

TNV series

ELECTRONIC CONTROL MANUAL

YANMAR

FOR EPA TIER3

3TNV84T-Z

4TNV84T-Z

4TNV98T-Z

4TNV98-Z(R80-7A)

4TNV98-E(R55-7A,R55W-7A)

OPTION

3TNV82A-Z

3TNV88-Z, 3TNV88-E

3TNV88-Z, 4TNV88-E

REFERENCE ONLY

- MINI-EXCAVATOR(5~8TON, -7A SERIES)

MANUAL

CONTENTS

	Page
SPECIFICATIONS	
Specifications	1-3
Outline	1-13
CONTROL SYSTEM	
Precautions on the use of electronic control components	2-3
Engine control unit	2-3
Fuel injection pump	2-4
EGR valve	2-5
Accelerator sensor	2-5
Relay	2-6
Service tool	2-6
Control scheme	2-7
System outline	2-7
E-ECU	2-10
Electrical parts	2-19
Harness	2-24
Harness design requirements	2-24
Harness clamping	2-25
CAN bus termination	2-26
Control functions	2-27
Control software	2-27
General	2-29
Engine control - General	2-36
Application interface outline	2-43
Fuel injection pump	2-66
EGR valve	2-67
Accelerator sensor	2-68
Main relay	2-70
Rack actuator relay	2-70

CONTENTS

Sub relay	2-71
Starter relay.....	2-71
Starting aid relay	2-73
For 400 W air heater (glow plug).....	2-73
For 500/800 W air heater	2-74
For 1000 W air heater	2-74
Coolant temperature sensors	2-75

Appendix Standard harness

TNV - Series service tool - Operation manual

Section 1

SPECIFICATIONS

	Page
Specifications	1-3
Outline	1-13

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Atmospheric conditions and engine configuration affect the rated output of a TNV engine. TNV engines are tested using the methods established by the Society of Automotive Engineers (SAE) J1349 and International Organization for Standardization (ISO) 3046/1. These standards state that engine output (net power rating) should be determined under the following atmospheric conditions (called the standard conditions). If the operating environment for your application differs from these standard conditions see *Correcting Observed Power*

SPECIFICATIONS

DI Series

3TNV82A-B

3TNV82A-Z (Option Electronic Control System)

Engine model			3TNV82A-B/3TNV82A-Z													
Engine classification			CL	VM												
1	Type	—	Vertical, 4-cycle water-cooled diesel engine													
2	Combustion system	—	Direct injection (DI)													
3	No. of cylinders - Bore × Stroke	n - mm × mm	3 - 82×84													
4	Displacement	ℓ	1.331													
5	Rated engine speed	min ⁻¹					2200	2300	2400	2500	2600	2700	2800		3000	
	Output (Gross) *1	Cont. rating	kW													
		Rated output	kW					16.5	17.3	18.1	18.9	19.7	20.5	21.3		23.0
	Output (NET)	Cont. rating	kW													
Rated output		kW					16.0	16.8	17.5	18.2	19.0	19.7	20.4		21.9	
6	Maximum idling speed	min ⁻¹ ±25					2375	2485	2570	2675	2780	2890	2995		3180	
7	Specific fuel consumption	g/kWh	≤245						≤252				≤258			
8	Exhaust gas temp.	°C (°F)					≤580	≤590	≤600	≤610	≤620	≤630	≤640		≤660	
9	Compression ratio	—	19.2													
10	Diesel fuel injection pressure	MPa (kgf/cm ²)	19.6 ^{+1.0} ₀ (20 ₀ ^{+1.0})													
11	Main shaft side	—	Flywheel side													
12	Rotation direction	—	Counterclockwise (Viewed from flywheel side)													
13	Governor	—	Mechanical governor (All-speed governor) / Electronic governor (All-speed governor)													
14	Aspiration	—	Natural aspiration													
15	Cooling system	—	Liquid-Cooled With Radiator													
16	Lubricating system	—	Forced lubrication with multi-stage trochoid pump													
17	Starting system	—	Electric starting													
18	Charging system	—	Alternator (12 VDC/40 A)													
19	Starting aid device	—	Super-quick Heating Glow plug													
20	Engine oil pressure	Rated speed MPa	0.34±0.05 (3.5±0.5)													
21	Oil pan capacity	Full	ℓ													
		Useful	ℓ													
22	Engine coolant capacity	ℓ	1.8 (Engine only)													
23	Cooling fan type - dia. × No. of blades	mm	Made by resin, Pusher, F Type - φ335(NF)×6													
24	Crank V-pulley dia./ Fan V-pulley dia.	mm/mm	φ120 / φ90	φ110 / φ110												

