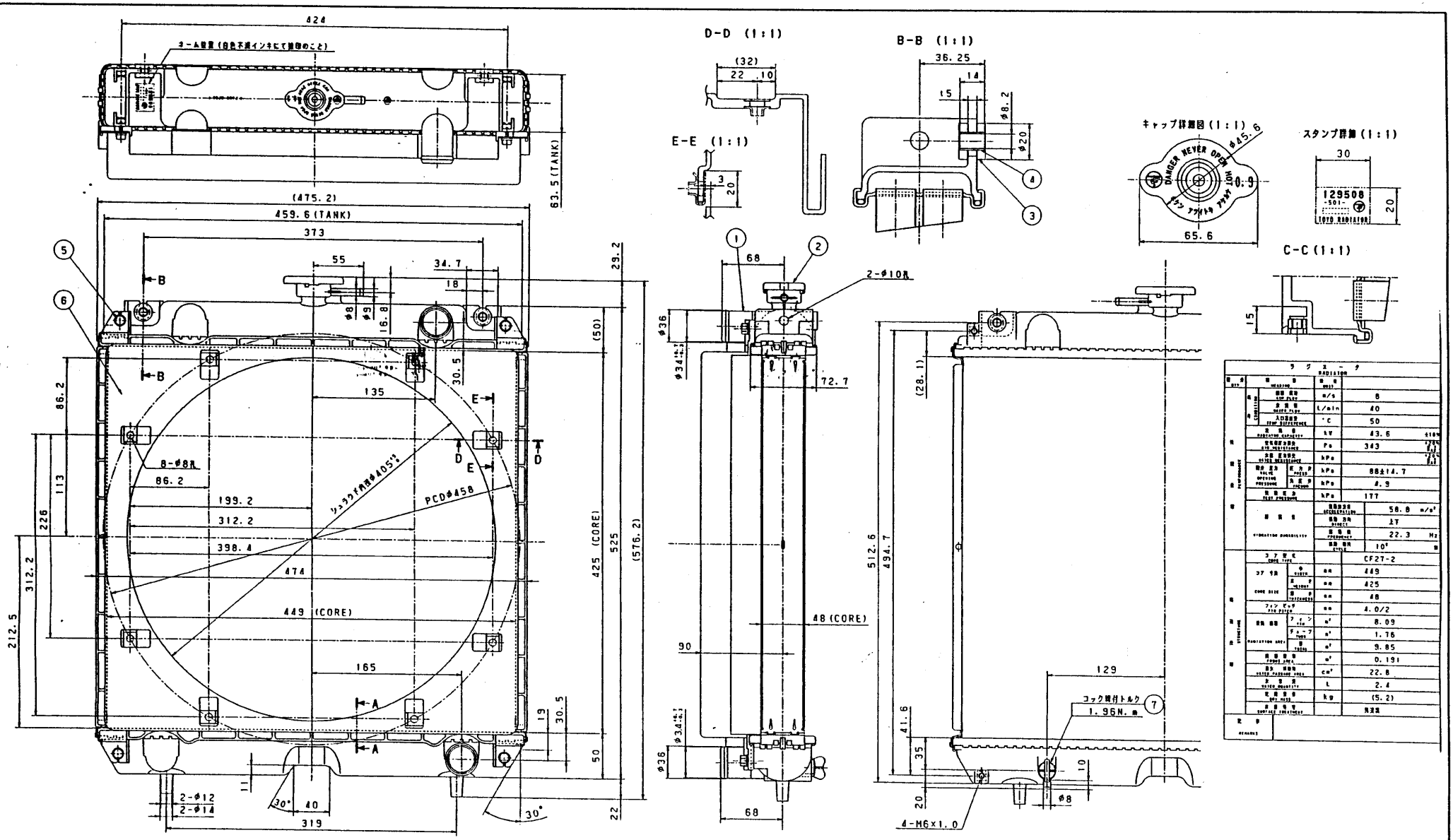
YANMAR CO., LTD. ENGINE PRODUCT OPERATIONS DIV.	
MODEL	TNV SERIES
部品名称	ガスケット(T/C
NAME	GASKET (T/C
PART No.	129508-18090



7	129508-44550	2361-037-4650	コック ASSY	ASSY	1	
6		2411-498-3400	シュラウド	PP-T40	1	
5	128014-060122	2221-274-3900	ボルト ASSY	ASSY	4	M8×1.0 L=20mm
4	129467-44590	2041-126-4920	カラー	SPCC	2	t0.9
3	129467-44580	2041-096-4910	アウントラバー	EPDM	2	
2	129107-44530	6713-052-0501	プレッシャキャップ	ASSY	1	
1		2411-501-1000	ラジエータ C COMP	ASSY	1	
品番 SYM	品番略号 CSTMR. PART NO.	部品番号 PART NO.	部品名称 PART NAME	材質 MATERIAL	個数 QTY	寸法・備考 SIZE・REMARKS

ラジエータ RADIATOR

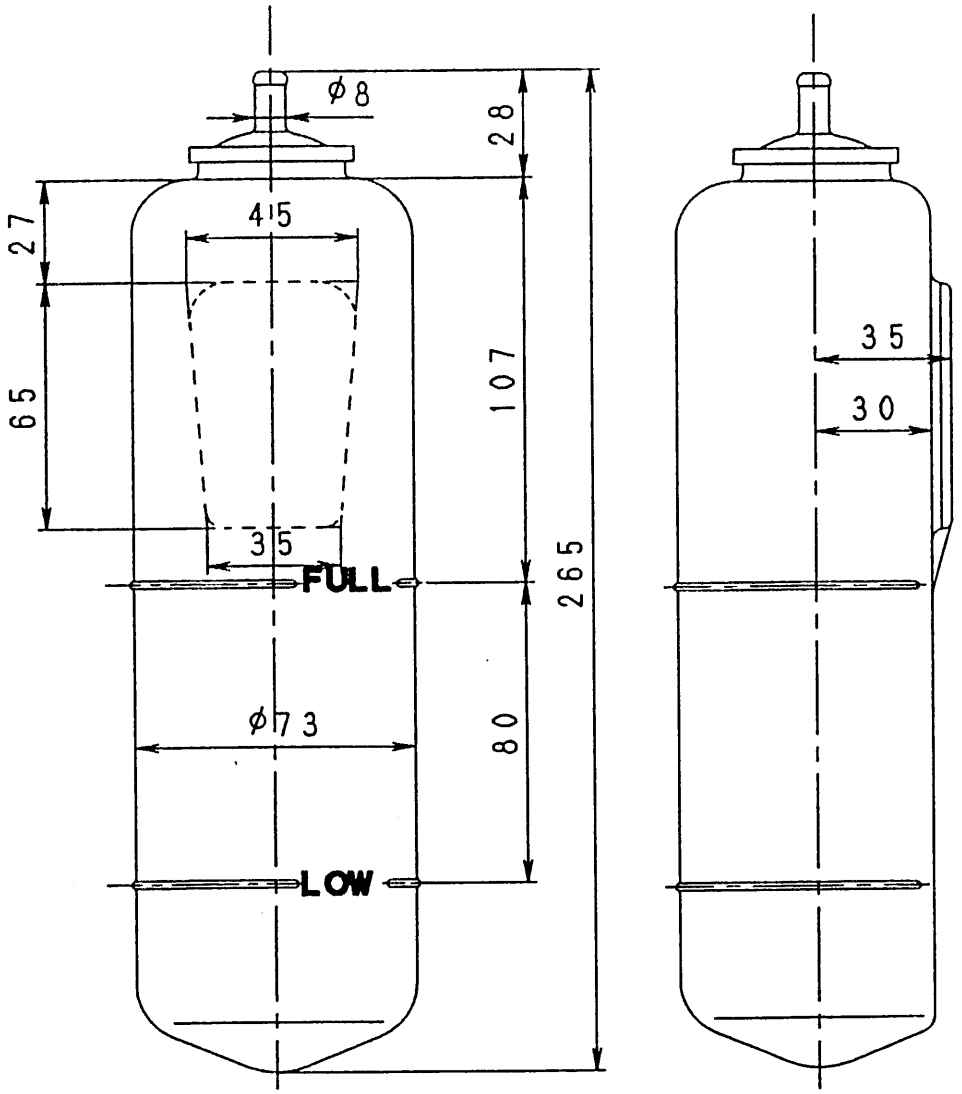
性能 PERFORMANCE	冷却能力 HEATING CAPACITY		kW	43.6
	冷却水量 WATER FLOW		L/min	40
	入口温度差 INLET TEMP. DIFFERENCE		°C	50
	放熱量 RADIATION CAPACITY		kW	43.6
	空気抵抗 AIR RESISTANCE		Pa	343
	水抵抗 WATER RESISTANCE		kPa	
	開弁圧力 VALVE OPENING PRESSURE	真空弁 VACUUM	kPa	88±14.7
		大気弁 PRESSURE	kPa	4.9
	耐圧 TEST PRESSURE		kPa	177
構造 STRUCTURE	耐振動加速度 VIBRATION DURABILITY	加速度 ACCELERATION		58.8 m/s²
		振動方向 DIRECT.		上下
		振動数 FREQUENCY		22.3 Hz
		振動時間 TIME		10'
	コア型式 CORE TYPE			CF27-2
	コアサイズ CORE SIZE	高さ HEIGHT	mm	449
		幅 WIDTH	mm	425
		厚さ THICKNESS	mm	48
	フィンピッチ FIN PITCH		mm	4.0/2
	放熱面積 RADIATION AREA	アッパータンク UPPER TANK	m²	8.09
		チューブ TUBE	m²	1.76
		ロアータンク LOWER TANK	m²	9.85
	放熱率 FRONT AREA		m²	0.191
	容量 保有冷却水量 WATER PASSAGE AREA		cm²	22.8
	冷却水量 WATER QUANTITY		L	2.4
	質量 DRY WEIGHT		kg	(5.2)
	表面処理 SURFACE TREATMENT			黒塗装
備考 REMARKS				

