AMMANN
YANMAR

YANMAR®

MINI - EXCAVATORS

OPERATION & MAINTENANCE MANUAL (GB)

Models: **ViO17 (EP)**
ViO20-3
ViO25-3
ViO30/35-3
ViO50U
ViO57U



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5 Basic Precautions

⚠ WARNING

It is the user's responsibility to determine if an application presents any dangerous phenomena, for example: toxic gases, ground conditions requiring special precautions and measures to be taken to eliminate or reduce risks.

Follow safety rules at your workplace

- The operation and servicing of this machine is restricted to qualified persons.
- When operating or servicing the machine, follow all the safety rules, precautions and procedures.
- Any work performed by a team or with a signal person should be conducted in accordance with signals agreed on beforehand.

⚠ DANGER

The machines are not equipped to operate in explosive environments.

Install safety devices

- Make sure that all guards and covers are installed in their correct position. If any of them are damaged, repair them immediately.
- The proper use of all safety devices, such as lock lever, should be well understood by the machine operator.
- Never remove the safety devices. Always make sure that they operate properly. Incorrect operation of the safety devices could cause serious bodily injury.

Fasten the seatbelt

- For your safety, the machine is equipped with a Roll-Over Protective Structure (ROPS), a Falling Object Protective Structure (FOPS), a Tip-Over Protective Structure (TOPS) and a safety belt on the seat.
- Always fasten the seatbelt and adjust snugly before you operate the machine.
- The seatbelt must be replaced after an accident.
- In addition the seat and seat mounting must be checked by your dealer after an accident has occurred.
- If the seat and seat mounting are damaged, they must be replaced.

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6 Operating Precautions

6.1 Precautions before starting the engine

Ensure the safety of your workplace

- Before starting the machine, check to see if there are any hazards in your working area.
- Examine the terrain and soil, and decide the best way to do the work.
- When working on the street, provide a signal person or fence for the safety of vehicles and pedestrians.
- If there are underground utilities at the work site, such as water pipes, gas pipes, high-voltage conduits or others, contact the responsible companies to locate them exactly, so as not to damage them.

Inspect around the operator's seat

- Dirt, oil and snow on the floor, levers, handrails or steps are slippery and hazardous. Remove them all completely.
- Keep parts and tools away from the operator's seat as they may damage the control levers or switches or create any other hazards.

Signal before starting the engine

- Check the machine carefully before initial start up for the day.
- Make sure there are no persons near the machine before getting on it.
- Never start the engine when the "SERVICING IN PROGRESS" tag is attached to the control system.
- Sound the horn to alert people nearby before starting the engine.
- Be sure to start the engine and operate the machine from the operator's seat only.
- Do not allow any other persons to get on the machine.