Note: This table is subject to change for performance improvement.

*1: Gross outputs are theoretical, calculated from cooling fan formula. These are for reference only.

SPECIFICATIONS

3TNV84T-Z (Electronic Control System)

Engine model			3TNV84T-Z											
Engine classification			CL	VM										
1	Type	—	Vertical, 4-cycle water-cooled diesel engine											
2	Combustion system	—	Direct injection (DI)											
3	No. of cylinders - Bore × Stroke	n - mm × mm	3 - 84×90											
4	Displacement	ℓ	1.496											
5	Rated engine speed	min ⁻¹												
	Output (Gross) *1	Cont. rating	kW											
		Rated output	kW											
	Output (NET)	Cont. rating	kW											
Rated output		kW												
6	Maximum idling speed	min ⁻¹ ±25												
7	Specific fuel consumption	g/kWh												
8	Exhaust gas temp.	°C (°F)												
9	Compression ratio	—												
10	Diesel fuel injection pressure	MPa (kgf/cm ²)												
11	Main shaft side	—	Flywheel side											
12	Rotation direction	—	Counterclockwise (Viewed from flywheel side)											
13	Governor	—	Electronic governor (All-speed governor)											
14	Aspiration	—	Turbocharger											
15	Cooling system	—	Liquid-Cooled With Radiator											
16	Lubricating system	—	Forced lubrication with multi-stage trochoid pump											
17	Starting system	—	Electric starting											
18	Charging system	—	Alternator (12 VDC/40 A)											
19	Starting aid device	—	Super-quick Heating Glow plug											
20	Engine oil pressure	Rated speed MPa												
21	Oil pan capacity	Full	ℓ											
		Useful	ℓ											
22	Engine coolant capacity	ℓ												
23	Cooling fan type - dia. × No. of blades	mm												
24	Crank V-pulley dia./ Fan V-pulley dia.	mm/mm												

Note: This table is subject to change for performance improvement.

*1: Gross outputs are theoretical, calculated from cooling fan formula. These are for reference only.