ヤンマー株式会社

適用名称

適用機種	
部品名称	ラジエータ ASY
部品コード	129508-44501

YANMAR CO., LTD.

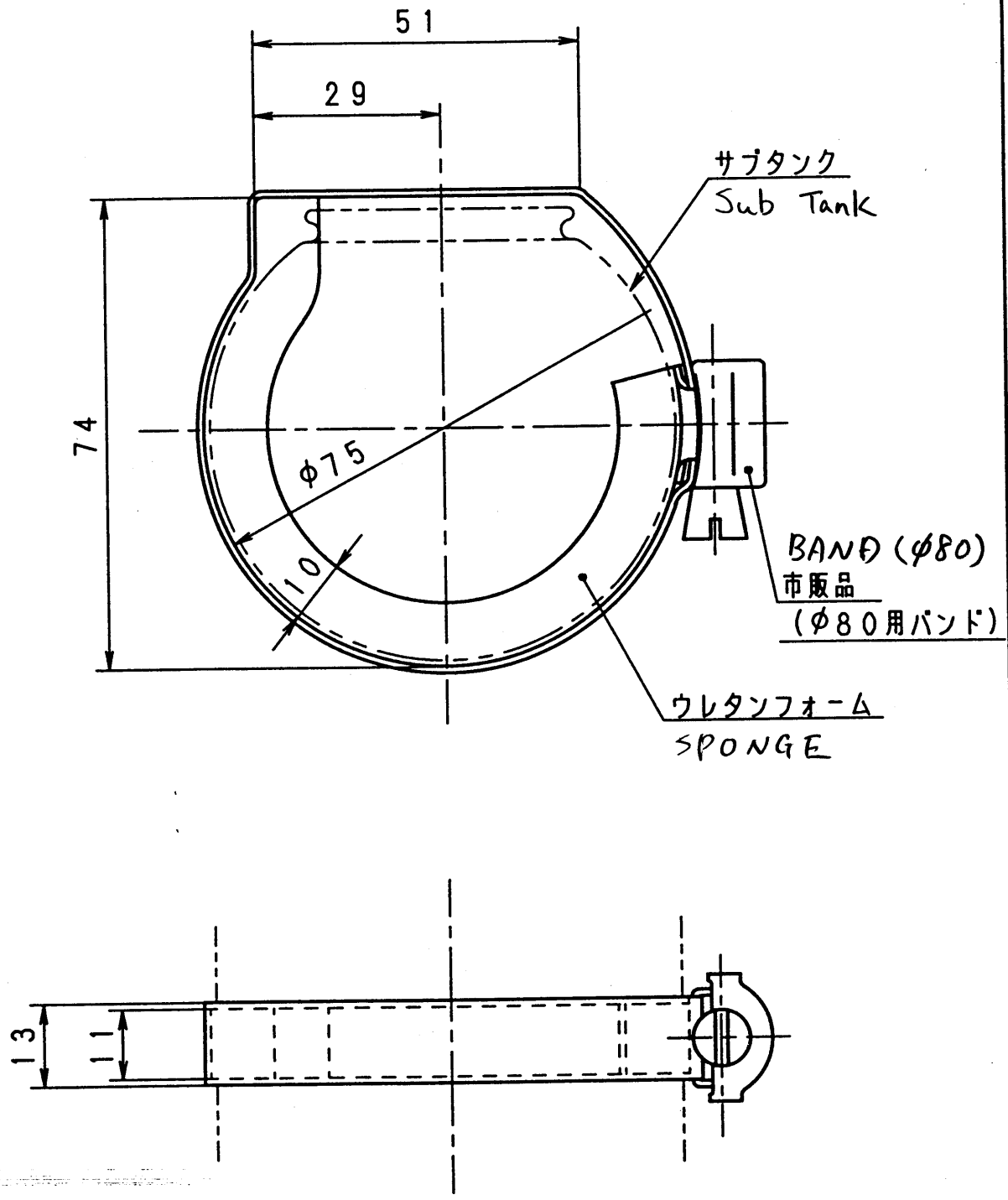


タンク容量：全量　約847cc、　上限　約450cc、　下限　約150cc

TANK CAPACITY: Approx. 847cc (Total), Approx. 450cc (at FULL), Approx. 150cc (at LOW)