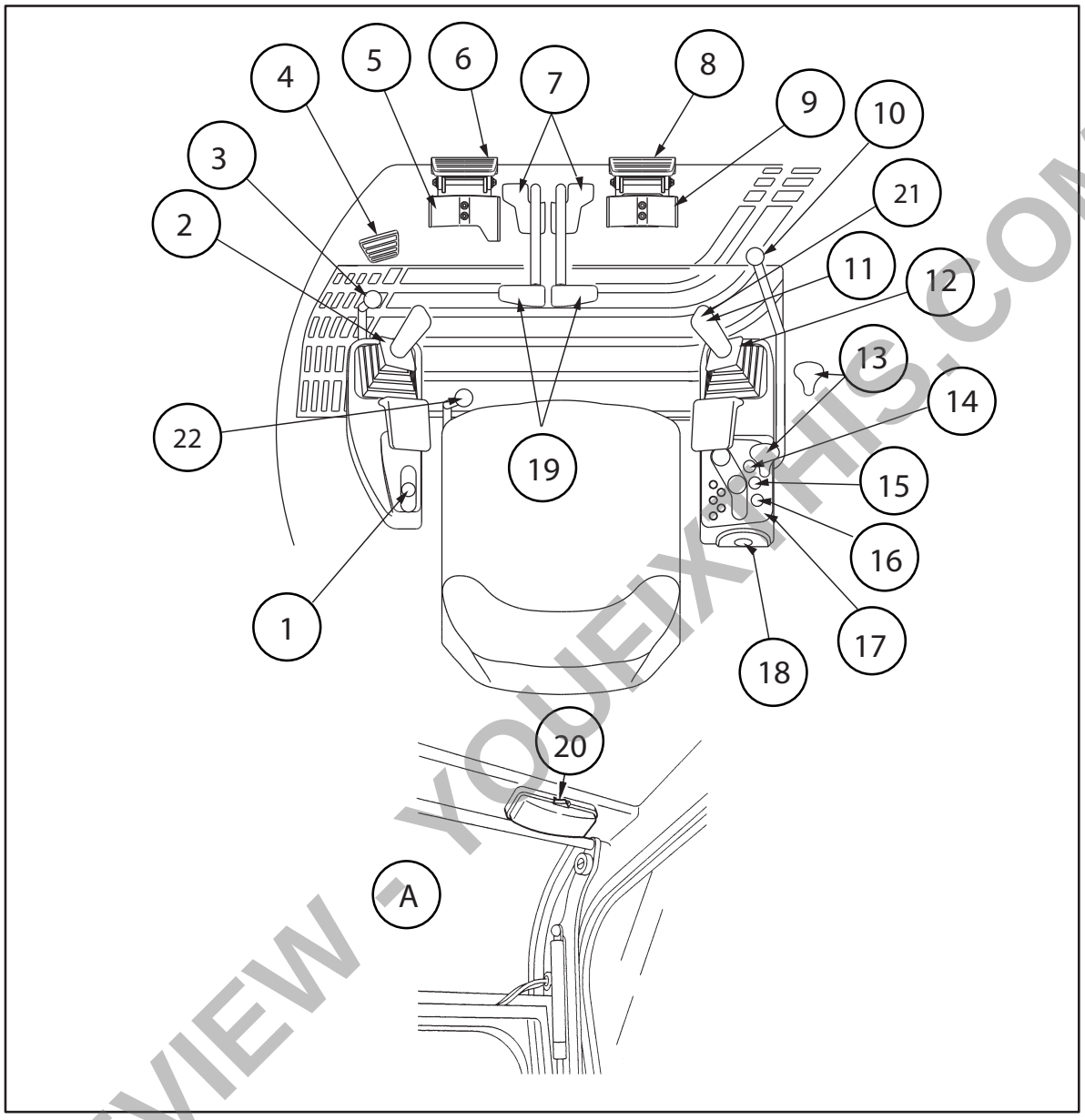
Keep the headlights clean

- Keep the surface of the headlights clean for clear view.
- Make sure that your machine is equipped with headlights and all required working lamps, and that they work properly.

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9.2 Controls and switches (depending on model)

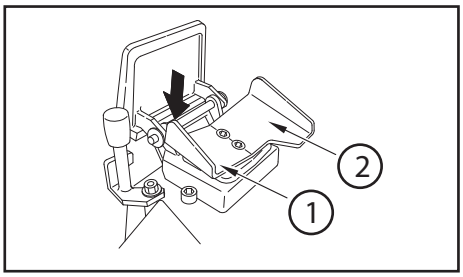


A = For cabin type

1) Accelerator lever
2) Control lever (L)
3) Lock lever
4) 2nd speed pedal
5) P.T.O. pedal/switch (depending on model)
6) Pedal guard
7) Travel pedal
8) Pedal guard
9) Boom swing pedal
10) Lock lever (only for canopy type)
11) Horn switch
12) Control lever (R)
13) Blade lever (location depending on model)
14) Light switch
15) Wiper switch (for cabin type)
16) Heater switch (for cabin type)
17) Monitor
18) Starter switch
19) Travel lever
20) Room lamp switch
21) P.T.O. -switch (depending on model)
22) Track spacing lever (for ViO17)