**3TNV88-B
3TNV88-Z (Option Electronic Control System)**

Engine model			3TNV88-B/3TNV88-Z													
Engine classification			CL		VM											
1	Type	—	Vertical, 4-cycle water-cooled diesel engine													
2	Combustion system	—	Direct injection (DI)													
3	No. of cylinders - Bore × Stroke	n - mm × mm	3 - 88×90													
4	Displacement	ℓ	1.642													
5	Rated engine speed	min ⁻¹	1500	1800			2200	2300	2400	2500	2600	2700	2800		3000	
	Output (Gross) *1	Cont. rating	kW	12.7	15.4											
		Rated output	kW	13.9	16.9			20.3	21.3	22.2	23.2	24.2	25.1	26.0		28.1
	Output (NET)	Cont. rating	kW	12.3	14.8											
Rated output		kW	13.5	16.3			19.9	20.7	21.6	22.6	23.5	24.3	25.2		27.1	
6	Maximum idling speed	min ⁻¹ ±25	1600	1895			2400	2510	2590	2690	2810	2920	2995		3210	
7	Specific fuel consumption	g/kWh	≤245					≤252					≤258			
8	Exhaust gas temp.	°C (°F)	≤540	≤560			≤590	≤600	≤610	≤620	≤630	≤640	≤650		≤670	
9	Compression ratio	—	19.1													
10	Diesel fuel injection pressure	MPa (kgf/cm ²)	19.6 ^{+1.0} ₀ (200 ⁺¹⁰ ₀)													
11	Main shaft side	—	Flywheel side													
12	Rotation direction	—	Counterclockwise (Viewed from flywheel side)													
13	Governor	—	Mechanical governor (All-speed governor) / Electronic governor (All-speed governor)													
14	Aspiration	—	Natural aspiration													
15	Cooling system	—	Liquid-Cooled With Radiator													
16	Lubricating system	—	Forced lubrication with multi-stage trochoid pump													
17	Starting system	—	Electric starting													
18	Charging system	—	Alternator (12 VDC/40 A)													
19	Starting aid device	—	Super-quick Heating Glow plug													
20	Engine oil pressure	Rated speed	MPa	0.34±0.05 (3.5±0.5)												
21	Oil pan capacity	Full	ℓ	6.7												
		Useful	ℓ	2.8												
22	Engine coolant capacity	ℓ	2.0 (Engine only)													
23	Cooling fan type - dia. × No. of blades	mm	Made by resin, Pusher, F Type - φ335(NF)×6													
24	Crank V-pulley dia./ Fan V-pulley dia.	mm/mm	φ120 / φ90		φ110 / φ110											

Note: This table is subject to change for performance improvement.

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SPECIFICATIONS

3TNV88-U

3TNV88-E (Option Electronic Control System)

Engine model			3TNV88-U/3TNV88-E												
Engine classification			CL	VM											
1	Type	—	Vertical, 4-cycle water-cooled diesel engine												
2	Combustion system	—	Direct injection (DI)												
3	No. of cylinders - Bore × Stroke	n - mm × mm	3 - 88×90												
4	Displacement	l	1.642												
5	Rated engine speed	min ⁻¹				2100	2200	2300	2400	2500	2600	2700	2800		3000
			Output (Gross) *1	Cont. rating	kW										
	Rated output	kW					17.7	18.6	19.4	20.3	21.2	22.1	23.0	23.9	
	Output (NET)	Cont. rating	kW												
Rated output		kW				17.3	18.1	18.9	19.7	20.5	21.3	22.2	23.0		24.6
6	Maximum idling speed	min ⁻¹ ±25				2290	2400	2510	2590	2690	2810	2920	2995		3210
7	Specific fuel consumption	g/kWh	≤245						≤252				≤258		
8	Exhaust gas temp.	°C (°F)				≤570	≤580	≤590	≤600	≤610	≤620	≤630	≤640		≤660
9	Compression ratio	—	19.1												
10	Diesel fuel injection pressure	MPa (kgf/cm ²)	19.6 ^{+1.0} ₀ (200 ⁺¹⁰ ₀)												
11	Main shaft side	—	Flywheel side												
12	Rotation direction	—	Counterclockwise (Viewed from flywheel side)												
13	Governor	—	Mechanical governor (All-speed governor) / Electronic governor (All-speed governor)												
14	Aspiration	—	Natural aspiration												
15	Cooling system	—	Liquid-Cooled With Radiator												
16	Lubricating system	—	Forced lubrication with multi-stage trochoid pump												
17	Starting system	—	Electric starting												
18	Charging system	—	Alternator (12 VDC/40 A)												
19	Starting aid device	—	Super-quick Heating Glow plug												
20	Engine oil pressure	Rated speed	MPa	0.34±0.05 (3.5±0.5)											
21	Oil pan capacity	Full	l	6.7											
		Useful	l	2.8											
22	Engine coolant capacity	l	2.0 (Engine only)												
23	Cooling fan type - dia. × No. of blades	mm	Made by resin, Pusher, F Type - φ335(NF)×6												
24	Crank V-pulley dia./ Fan V-pulley dia.	mm/mm	φ120 / φ90	φ110 / φ110											

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