サブタンク
SUB TANK

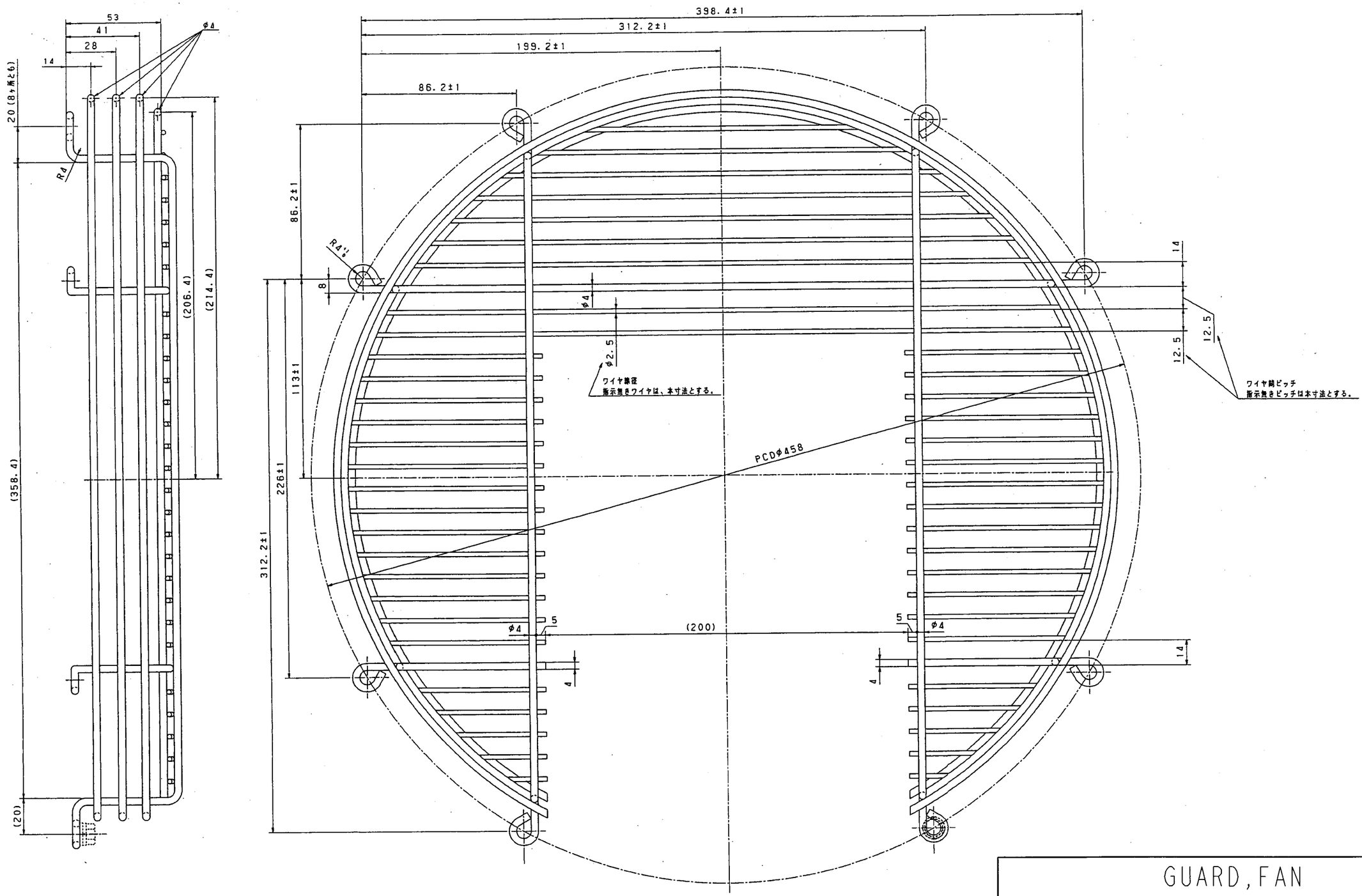
ヤンマーディーゼル株式会社 YANMAR DIESEL ENGINE CO., LTD.	DWG. NO.	————
	部品コード	124450-44510



バンド（サブタンク
CLAMP

ヤンマーディーゼル株式会社 YANMAR DIESEL ENGINE CO., LTD.	DWG. NO.	――――
	部品コード	124450-44550

3D-CAD



GUARD, FAN

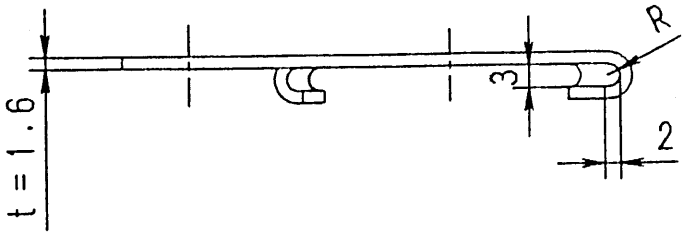
ファンガード

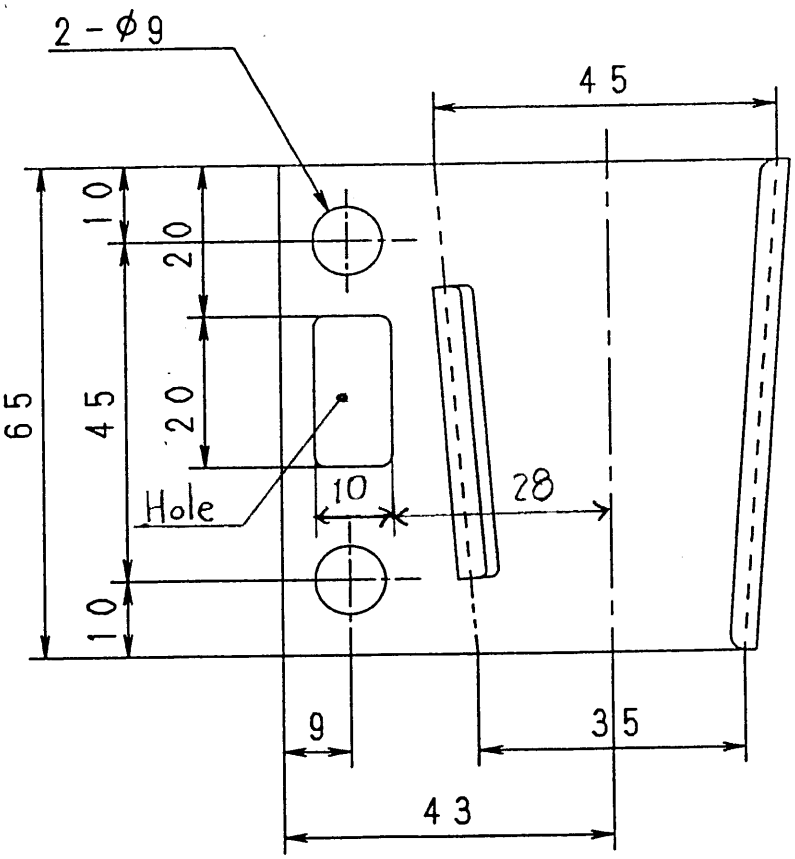
YANMAR

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

CODE	129601-44560

ENG. MODEL	??????