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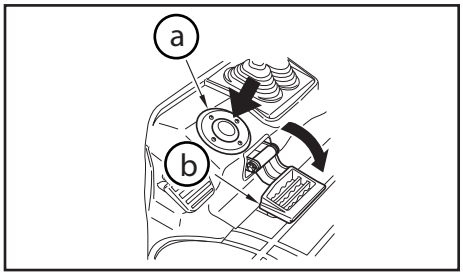
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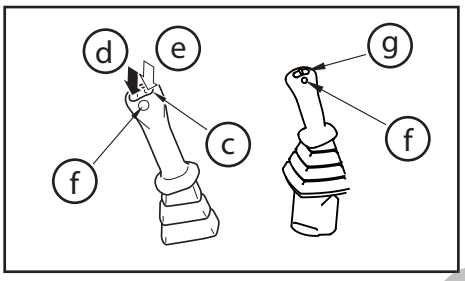
(2) P.T.O. pedal (depending on model)

- Use this pedal to operate the attachment.
- Move the P.T.O. pedal to the left side (1) for operating the single acting actuator type of attachments, when the P.T.O. selector valve is in the single acting position.
  [Example of the P.T.O. : Breaker]

1) Left
2) Right



a = P.T.O. foot switch (single acting)
b = Foot rest



(3) P.T.O. -switch (depending on model)

Use this switch for single or double acting, according to the P.T.O. selector valve position.

c = P.T.O. -switch
d = single effect
e = double effect
f = Horn-switch
g = Proportional roller (depending on model)

IMPORTANT

Before disconnecting the attachments, shutdown the machine, leave the key in the "ON" position and press the pedal of the 3rd circuit to release the residual pressure.

11.6 Operation of the air conditioning heater (depending on model)



The control panel is installed on the machine dashboard.

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14.2 Troubleshooting

Engine

- Contact your dealer about the measures shown in parentheses in the list below.
- If there is any abnormality or trouble whose cause is unknown other than those shown below, ask your dealer for repair.

Problem		Cause	Measure
Engine	Steam comes out of top of radiator.	• Shortage of cooling water	• Check cooling water level. Refill, if necessary. (Check cooling water for leak from water port.)
	Water temp alarm lamp lights.	• Loose fan belt	• Adjust belt tension.
		• Buildup of dust and water scale on cooling system	• Replace cooling water. Clean inside of cooling water system.
		• Defective thermostat	• Replace thermostat.
		• Clogged radiator fin or inclined fin	• Clean or repair fin.
		• Defective electrical system	• Check or replace electrical system.
	Turning on starter motor does not start engine.	• Shortage of fuel	• Refill fuel tank.
		• Air mixed in fuel system	• Repair air leak. Release air from fuel system.
		• Defective fuel injection pump or deteriorated nozzle performance	• (Replace pump or nozzle.)
		• Improper compression	• (Check and repair.)
		• Blown out fusible link	• Replace fusible link.
		• Damaged key stop solenoid. Link disengagement	• (Check and repair.)
	Dark fumes come out of machine.	• Clogged air cleaner element	• Clean or repair element.
		• Deteriorated nozzle performance	• (Check and repair.)
		• Improper compression	• (Check and repair.)
	Exhaust color is white or bluish white.	• Too much oil in oil pan	• Drain oil from oil pan to specified level.
		• Improper fuel	• Replace fuel with recommended one.
		• Worn cylinder or piston ring	• (Repair.)

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18 Standard Tightening Torque for Bolts and Nuts

18.1 Torque table

Bolts or nuts in the metric system should be tightened at the torque described below unless specified otherwise.