ブラケット（サブタンク
BRACKET FOR SUB TANK

ヤンマーディーゼル株式会社 YANMAR DIESEL ENGINE CO., LTD.	DWG. NO.	
	部品コード	121256-44600

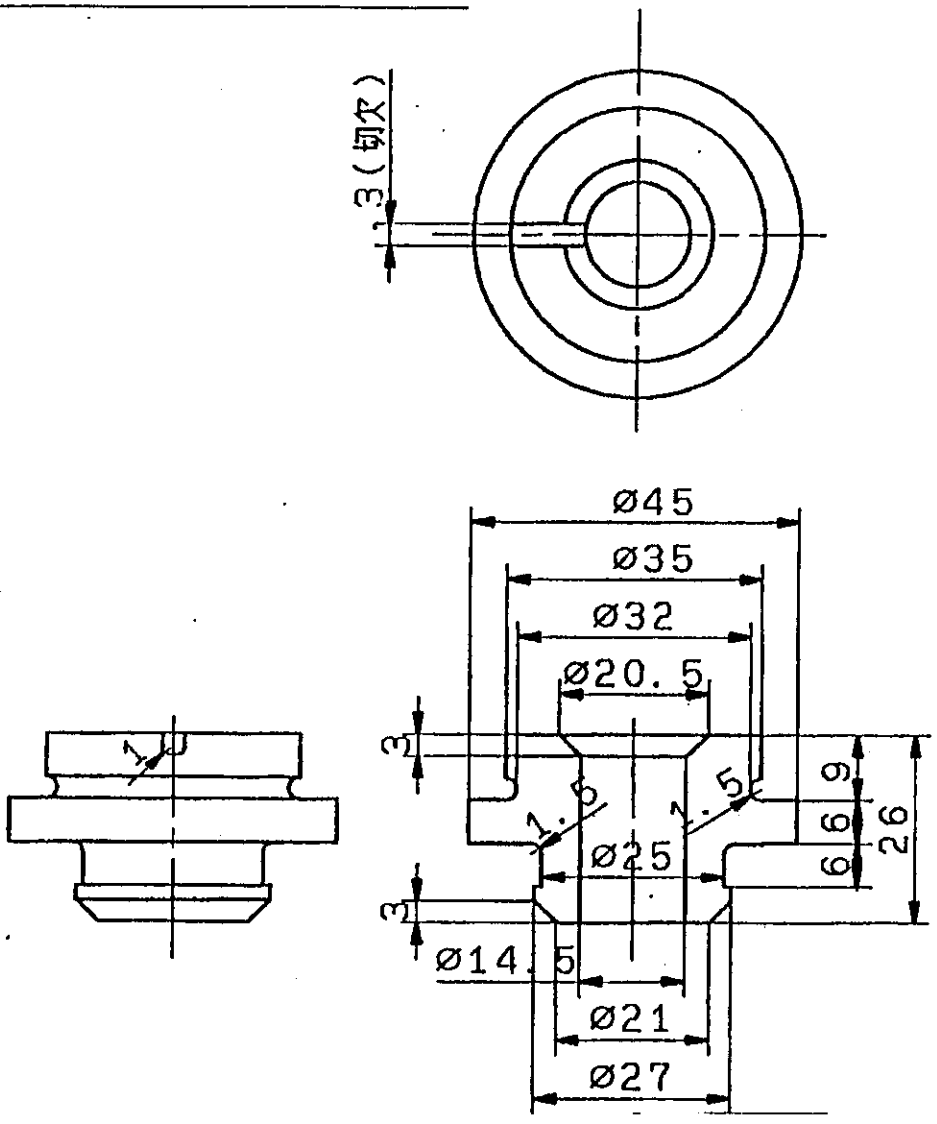
備考

1．材質：CR，ゴム硬度70° ±5°

Note

material : CR

rubber hardness : 70° ±5°



Dumper

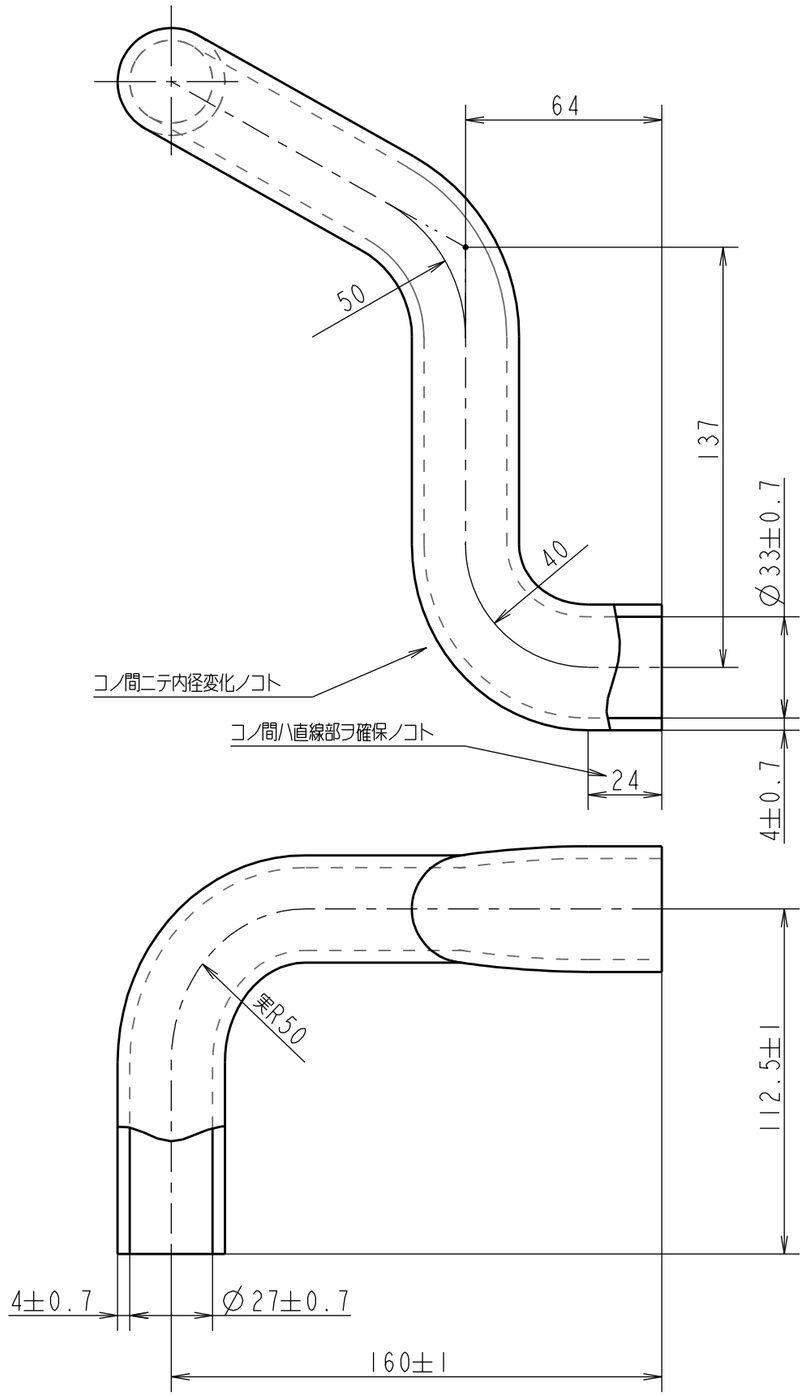
Silent blocks

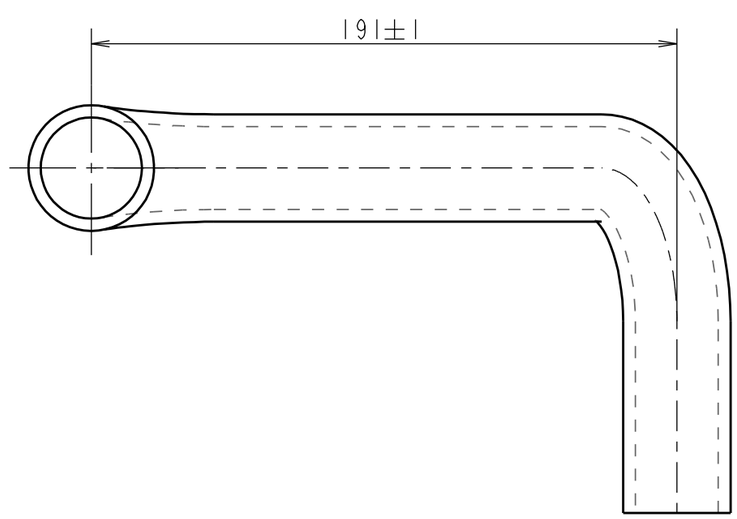
ヤンマーディーゼル株式会社 適用名称	
適用機種	
部品名称	防振ゴム(ラジーター)
部品コード	119255-44660

FILE NAME:129602-49010.DRW

3RD ANGLE PROJECTION

3D-CAD





TUBE A,COOLING WATER

CW-T(A

YANMAR

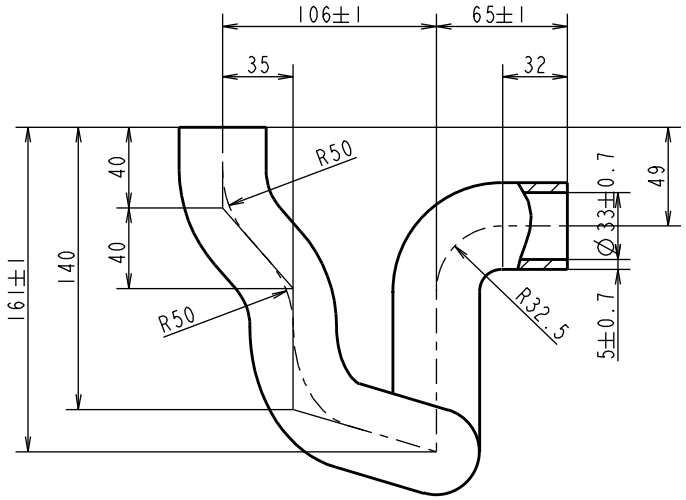
ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.

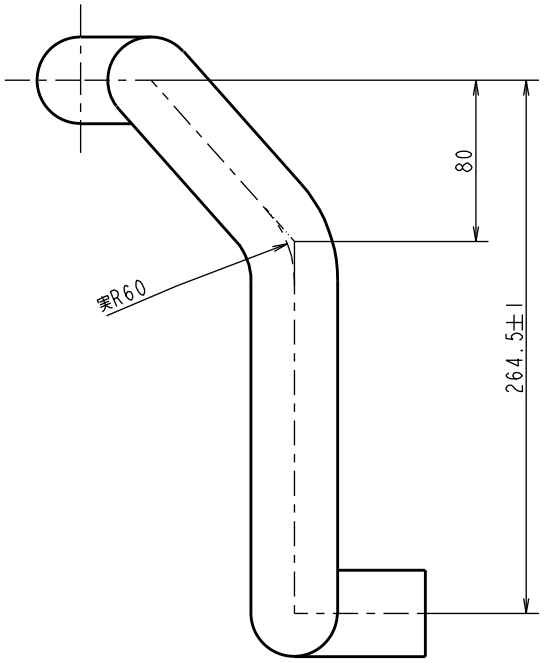
ENG.MODEL	??????	CODE	129602-49010

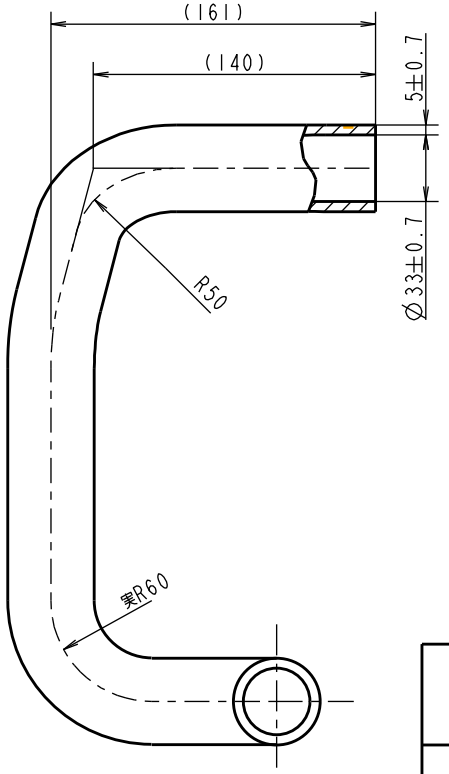
FILE NAME:129508-49020.DRW

3RD ANGLE PROJECTION

3D-CAD







CW-T(B

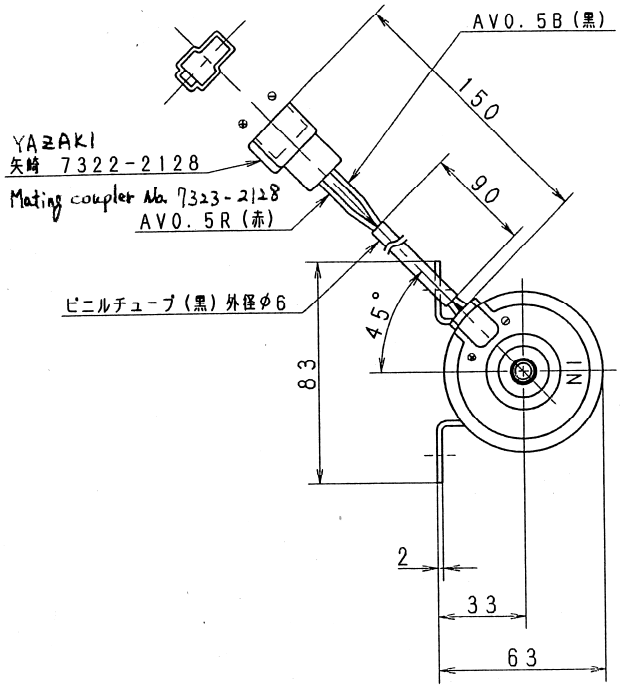
CW-T(B

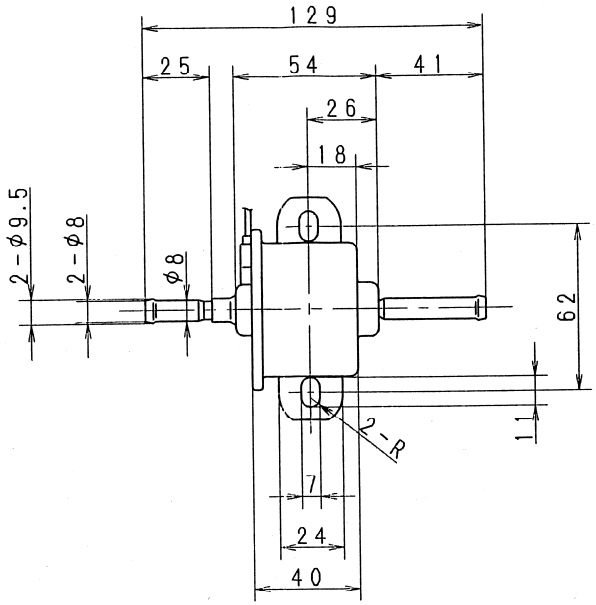
YANMAR

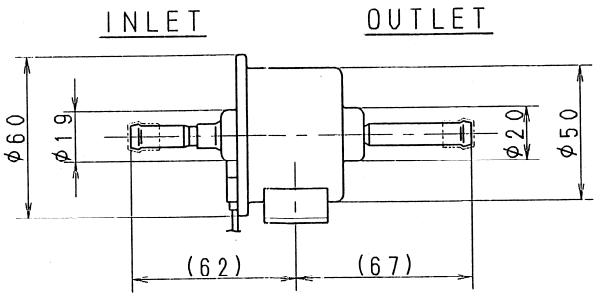
ENGINE PRODUCT OPERATIONS DIV., YANMAR CO., LTD.

CODE 129508-49020

ENG.MODEL ??????