Item		Thread size X pitch	Tightening torque N•m	Remarks
Screw (7T) Nut	Coarse threads	M6×1	9,8 - 11,8	1) Apply 80 % tightening torque if screws or nuts are in aluminium. 2) Apply 60 % tightening torque for 4T bolt and lock nut. 3) Use fine thread screws for engine only.
		M8×1,25	22,6 - 28,4	
		M10×1,5	44,1 - 58,8	
		M12×1,75	78,5 - 98,1	
		M14×2	117,7 - 147,1	
		M16×2	166,7 - 206,0	
		M18×2,5	235,4 - 284,4	
		M20×2,5	323,6 - 402,1	
	Fine threads	M14×1,5	127,5 - 147,1	
		M16×1,5	210,9 - 240,3	
PT plug		1/8	9,8	
		1/4	19,6	
		3/8	29,4	
		1/2	58,8	
Pipe joint bolt		M8	12,7 - 16,7	
		M12	24,5 - 34,3	
		M14	39,2 - 49,0	
		M16	49,0 - 58,8	

IMPORTANT

If a part to be tightened is made of resin like a panel board, excessive tightening torque may damage the tightened part. Be careful when tightening.

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17 Fueling, Oiling and Greasing Based on Temperature Range

17.1 Fuel and oil

Select fuel and oil based on the temperature range.
If you start the engine at air temperatures lower than 32°F (0°C), use SAE10W, SAE10W-30, or SAE15W-40 even if the temperature in the daytime rises to 50°F (10°C) or so.
Machines can operate using B-type BIO diesel.

17.2 Cooling water

Because a AMMANN YANMAR genuine long-life coolant (LLC) is added to the cooling water, you need not change it unless the temperature falls bellow -31°F (-35°C).

Components	Fluid	Recommendations with regard to temperature ranges	Prescribed amount (litre)			
		(°F) -4 14 32 50 68 86 (°C) (-20) (-10) (0) (10) (20) (30)	ViO17	ViO20-3	ViO25-3	
Engine	Engine oil	SAE 10WCD SAE 10W-30CD SAE 15W-40CD	2,8 +0,4	3,5 + 0,4	3,5 +0,4	with filter
Travel reduction gear	Gear oil	SAE 90 (GL-4)	-	0,4	0,4	for each reduction gear
Hydraulic oil sytstem	Hydraulic oil	ISO VG46	16,5 9,5	26,0 13,0	26,0 13,0	in the tank the rest
Fuel tank	Ligh oil	No.2-D No.3-D No.3-D (S)	20,0	28,5	28,5	
Cooling system	Water	AMMANN YANMAR genuine long-life coolant (LLC) added	2,7 0,4	2,9 0,4	2,9 0,4	radiator subtank

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MAINTENANCE

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21 Specifications

21.1 Specifications

		ViO17
Crawlers		rubber
H (crawler tension)	mm	8~13
Items		Canopy

Weight (in compliance with CE standards)

Operating mass (with operator + 75 kg)	kg	1740

Working range and performance

Operating temperature range	°C	-15 ~ 40
Bucket capacity, standard	m^3	0,05
Bucket width, standard	mm	450
Maximum digging depth	mm	2310
Maximum vertical wall digging depth	mm	1850
Maximum cutting height	mm	3690
Maximum dumping height	mm	2630
Maximum digging radius of the ground	mm	3710
Front minimum swing radius	mm	1535
Boom swing angle : left / right		42° / 65°
Maximum digging force : bucket / arm	kN	15,2
Travel speed : high / low	km / h	4,3 / 2,1
Maximum gradient		30°
Swing speed	rpm	9,5
Average ground pressure, standard crawler	kg / cm^2	0,291
Hydraulic pump displacement	L / min	17,6x2 <Variable displacement pumps> 13,2x1 <Gear pump> 9,9x1 <Trochoid pump>
System relief set pressure	MPa	20,6x2; 16,7x1; 2,9x1