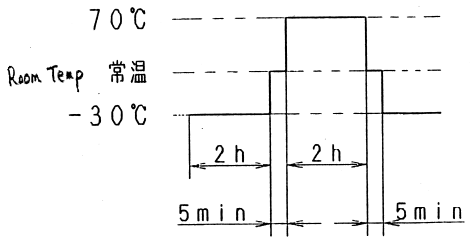


図 1

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℃
9. TEST FUEL: JIS K2203 OR K2201
10. FIXING DIRECTION FOR TEST: INLET & OUTLET PIPES HOLIZONTALLY
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

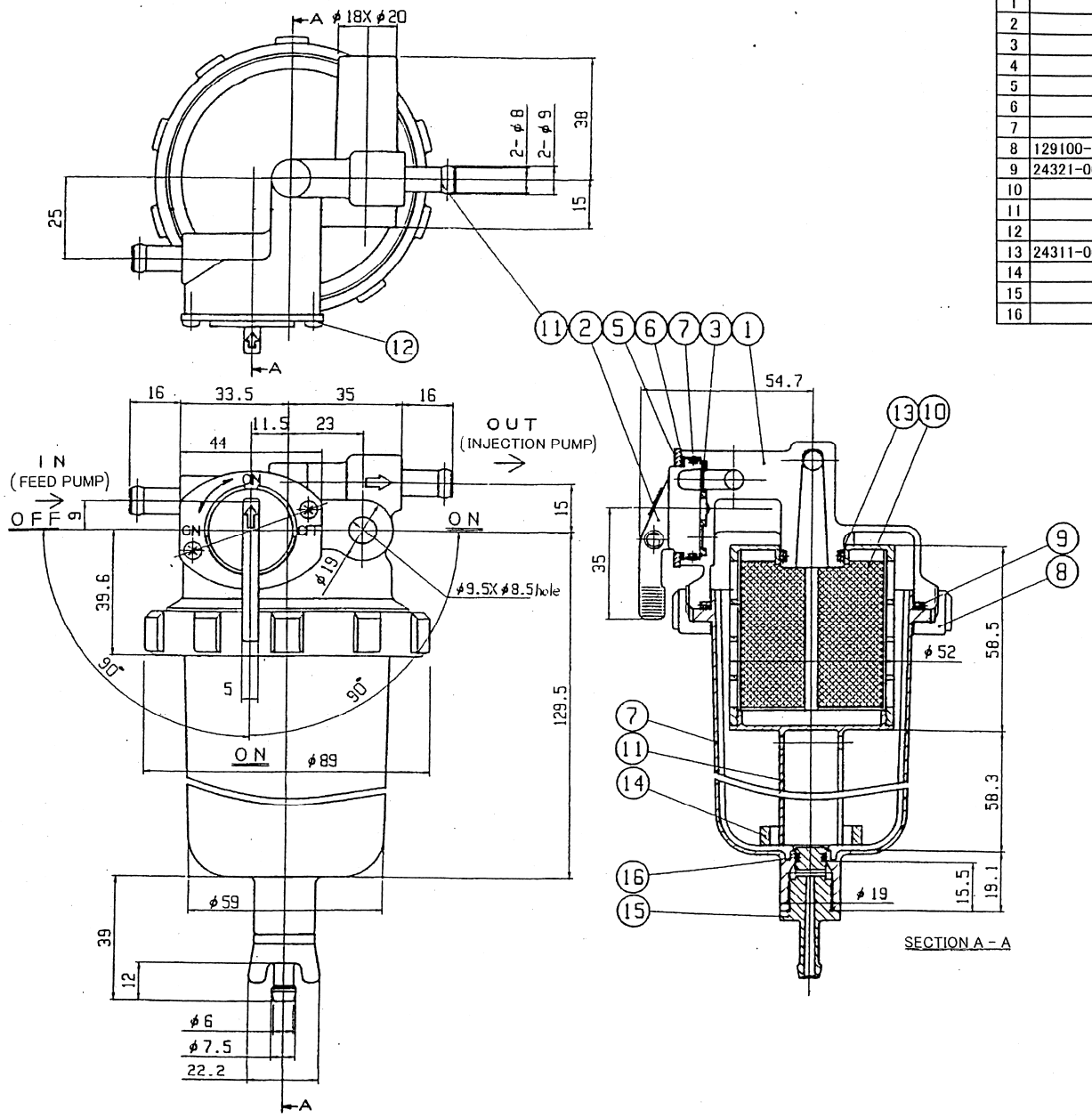
AFTER EACH TEST(NO.14~24) AS FOLLOWS, PUMP MUST OPERATE NOMALLY

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±2℃ 240Hrs AND -20℃ 240Hrs
18. HIGH TEMP. PERFORMANCE:
    a) VOLTAGE: 14V DC
    b) FUEL TEMP.: 50℃
    c) ENVIRONMENT TEMP.: 70℃
    d) OPERATING TIME: 96Hrs
19. FALLING TOUGHNESS: FALL FROM 300mm HEIGHT TO THE CONCRETE
20. SURGE VOLTAGE: JASO D001-82 A-1,2 B-1,2 ALL
21. REVERSALY VOLTAGE APPLING: JASO D001-82, 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 } 1 CYCLE
    b) STOPPING IN THE WATER: 1Hr }
    c) CYCLES: 350

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 HOLIZONTALLY OR VERTICALLY (OUTLET IS UP SIDE)
3. PUT A CLIP AT HOSE INSERTING PLACE
4. DON'T OPERATE WITHOUT FUEL

YANMAR DIESEL	
PARTS NAME	FUEL FEED PUMP
PARTS CODE	119225-52102



NO.	YANMAR CODE	SUPPLIER CODE	MODEL NAME	MATERIAL	QUANTITY	NOTES
1		YD-259-1	BODY	ADC12	1	
2		DI-2a	LEVER	ZDC2	1	WHITE CHROMATE
3		OK-3a	VALVE PACKING	NBR	1	
4		KTO-2-4	WAVE WASHER	SKS	1	
5		DI-5a	PLATE	SPCC	1	MFZn2
6		YMO-1-26	O RING	NBR	1	S-29
7		YD-259-7	CUP	12 NYLON	1	SEMI-TRANSPARENT
8	129100-55690	IA-8	RING NUT	ZDC2	1	WHITE CHROMATE
9	24321-000650	IA-9	O RING	NBR	1	G65
10		YD-259-10	ELEMENT	66 NYLON	1	108 MESH
11		S12-08	JOINT	C2700T	2	
12		ZSR-30-13	SCREW	S25C	2	MFZn2-C
13	24311-000160	YM-5-6	O RING	NBR	1	P16
14		JB-14-12	FLOAT	P.P	1	RED
15		JB-13-18	DRAIN PLUG	PCM	1	
16		KG-6	O RING	NBR	1	P7

SPECIFICATION		
ITEM	CONDITION	STANDARD
AIRTIGHTNESS	AIR PRESSURE(100kPa)(1.0kg/cm2)	NO LEAKAGE
FLOW RATE		
LEVER OPERATION TORQUE	AFTER OPERATING A FEW TIMES	LESS THAN 0.7N·m (7kg·cm)
ADAPTIVE FUEL		LIGHT OIL, YANMAR HEAVY OIL
ADAPTIVE TEMPRATURE RANGE		-20℃ ~ 80℃
LEVER OPERATION DURABILITY	OPERATION SPEED 15±5 REPROCATION/min	IX103 REPROCATION

NOTE

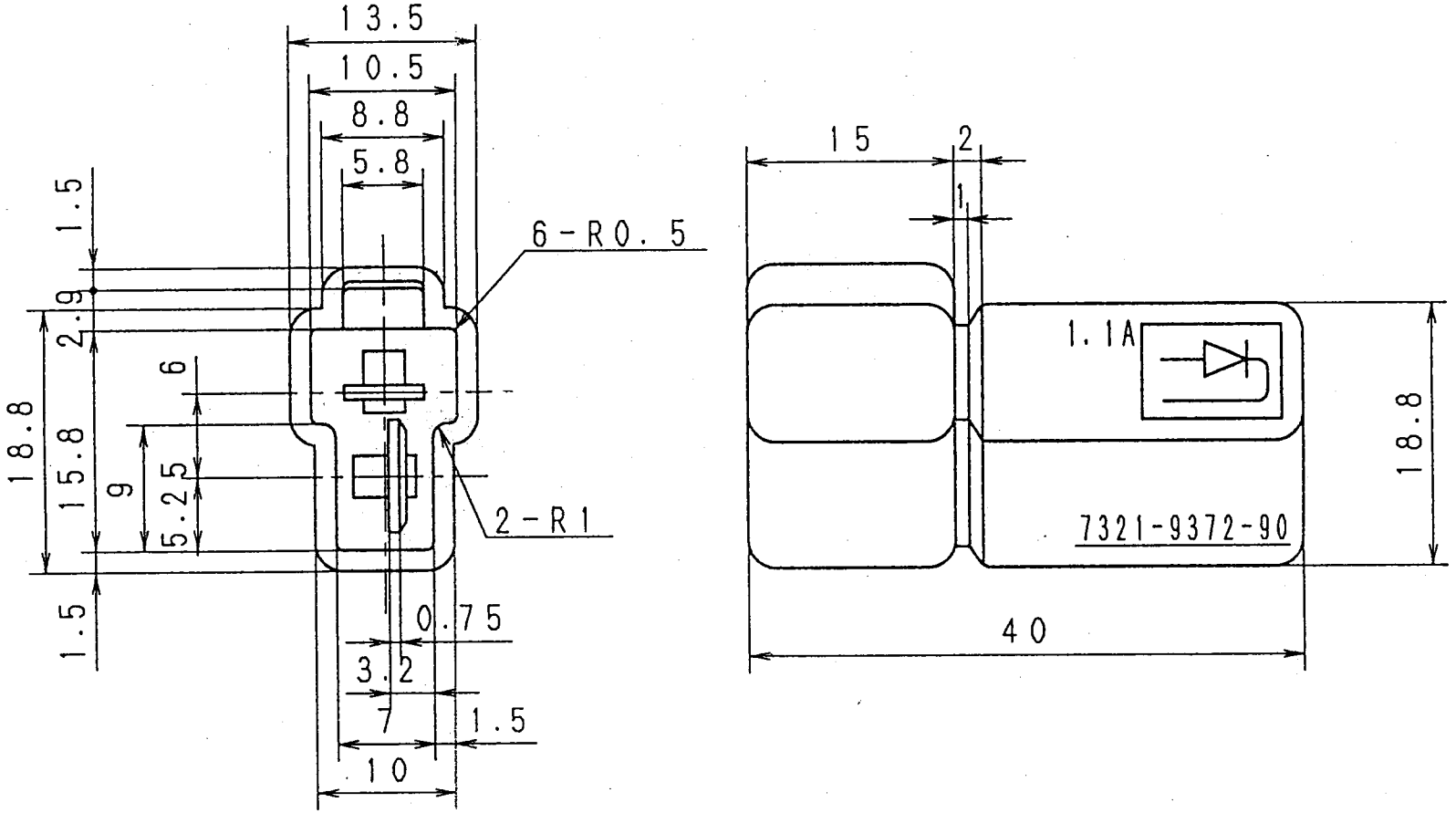
1. ⑧ ASSEMBLE AND APPLY DIAMOND GREASE TO RING NUT SCREW.
   TIGHTNING TORQUE: 15^{+5} N·m {150+50 kg·cm}
2. ⑪ FORCE FIT AFTER APPLYING ADHESIVE (THREE BOND 1303) TO JOINT.
   DRAFT LOAD: MORE THAN 4 N·m {40kg}
3. ⑩ ELEMENT SPECIFICATIONS
   FILTRAION AREA: MORE THAN 57cm^2
   OPENING: 152 μ
4. COUNTER VIBRATION: 8G, 50Hz
5. CAPACITY OF WATER-OIL SEPARTOR: MORE THAN 150cc
6. TO BE FREE FROM FOREIGN MATTERS AND BARRIS IN FUEL LINE.
7. INDICATED DETAIL OF DATE OF MANUFACTURE (ex.) 2001.5.14 [N15]

DAY $\frac{1\text{-}26,\ 27,\ 28,\ 29,\ 30,\ 31}{(A\text{-}Z)\ (a)\ (b)\ (d)\ (e)\ (f)}$ YEAR $\frac{0\text{-}9}{\text{THE END OF NUMBER OF THE YE/}}$ MONTH $\frac{1\text{-}9,\ 10,\ 11,\ 12}{(1\sim9)\ (O)\ (N)\ (D)}$

YANMAR DIESEL	
PARTS NAME	WATER-OIL SEPARATOR
PARTS CODE	119802-55700

3RD ANGLE PROJECTION

3D-CAD



Mate coupler : 7123-2228

Mate terminal : 7116-2090

DIODE

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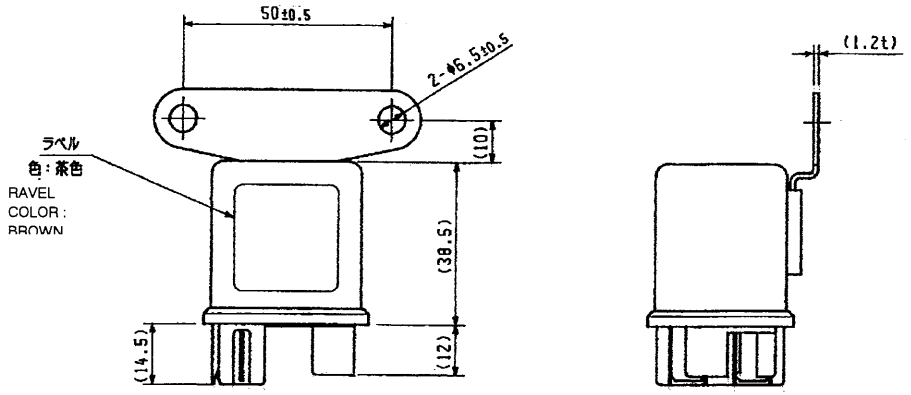
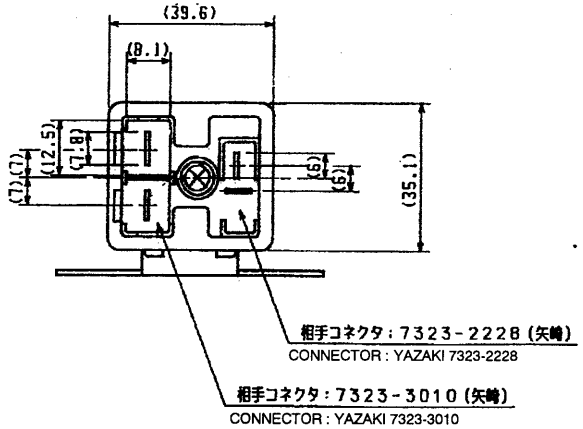
YANMAR