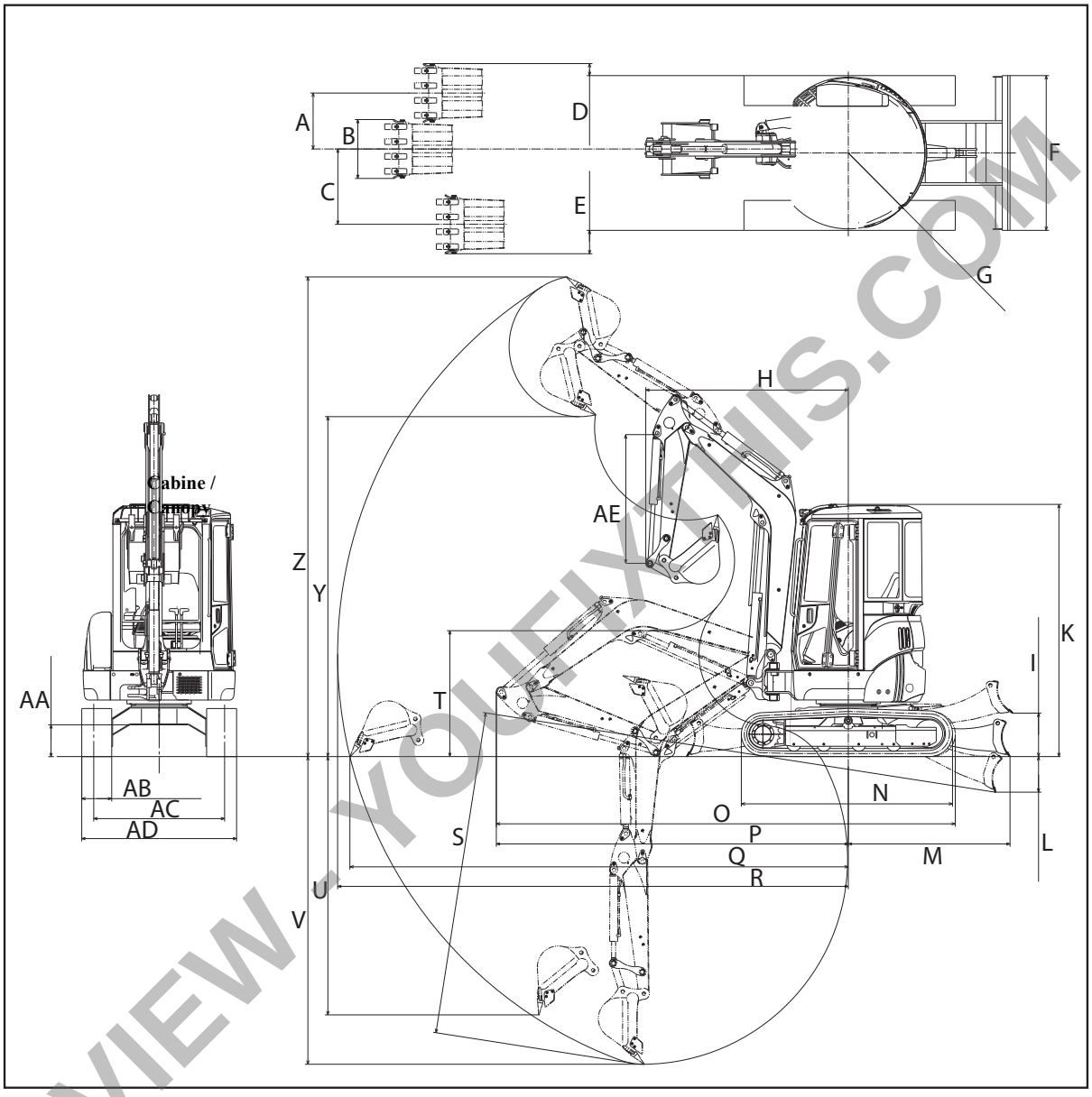
Engine		ViO17
Type	-	Vertical three cycle water-cooled diesel engine
Model	-	YANMAR 3TNV70 - XBV
Rated output / revs	kW / rpm	10,1 / 2200
Displacement	cm^3	854
Compression pressure	MPa	3,2 at 250 rpm
Nozzle injection pressure	MPa	12,3
Generator capacity	V / A	12 / 20

Subject to technical modifications

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21.2 Model view and working range (Cabin / Canopy)



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