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

CODE 119643-66900

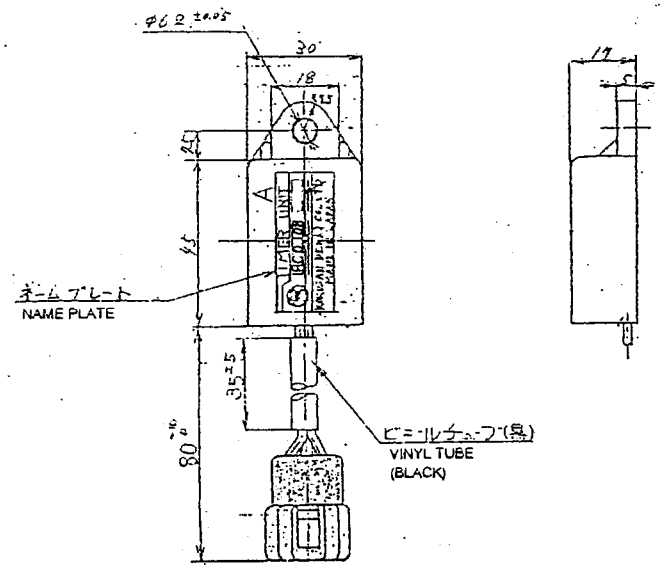


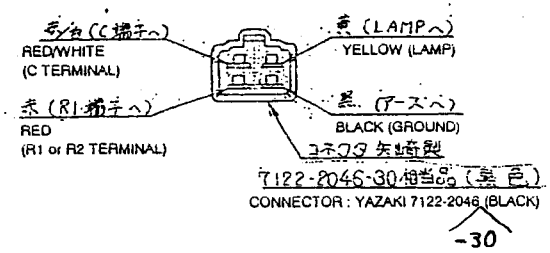


仕 様
1．定格電圧 ： ＤＣ１２Ｖ
2．連続定格 ： 10 MIN.
3．コイル抵抗値 ： ３７Ω
4．インダクタンス ： ６６mH （at 1kHz）

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

YANMAR DISEL 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



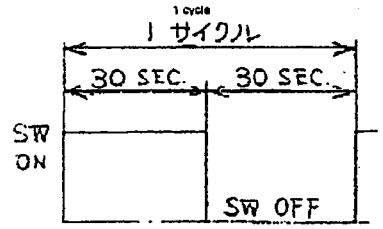


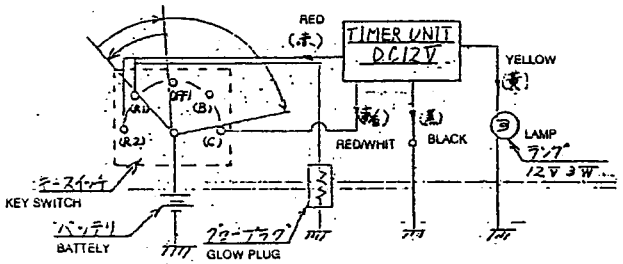
仕 様

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 ： 1Ａ
6．耐水性 ： 清水中10cmノ所ニ24時間保持シタ後、水分ヲ拭キ取リ自然乾燥後、性能ニ異常ナキコト.
　但シ、カプラ及ビコネクタ部分ハ浸水ガ無イヨウニ行ウコト.
7．耐振性 ： 20Ｇ一定ニテ100～1000Hz60secスイープニテX, Y, Z方向各２Hr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リ付ケルコト.
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. OPRATION 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. VIBLEATION RESISTANCE : 20G
8. DUABILITY : 30000 cycle



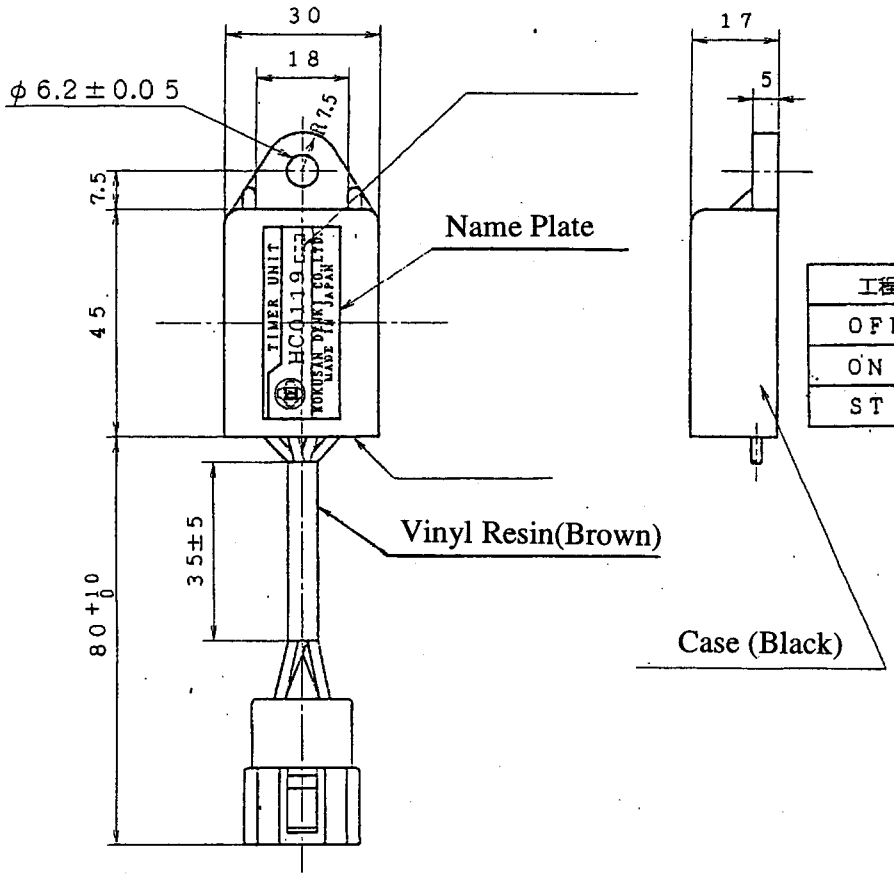


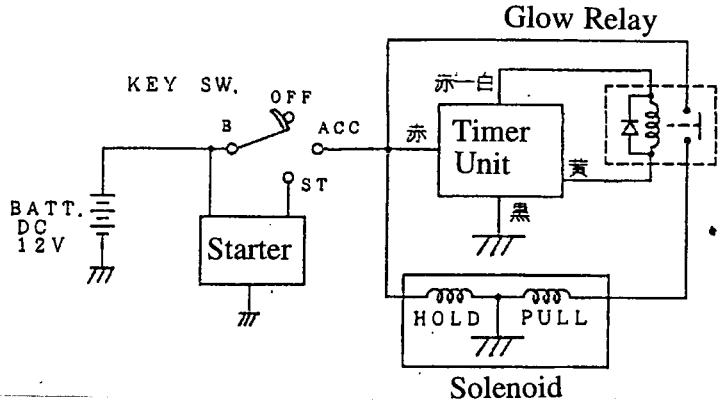
結線図
WIRING DIAGRAM

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

3RD ANGLE PROJECTION

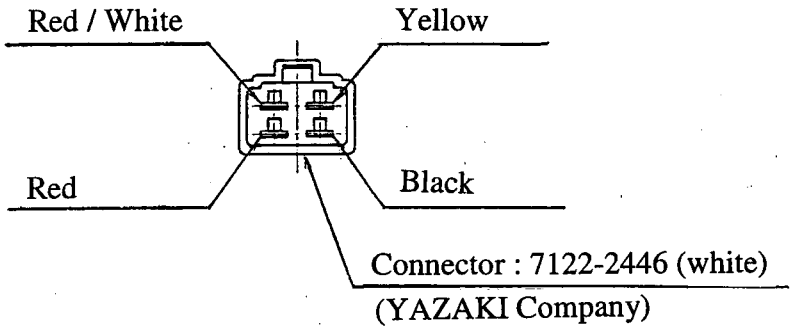
3D-CAD





工程	B	ACC	ST
OFF			
ON	○	○	
ST	○	○	○

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



TIMER(1sec

タイマー(1sec

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CODE 129211-77920